SITE INVESTIGATION REPORT
AND
REMEDIATION PLAN
SUPERIOR CRUDE GATHERING, INC.
CRUDE OIL SPILL
INGLESIDE, TX

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1.0 INTRODUCTION

Pastor, Behling & Wheeler, LLC (PBW) has prepared this Site Investigation Report and Remediation Plan on behalf of Superior Crude Gathering, Inc. (Superior) to address soil affected by a spill of crude oil.

1.1 Site Description and Background

The Site is located within the former Falcon Refinery at 1472 FM 2725 in Ingleside, San Patricio County, Texas. The property is owned by National Oil Recovery Corporation (NORCO). Since 2002, Superior has leased three tanks (designated as Tanks 13, 15 and 16 (Figure 1)), which have a capacity of 100,000, 55,000 and 55,000 barrels (bbls), respectively. The three tanks are located within a large tank farm, as shown on Figure 1.

On February 9, 2010, crude oil was discovered leaking from Tank 13 into the containment area around the tank and approximately 22,000 bbls of crude oil eventually leaked from the tank. The crude oil in Tank 13 was South Texas crude obtained from various oil fields in south and central Texas. Although the berms and dikes around Tank 13 contained the oil, oil was carried by underground piping into the containment area around another storage tank facility on the Falcon Refinery property. This storage facility, which Superior does not lease from NORCO, is adjacent to a small pond (the "Duck Pond") (Figure 1). It was determined that this other containment area had an open pipe that allowed approximately 2,200 bbls of crude oil to flow into the Duck Pond. Crude oil that leaked from Tank 13 also moved from the containment area around Tank 13 to the containment areas around Tanks 12 and 30, although the mechanism for this movement of oil is unclear. On February 10, 2010, it was discovered that Tank 15, which was being used to contain spilled oil from Tank 13, was leaking into its containment area. Figure 2 shows the approximate extent of the crude oil spill at the Site.

1.2 Summary of Cleanup Actions

Immediately after the release, Superior initiated oil recovery and clean-up activities at the tank farm and Duck Pond. Oil was recovered using drum skimmers, vacuum skimmers, rope mops, and "super suckers". A system of vacuum trucks, pumps, "frac" tanks, push boats and marine storage was used to move and contain the oil. At the Duck Pond, 1,100 linear feet of hard boom was initially deployed to contain the oil, and an additional 500 linear feet of boom was later deployed. The Duck Pond cleanup was completed on February 19, 2010, with 2,200 bbls of crude oil recovered.

Since the initial response, Superior has continued to recover oil and remove impacted soil, vegetation, water and debris. Superior has taken precautions to minimize the further spread of crude oil contamination within the area of the release. Superior used water under high pressure to move the oil and "wash" the tank farm soil where crude was released. This water has subsequently has been removed, as discussed in Section 3.0.

All recoverable crude oil was removed from the site prior to May 14, 2010. Most of the visually-impacted soil and vegetation have also been removed and stockpiled pending characterization. Access to some areas (Tanks 10, 11, 26, and 27 containment areas) with heavy equipment has been limited as a result of soft/saturated soil conditions caused by intermittent rain during the investigation/cleanup. Some visually-impacted soil and vegetation remain under piping and pipe racks at the site given the difficulty of removal in these areas. Superior and the property owner have agreed to allow dismantling of the piping and pipe racks to allow for removal of the remaining visually-impacted soil and vegetation. Further discussion is provided in Section 4.

2.0 SITE INVESTIGATION

2.1 Investigation Methods

The overall objective of the investigation was to provide the data necessary to delineate the extent of impacted media at the Site such that a remediation plan could be developed. Specifically, the investigation was to:

1) Confirm the effectiveness of surface remediation, i.e., that oily material at the surface has been removed;
2) Characterize the vertical extent of any penetration of oil that may have occurred; and
3) Characterize the concentrations of TPH and BTEX remaining in soil beneath areas where free oil and oily materials have been removed.

The investigation was conducted on all parts of the property impacted by the release of crude oil from Tank 13 and Tank 15, and on parts of the property impacted by releases from underground piping that allowed the oil to spread from the containment areas of Tank 13 and Tank 15, except that no investigation was conducted in the Duck Pond since all crude oil had been recovered from the Duck Pond area.

2.1.1 Sample Collection

Soil samples were collected in May and June, 2010 from the locations shown on Figure 3. Soil samples were collected at eight locations within each tank containment area where crude was released. At Tank 16, because crude oil did not impact the entire tank containment area, only two locations were sampled. A total of 84 samples were collected from the tank containment areas. In addition, four soil samples were collected from the drainage ditches south of the tank farm where some crude oil flowed after the spill.

Soil or vegetation that was visually impacted by crude oil was removed prior to the start of sampling and was not sampled. At the locations where the visually-impacted material could not be removed during the investigation due to standing water or soft ground conditions, the area around the sample locations was stripped of this material prior to sampling.

Soil samples were collected from a depth of zero to six inches at each location. At two locations (T13-SO-04 and T30-SO-06), soil samples were collected at six-inch intervals to a total depth of three feet to evaluate the potential vertical migration of hydrocarbons. The locations for the deeper samples were

chosen in the field based on the identification of low spots (most likely collection points) as indicated by standing water.

Samples were collected using a disposable, plastic hand trowel or stainless-steel soil core sampler fitted with plastic liners. All soil samples were analyzed for the following chemicals of concern (COCs):

- Total petroleum hydrocarbons (TPH) by method TX1005;
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA method 8021B.

Three soil samples were analyzed for TPH using method TX1006, including the sample with the highest TPH concentration by TX1005 (9,600 mg/kg at location T26-SO-05).

Field duplicate samples were collected at the rate of one duplicate per 20 samples collected (or at least one per day of sampling). One equipment blank sample was also collected by capturing distilled water poured over the decontaminated or disposable sampling equipment.

Samples were collected using a disposable, plastic hand trowels or stainless-steel soil core samplers fitted with plastic liners. At the locations where samples were collected to a depth of three feet, sampling was difficult with the core sampler due to water in the boring. At these locations, a hole was dug with a post-hole digger and the samples were collected from the sidewalls of the resulting boring using a plastic trowel or by gloved hand.

Soil from each location was composited in a plastic Ziploc bag and the appropriate amount placed in the sample containers provided by the laboratories. Samples from multiple locations were not composited.

The lithology (i.e., approximate percentages of sand, silt and/or clay) and other characteristics (e.g., presence of staining, color, odor, etc.) of each sample were noted on a field log (Appendix A).

All samples were packaged and delivered to the laboratory in a way to best preserve the integrity of the samples. Samples were immediately placed in ice chests containing sufficient ice to keep the samples below 4° Celsius. Glass sample containers were wrapped in protective packaging, as necessary, to prevent breakage. The ice chests were sealed with tape for shipment to the laboratory via hand delivery. A chain-of-custody form was completed and placed in each ice chest with the samples. The chain-of-custody noted the sample identification, date and time of sample collection, sample preservation, sample

container volume and type (plastic, glass, etc.) the number of containers and the laboratory analysis to be performed.

All sample locations were surveyed in the field using a differential global positioning satellite (GPS) instrument (Trimble® GeoXT).

Field records and photographs are provided in Appendix A.

2.1.2 Deviations from Work Plan

The Work Plan proposed that soil samples would be collected in six-inch increments to a depth of three feet at three locations. Based on the results of the first two three-foot borings, a third soil boring was deemed unnecessary. Also, the Work Plan stated that six soil samples would be collected from the ditches to the south of the tank containment areas. Based on discussions with Jeff Kirby of Superior to indentify the areas where hydrocarbons had accumulated during initial cleanup activities, four samples were collected in those areas.

2.2 Risk-Based Screening

The potentially complete exposure pathways identified as applicable for this Site are detailed below and were used to determine assessment levels, critical Protective Concentration Limits (PCLs) and cleanup levels.

2.2.1 Soil

The ${}^{Tot}Soil_{Comb}$ and ${}^{GW}Soil_{Ing}$ pathways are considered potentially complete for surface soils, defined as soils from ground surface to 15 feet bgs for residential land use. The ${}^{Tot}Soil_{Comb}$ pathway considers potential exposure to soil COCs by humans through dermal contact and ingestion of soil. The ${}^{GW}Soil_{Ing}$ pathway considers the leaching of COCs from soil to groundwater and is the applicable soil-to-groundwater pathway since the uppermost water-bearing unit is considered a Class 2 groundwater resource. Since underlying groundwater occurs above 15-feet below ground surface, subsurface soils were not considered in the pathway analysis.

Delineation of COCs in Site soils was completed using PCLs (assessment levels) established for residential land use. The applicable assessment level is the lowest Tier 1 residential PCL for the potentially complete pathways in each media. The ${}^{GW}Soil_{Ing}$ pathway (30-acre source area) is the critical pathway for residential land use (soil from ground surface to the top of the uppermost water-bearing unit), since PCLs for this pathway are lower for all COCs than the PCLs for the ${}^{Tot}Soil_{Comb}$ pathway. The ${}^{GW}Soil_{Ing}$ PCLs are shown at the top of Table 1.

A Tier 1 TPH mixture PCL was developed in accordance with Guidance Document TRRP-27 to further evaluate the protectiveness of the mass of petroleum hydrocarbons, in this case the spill of crude oil. The TPH mixture PCL was developed using the TPH by TX 1006 results for the sample with the highest TPH result from the TPH TX 1005 analyses (9,600 mg/kg, sample T26-SO-05). The resulting TPH mixture PCL is shown on Table 1, and the calculations are provided in Appendix B. The TPH mixture PCL for the soil-to-groundwater pathway (${}^{GW}Soil_{Ing}$) is the critical PCL for TPH in soil (4,220 mg/kg).

For the BTEX compounds, the critical PCLs are the ${}^{GW}Soil_{Ing}$ PCLs for residential land use (30-acre source area) (Table 1).

2.2.2 Groundwater

The applicable groundwater pathways for the uppermost groundwater-bearing unit are ${}^{GW}GW_{Ing}$ and ${}^{Air}GW_{Inh\text{-}V}$. The ${}^{Air}GW_{Inh\text{-}V}$ pathway is evaluated to ensure that it is not the critical PCL for any of the COCs. As shown on Table 3, the critical PCLs for the BTEX compounds and TPH in groundwater are the ${}^{GW}GW_{Ing}$ PCLs for residential land use.

2.2 Summary of Investigation Results

2.3.1 Site Conditions

Site soils to a depth of 3 feet (the maximum depth of sampling) consist primarily of sand. Specifically, soils were described as gray, brown or tan silty sand with variable amounts of clay in the sand matrix or as thin beds. Varying amounts of organic material in the form of grass, roots, and/or dark staining, etc. were observed in the upper six inches. The soils were typically dry in the upper part of the soil column, except after rain events when the entire soil column was wet. Evidence of hydrocarbons (staining) was

observed in a few of the 0-6 inch samples, usually as staining around small roots. No free phase hydrocarbons were observed in any sample.

In the soil borings that were sampled to a depth of three feet, water accumulated in the borehole after a few minutes at a depth of approximately 1.5 feet below ground surface.

2.3.2 Soil

Soil samples were collected from the locations shown on Figure 3 and analyzed for TPH and BTEX. The results of the soil sampling are shown on Tables 1 and 2 (with complete laboratory analytical reports provided in Appendix C). A review of the results indicates the following:

1) TPH TX1005 concentrations in soil samples at the site range from below detection limits to a maximum concentration of C6-C40 of 9,600 mg/kg (T26-SO-05) (Table 1, Figures 4A and 4B). Most TPH detections in soil fall in the C12-C28 and C28-C35 hydrocarbon range, as expected for a crude oil spill. Three soil samples have total TPH concentrations that exceed the critical PCL for TPH: T13-SO-05, T15-SO-08, and T26-SO-05 with concentrations of 6,900 mg/kg, 7,700 mg/kg, and 9,600 mg/kg, respectively (Table 1).
2) Benzene concentrations are below the critical PCL for all but two samples (Table 1, Figures 5A, 5B). The maximum benzene concentration detected in soil samples at the site was 0.017 mg/kg at location T30-SO-01. The detection limit for the sample collected at location T14-SO-04 (<0.023 mg/kg) was higher than the PCL of 0.013 mg/kg. Although many of the benzene concentrations were J-flagged by the laboratory (meaning that the benzene concentration was "estimated", i.e., it was detected in the sample but at a concentration above the method detection limit and below the sample quantitation limit) –none of the J-flagged results exceeded the critical PCL for benzene.
3) Toluene, ethylbenzene, and xylene were not detected above the critical PCL in any soil sample.

Three soil samples were analyzed for TPH by TX1006 (Table 2). The TX1006 results also showed that the soil samples contained hydrocarbons in the heavier hydrocarbon ranges (C12-C16, C16-C21 and C21-C35), as expected for soil impacted by crude oil (and consistent with the hydrocarbon ranges in the TX1005 results). As mentioned above, the results from the TPH 1006 analyses of sample T26-SO-05 were used to develop a TRRP Tier 1 TPH mixture PCL in accordance with Guidance Document TRRP-27.

The results of soil sampling at the two three-foot deep borings (T13-SO-04 and T30-SO-06) indicate that vertical migration of hydrocarbons has not occurred (as well as confirming that the removal of the visually-impacted soil and vegetation is an effective remedial action for the site).

Four soil samples were collected from the ditch to the south of the tank containment areas. Concentrations of TPH and BTEX did not exceed the critical PCLs in any of the four samples (Table 1).

2.3.3 Groundwater

Two water samples were collected from the 0-36 inch borings at the T13-04 and T30-06 locations and analyzed for BTEX and TPH (Table 3). No BTEX constituents exceeded the ${}^{GW}GW_{Ing}$ PCL in either sample (and all were non-detect in sample T13-WA-04). TPH concentrations were non-detect for all but the C12-C28 range for both sample locations. Estimated (J-flagged) concentrations for the C12-C28 TPH range were reported for both samples (1.4 mg/L and 1.3 mg/L, respectively). These estimated concentrations exceed the critical groundwater PCL (${}^{GW}GW_{Ing}$) of 0.98 mg/L. As discussed below, no further investigation of groundwater is proposed.

2.3.4 Underground Piping Investigation

Due to the potential presence of residual crude oil in the underground piping at the site, and the potential interconnection of the piping between containment areas, an investigation of the piping was conducted.

Superior identified 12-inch underground piping that connects Tank 13 with Tank 11, and consequently with Tanks 10, 26 and 27, which are all within the Tank 11 containment. Upon examination, Superior found that a valve in the piping was open approximately 3”, allowing crude oil to move from the containment area of Tank 13 to the containment area of Tank 11 and elsewhere. Residual crude oil was flushed from this piping by pumping fresh water through the piping from the Tank 11 containment area into the containment area for Tank 13, where the oil and water were recovered. A plug was subsequently installed in the piping.

The piping between Tank 15 and the ditch was located and removed. This piping was part of the fire monitoring system for the refinery which operated previously on the property.

The piping between Tank 27 and the Duck Pond was also located, flushed, and covered with dirt. The piping will be sealed once all remediation activities in the Tank 27 containment area are complete.

3.0 PROJECT WASTE MANAGEMENT

Two roll-off containers of cleanup-related debris (approximately 22 cubic yards of debris), including sorbent boom, personal protective equipment, and other impacted materials, were characterized and disposed of at the US Ecology Landfill in Robstown, TX. Waste characterization data were submitted to the RRC on April 27, 2010. Copies of the waste disposal documentation are included in Appendix D-1.

Rainwater that collected in the containment areas and water used during cleanup has been collected and shipped off site for disposal via deep well injection. Analytical results of water samples have shown that the water is not characteristically hazardous (Appendix D-2). Approximately 4,515 barrels (189,630 gallons) of water have been removed from the site and disposed in the Johnson Resources Inc., Johnson SWD well in Nueces County.

Crude-oil impacted vegetation was removed, characterized and shipped to the Eco Mud disposal facility. Documentation of this waste shipment is included in Appendix D-3.

Visually impacted soil and vegetation stripped from the tank containment areas is being stockpiled in the individual tank containment areas. Soil samples were collected from three of these stockpiles and analyzed for TPH, Toxic Characteristic Leaching Procedure (TCLP) VOCs, TCLP SVOCs, TCLP metals (RCRA 8) and chloride. Field documentation and analytical results are included in Appendix D-4. Characterization of the soil is on-going and pending the final results, disposal methods for the soil will be evaluated. Further discussion is provided in Section 4.4.

4.0 REMEDIATION PLAN

4.1 Cleanup Levels

The cleanup levels for Site soils are the critical PCLs, as discussed in Section 2 and shown on Table 1. The applicable cleanup levels for the Site are for TPH and benzene, since these were the only PCLs exceeded in site soils. The TPH cleanup level for soil is 4,220 mg/kg and the benzene cleanup level for soil is 0.013 mg/kg.

4.2 Soil Remediation

Superior will perform the following soil remediation activities at the site:

1) Soil will be removed from the four areas where TPH or benzene exceeded the cleanup level in soil. These areas include:
    a. The area near soil sample T13-SO-05 in the containment area of Tank 13;
    b. The area near soil sample T15-SO-08 in the containment area of Tank 15;
    c. The area near soil sample T26-SO-05 in the containment area of Tank 26;
    d. The area near soil sample T30-SO-01 in the containment area of Tank 30.

    The top three inches of soil in these areas will be removed by mobile equipment (bulldozer or other). The area where soil will be removed will extend approximately 50 feet outward from the original sample location, or to either the next sample location, the tank wall, or the inner toe of the containment area dike (if either of these are less than 50 feet from the sample location).
2) The remainder of the visually-impacted soil and vegetation, the removal of which has been impeded by wet conditions and by the presence of pipe/pipe rack, will be removed.

Confirmation samples will be collected, as described in Section 4.3, which may result in the removal of additional impacted soil.

4.3 Soil Confirmation Sampling

Soil samples will be collected to confirm that the soil remediation activities have resulted in final soil concentrations below the cleanup levels. At the four locations where additional soil will be removed due to an exceedance of a cleanup level (Section 4.2, bullet 1), a confirmation sample will be collected at the original soil sample location. The sample will be collected from a depth of 0-6 inches and will be collected using the same soil sampling procedures that were used during the investigation. The sample will be analyzed for BTEX and TPH (1005) and the concentrations compared to the cleanup levels. If any concentration exceeds a cleanup level, an additional three inches of soil will be removed and another

confirmation sample will be collected. This process will be repeated at these areas until the cleanup levels are attained.

To confirm that final surface soil concentrations are below cleanup levels, soil samples will also be collected at the areas where the remaining visually-impacted soil and vegetation will be removed (Section 4.2, bullet 2). At the areas where standing water has impeded the removal of the visually-impacted soil and vegetation, one confirmation sample will be collected for every 2,500 ft^2 of soil removed (i.e., one sample per area of 50 ft by 50 ft). At the areas inaccessible due to the presence of pipe/pipe racks, one sample will be collected for approximately every 250 linear feet of piping. The sample will be collected from a depth of 0-6 inches and will be collected using the same soil sampling procedures that were used during the investigation. The sample will be analyzed for BTEX and TPH (1005) and the concentrations compared to the cleanup levels. If any concentration exceeds a cleanup level, an additional three inches of soil will be removed and another confirmation sample will be collected. This process will be repeated at these areas until the cleanup levels are attained.

4.4 Management of Excavated Soils

Currently, the impacted soil and vegetation that has been stripped from the tank containment areas is being stockpiled within the containment areas where it was removed. At the completion of the remedial activities described in Section 4.2 (and 4.3, if required, based on confirmation sampling), the material will be removed and disposed off site. Contingent on pre-approval of a waste profile, this material will be transferred directly to haul trucks for transport to a permitted off-site disposal facility under proper waste manifest procedures.

Three samples of the stockpiled soil and vegetation have been collected and analyzed, as described in Section 3.0 and shown in Appendix D-4. An additional three representative samples will be collected from the final resulting stockpiles and analyzed for TPH, Toxic Characteristic Leaching Procedure (TCLP) VOCs, TCLP SVOCs, TCLP metals (RCRA 8) and chloride.

4.5 Schedule

The remediation activities described above will be completed within 90 days after approval of this Site Investigation Report, assuming no weather delays. As described earlier in this report, rain impacts the

ability to work within certain of the containment areas of the site. Superior will contact the RRC if these activities cannot be completed within the 90-day schedule.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

5.1 Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) was achieved by collecting and/or analyzing the appropriate field and laboratory QA/QC samples to ensure that the analytical results met the measurement objectives. Results from analyses of QA/QC samples were used to quantify precision and accuracy and identify any problems or limitations of those data.

5.1.1 Field Quality Assurance/Quality Control Program

A field QA/QC program was implemented during the proposed response activities to evaluate field sampling methods and to evaluate combined field and laboratory precision.

During the investigation, a total of six field duplicate samples were collected as described in the Work Plan. The duplicate results are shown on Table 1 and indicate acceptable agreement between the original sample and the duplicate.

An equipment rinsate sample was collected as described in the Work Plan. The results can be found in Appendix C (Laboratory Job Number 560-20624-1, Equipment Blank). TPH was not detected in the sample. Toluene was detected at a J-flagged concentration of 0.24 ug/L, and all other BTEX compounds were not detected.

In addition, a laboratory supplied trip blank was included in coolers containing samples designated for volatile compound analysis (i.e., BTEX). All BTEX compounds were non-detect in the trip blank samples, with the exception of one sample where toluene was detected at a J-flagged concentration of 0.21 ug/L.

5.1.2 Laboratory Quality Assurance/Quality Control Program

The laboratory QA/QC program consisted of the examination of field and laboratory blank contamination, matrix spike/spike duplicate (MS) recoveries, laboratory control spike sample (LCS) recoveries, and surrogate recoveries. Each of the laboratory reports provided in Appendix C contains a job narrative that describes any QA/QC issues related to the analyses of a particular batch of samples. A review of these

job narratives indicates that some typical analytical issues were identified, such as elevated reporting limits due to dilutions and QA/QC sample recoveries outside of the laboratory control limits. None of these issues is thought to significantly affect the sample results, and the results can be used for their intended purpose.

TABLES

TABLE 1
SOIL SAMPLE ANALYTICAL SUMMARY - TPH BY TX 1005 AND BTEX
SUPERIOR CRUDE GATHERING - INGLESIDE, TEXAS

Sample ID	Collection Date	Constituents (mg/kg)											
								Total Petroleum Hydrocarbons (TPH)					
		Benzene	Ethylbenzene	Toluene	Total Xylenes	o-Xylene	m&p-Xylene	C6-C12	C12-C28	C28-C35	C35-C40	C6-C40	Mix PCL (2)
TRRP Tier 1 Residential Soil PCLs) (30 acre source) $^{Tot}Soil_{Comb}$		48	4000	5400	3700	29000	4700	---	---	---	---	---	6970
TRRP Tier 1 Residential Soil PCLs (30 acre source) $^{GW}Soil_{Ing}$		0.013	3.8	4.1	61	35	53	---	---	---	---	---	4220
Tank 10													
T10-SO-01	6/16/2010	<0.0021	<0.0025	<0.0023	<0.0075	<0.0025	<0.005	<13	280	41 J	<13	320	320
T10-SO-02	6/18/2010	<0.012	<0.014	<0.013	<0.042	<0.014	<0.028	<12	32 J	37 J	<12	69	69
T10-SO-03	6/16/2010	<0.002	<0.0023	<0.0022	<0.007	<0.0023	<0.0047	<24	810	150	30 J	990	990
T10-SO-04	6/16/2010	<0.0021	0.0025 J	<0.0023	0.015 J	0.0038 J	0.011	<13	340	110	19 J	470	470
T10-SO-05	6/16/2010	<0.0022	<0.0025	<0.0024	0.023	0.0047 J	0.018	<66	2200	330	84 J	2600	2600
T10-SO-06	6/16/2010	<0.0027	<0.0032	<0.003	<0.0096	<0.0031	<0.0064	<16	340	82	27 J	450	450
T10-SO-07	6/16/2010	<0.002	<0.0023	<0.0022	<0.007	<0.0023	<0.0047	39 J	1100	110 J	<36	1200	1200
T10-SO-08	6/16/2010	<0.002	<0.0023	<0.0022	<0.007	<0.0023	<0.0047	12 J	450	60	17 J	540	540
Tank 11													
T11-SO-01	6/16/2010	<0.0022	<0.0026	<0.0024	<0.0077	<0.0025	<0.0052	<13	40 J	<13	<13	40 J	40 J
T11-SO-02	6/16/2010	<0.0022	<0.0025	<0.0024	<0.0077	<0.0025	<0.0051	<13	120	38 J	<13	160	160
T11-SO-03	6/16/2010	<0.0022	<0.0026	<0.0025	<0.0079	<0.0026	0.0057 J	<14	540	68	25 J	630	630
T11-SO-04	6/16/2010	<0.0023	<0.0027	<0.0025	<0.008	<0.0026	0.0059 J	<14	260	28 J	<14	290	290
T11-SO-05	6/16/2010	<0.0022	<0.0026	<0.0024	0.017	0.0039 J	0.014	<67	1400	170 J	<67	1600	1600
T11-SO-501 (Duplicate of T11-SO-05)	6/16/2010	<0.0021	<0.0024	<0.0022	0.019	0.0047 J	0.014	<37	880	100 J	<37	980	980
T11-SO-06	6/16/2010	<0.002	<0.0024	<0.0022	0.011 J	0.0039 J	0.0067 J	<12	300	29 J	19 J	350	350
T11-SO-07	6/16/2010	<0.012	<0.014	<0.013	<0.042	<0.014	<0.028	<13	430	69	32 J	530	530
T11-SO-08	6/16/2010	<0.0021	<0.0024	<0.0023	<0.0074	<0.0024	<0.0049	<25	760	110 J	41 J	910	910
Tank 12													
T12-SO-01	5/18/2010	<0.00048	<0.00048	<0.00067	<0.00048	<0.00048	<0.00048	<14	2320	100	30 J	450	450
T12-SO-02	5/18/2010	0.0031 J	0.00069 J	0.0041 J	0.0068	0.0012 J	0.0056	<12	58 J	27 J	12 J	97	97
T12-SO-03	5/18/2010	0.0024 J	<0.00044	0.00083 J	0.0014 J	<0.00044	0.0011 J	<13	36 J	<13	<13	36 J	36 J
T12-SO-04	5/18/2010	0.0015 J	0.005 J	0.00065 J	0.04	0.01	0.03	<12	160	52 J	24 J	240	240
T12-SO-05	6/15/2010	0.008	0.0019 J	0.0018 J	0.02	0.0059	0.014	<13	150	70	18 J	240	240
T12-SO-06	6/15/2010	0.0012 J	<0.00042	0.0027 J	0.0018 J	<0.00042	0.0015 J	<61	1300	550	130 J	2000	2000
T12-SO-07	6/15/2010	0.0011 J	0.00076 J	0.0021 J	0.0027 J	0.00086 J	0.0019 J	<36	1200	320	64 J	1600	1600
T12-SO-401 (Duplicate of T12-SO-07)	6/15/2010	0.00083 J	<0.00041	0.0015 J	0.0011 J	<0.00041	0.00087 J	<59	1500	480	110 J	2100	2100
T12-SO-08	5/18/2010	0.00073 J	0.011 J	0.00066 J	0.008	0.0019 J	0.0061	<13	250	150	42 J	440	440
Tank 13													
T13-SO-01	5/18/2010	<0.00049	<0.00049	<0.00069	<0.00049	<0.00049	<0.00049	<14	34 J	14 J	<14	48 J	48 J
T13-SO-02	5/18/2010	0.00064 J	0.00073 J	0.0016 J	0.0089	0.00063 J	0.0083	<12	280	94	26 J	400	400
T13-SO-03	5/18/2010	0.0019 J	<0.00041	0.003 J	0.0037 J	<0.00041	0.0033 J	<12	190	86	27 J	300	300
T13-SO-04 (0-6)	6/15/2010	0.00077 J	<0.0004	0.0015 J	0.0017 J	0.00085 J	0.00088 J	<12	19 J	<12	<12	19 J	19 J
T13-SO-04 (6-12)	6/15/2010	0.00084 J	<0.0004	0.0023 J	0.0025 J	0.00044 J	0.0021 J	<12	<12	<12	<12	<12	<12
T13-SO-04 (12-18)	6/15/2010	0.00081 J	<0.00041	0.0023 J	0.0021 J	<0.00041	0.0017 J	<12	<12	<12	<12	<12	<12
T13-SO-04 (18-24)	6/15/2010	<0.00042	<0.00042	0.00065 J	0.00073 J	<0.00042	0.00056 J	<12	<12	<12	<12	<12	<12
T13-SO-04 (24-30)	6/15/2010	<0.00043	<0.00043	0.0017 J	0.0011 J	<0.00043	0.00085 J	<12	<12	<12	<12	<12	<12
T13-SO-04 (30-36)	6/15/2010	<0.00043	<0.00043	0.00086 J	0.00066 J	<0.00043	0.00049 J	<13	<13	<13	<13	<13	<13
T13-SO-05	6/15/2010	<0.0022	<0.0022	0.0039 J	0.0036 J	<0.0022	0.0027 J	<250	5600	1300	<250	6900	6900
T13-SO-06	6/15/2010	0.0068 J	<0.0026	0.011 J	0.0036 J	<0.0026	0.0028 J	<66	2400	500	99 J	3000	3000

TABLE 1
SOIL SAMPLE ANALYTICAL SUMMARY - TPH BY TX 1005 AND BTEX
SUPERIOR CRUDE GATHERING - INGLESIDE, TEXAS

Sample ID	Collection Date	Constituents (mg/kg)											
								Total Petroleum Hydrocarbons (TPH)					
		Benzene	Ethylbenzene	Toluene	Total Xylenes	o-Xylene	m&p-Xylene	C6-C12	C12-C28	C28-C35	C35-C40	C6-C40	Mix PCL (2)
TRRP Tier 1 Residential Soil PCLs) (30 acre source) $^{Tot}Soil_{Comb}$		48	4000	5400	3700	29000	4700	---	---	---	---	---	6970
TRRP Tier 1 Residential Soil PCLs (30 acre source) $^{GW}Soil_{Ing}$		0.013	3.8	4.1	61	35	53	---	---	---	---	---	4220
T13-SO-07	6/3/2010	<0.00042	<0.00042	0.0012 J	0.00061 J	<0.00042	0.00061 J	<12	82	35 J	17 J	130	130
T13-SO-08	5/18/2010	<0.00049	<0.00049	<0.00069	0.0023 J	0.0023 J	<0.00049	<71	2700	510	130 J	3300	3300
Tank 14													
T14-SO-01	5/18/2010	<0.00018	<0.00018	<0.00025	<0.00018	<0.00018	<0.00018	<13	210	14 J	15 J	240	240
T14-SO-02	5/18/2010	<0.00043	<0.00043	0.0005 J	<0.00043	<0.00043	<0.00043	<12	18 J	<12	<12	18 J	18 J
T14-SO-03	5/18/2010	0.00077 J	<0.00041	0.0014 J	0.0036 J	0.00057 J	0.003 J	<12	<12	<12	<12	<12	<12
T14-SO-101 (Duplicate of T14-SO-03)	5/18/2010	0.00047 J	<0.00042	0.00065 J	0.0026 J	0.00042 J	0.0022 J	<12	<12	<12	<12	<12	<12
T14-SO-04	5/18/2010	<0.023	<0.011	0.021 J	0.29 J	0.24	0.045 J	<120	2500	880	270 J	3600	3600
T14-SO-05	6/16/2010	<0.013	<0.015	<0.014	<0.045	<0.015	<0.03	<14	140	67 J	<14	210	210
T14-SO-06	6/16/2010	<0.011	<0.013	<0.012	<0.039	<0.013	<0.026	<12	66	<12	<12	66	66
T14-SO-07	5/18/2010	<0.0016	<0.0016	<0.0023	<0.0016	<0.0016	<0.0016	66 J	1200	110 J	45 J	1400	1400
T14-SO-08	5/18/2010	<0.00042	<0.00042	<0.00059	<0.00042	<0.00042	<0.00042	<12	400	70	24 J	490	490
Tank 15													
T15-SO-01	5/26/2010	0.00041 J	<0.00039	<0.00060	0.00081 J	<0.00039	0.00045 J	<57	2000	230 J	70 J	2300	2300
T15-SO-02	5/26/2010	0.0021 J	<0.00042	0.0035 J	0.0014 J	<0.00042	0.0012 J	<12	56 J	17 J	16 J	89	89
T15-SO-03	5/26/2010	<0.00044	<0.00044	<0.00061	0.0016 J	<0.00044	0.0013 J	<12	28 J	<12	<12	28 J	28 J
T15-SO-04	5/26/2010	0.0011 J	0.00077 J	0.0033 J	0.0021 J	0.00096 J	0.0011 J	<12	50 J	22 J	17 J	89	89
T15-SO-05	5/26/2010	0.0011 J	0.00048 J	0.0031 J	0.0027 J	<0.0004	0.0023 J	<12	87	36 J	18 J	140	140
T15-SO-201 (Duplicate of T15-SO-05)	5/26/2010	0.0012 J	0.00074 J	0.0045 J	0.0044 J	0.00068 J	0.0037 J	<12	66	28 J	13 J	110	110
T15-SO-06	5/26/2010	<0.00095	<0.00095	<0.0013	0.005 J	0.0034J	0.0015 J	<59	1800	350	100 J	2200	2200
T15-SO-07	5/26/2010	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<12	420	88	33 J	540	540
T15-SO-08	5/26/2010	<0.0021	<0.0021	<0.0029	0.021 J	0.021 J	<0.0021	360 J	6400	670 J	280 J	7700	7700
Tank 16													
T16-SO-04	5/26/2010	0.0012 J	<0.00042	0.00092 J	<0.00042	<0.00042	<0.00042	<12	260	140	60	460	460
T16-SO-05	5/26/2010	0.0041 J	0.00062 J	0.0063	0.0046 J	0.00082 J	0.0038 J	<12	77	45 J	19 J	140	140
Tank 26													
T26-SO-01	6/18/2010	<0.0021	<0.0024	<0.0023	<0.0074	<0.0024	<0.0049	<13	120	25 J	<13	140	140
T26-SO-02	6/18/2010	<0.0021	<0.0025	<0.0023	<0.0075	<0.0025	<0.005	<13	<13	<13	<13	<13	<13
T26-SO-03	6/16/2010	<0.002	<0.0024	<0.0022	0.077	0.0094	0.068	28 J	150	43 J	<12	220	220
T26-SO-04	6/16/2010	<0.0022	<0.0026	<0.0024	<0.0078	<0.0026	<0.0052	<66	1600	770	300 J	2700	2700
T26-SO-05	6/16/2010	<0.012	<0.013	<0.013	0.15	0.031	0.12	<240	7300	1500	810 J	9600	9600
T26-SO-06	6/3/2010	0.0018 J	0.0023 J	0.0012 J	0.015	0.0063	0.0085	<13	110	64 J	26 J	200	200
T26-SO-07	6/3/2010	<0.00048	<0.00048	<0.00048	<0.00048	<0.00048	<0.00048	<14	60 J	15 J	14 J	89	89
T26-SO-08	6/3/2010	<0.0013	0.0034 J	0.0092 J	0.021	0.0059 J	0.015 J	<67	1300	680	260 J	2200	2200
T26-SO-301 (Duplicate of T26-SO-08)	6/3/2010	0.0017 J	0.0024J	0.0037 J	0.017	0.011 J	0.0063 J	<67	860	460	170 J	1500	1500
Tank 27													
T27-SO-01	6/18/2010	<0.011	<0.013	<0.012	<0.040	<0.013	<0.027	72 J	880	230	57 J	1200	1200
T27-SO-02	6/18/2010	<0.002	<0.0023	<0.0022	<0.007	<0.0023	<0.0047	<60	1100	260 J	<60	1400	1400
T27-SO-03	6/18/2010	<0.012	<0.014	<0.013	<0.043	<0.014	<0.029	<13	100	64	<13	160	160
T27-SO-04	6/18/2010	<0.012	<0.014	<0.013	0.064 J	0.016 J	0.048 J	16 J	140	26 J	<13	180	180
T27-SO-05	6/18/2010	<0.012	<0.014	<0.013	<0.042	<0.014	<0.028	<13	200	190	52 J	440	440

TABLE 1
SOIL SAMPLE ANALYTICAL SUMMARY - TPH BY TX 1005 AND BTEX
SUPERIOR CRUDE GATHERING - INGLESIDE, TEXAS

Sample ID	Collection Date	Constituents (mg/kg)											
								Total Petroleum Hydrocarbons (TPH)					
		Benzene	Ethylbenzene	Toluene	Total Xylenes	o-Xylene	m&p-Xylene	C6-C12	C12-C28	C28-C35	C35-C40	C6-C40	Mix PCL (2)
TRRP Tier 1 Residential Soil PCLs) (30 acre source) $^{Tot}Soil_{Comb}$		48	4000	5400	3700	29000	4700	---	---	---	---	---	6970
TRRP Tier 1 Residential Soil PCLs (30 acre source) $^{GW}Soil_{Ing}$		0.013	3.8	4.1	61	35	53	---	---	---	---	---	4220
T27-SO-06	6/18/2010	<0.012	<0.014	<0.013	<0.041	<0.013	<0.027	<12	12 J	<12	<12	12 J	12 J
T27-SO-07	6/18/2010	<0.012	<0.014	<0.013	0.061 J	<0.014	0.051 J	<26	1100	260	52 J	1400	1400
T27-SO-08	6/18/2010	<0.002	<0.0024	<0.0022	<0.0072	<0.0024	<0.0048	<12	110	22 J	<12	130	130
T27-SO-601 (Duplicate of T27-SO-08)	6/18/2010	<0.0022	<0.0026	<0.0024	<0.0077	<0.0025	<0.0052	<13	57 J	<13	<13	57 J	57 J
Tank 30													
T30-SO-01	5/18/2010	0.17	0.086	0.1	0.088	0.025	0.063	<12	170	28 J	17 J	220	220
T30-SO-02	5/18/2010	0.0017 J	<0.00041	0.0027 J	0.0014 J	<0.00041	0.0012 J	<12	380	51 J	14 J	440	440
T30-SO-03	5/18/2010	<0.00041	<0.00041	<0.00058	0.001 J	<0.00041	0.00066 J	<12	62	<12	<12	62	62
T30-SO-04	5/18/2010	<0.00043	<0.00043	<0.0006	0.00055 J	0.00055 J	<0.00043	<12	160	22 J	15 J	200	200
T30-SO-05	6/3/2010	0.0031 J	0.0032 J	<0.00065	0.025	0.008	0.017	<13	64 J	<13	<13	64 J	64 J
T30-SO-06 (0-6)	6/3/2010	<0.00041	<0.00041	<0.00058	<0.00041	<0.00041	<0.00041	<12	31 J	<12	12 J	43 J	43 J
T30-SO-06 (6-12)	6/3/2010	<0.00040	<0.00040	<0.00056	0.001 J	0.00052 J	0.0005 J	<12	28 J	<12	<12	28 J	28 J
T30-SO-06 (12-18)	6/3/2010	<0.00041	0.00093 J	<0.00058	0.01	0.0047 J	0.0056	<12	20 J	<12	<12	20 J	20 J
T30-SO-06 (18-24)	6/3/2010	0.00076 J	<0.00041	0.0013 J	0.0024 J	0.00047 J	0.002 J	<12	<12	<12	<12	<12	<12
T30-SO-06 (24-30)	6/3/2010	<0.00042	<0.00042	<0.00059	0.0014 J	0.00089 J	0.00052 J	<12	<12	<12	<12	<12	<12
T30-SO-06 (30-36)	6/3/2010	0.0013 J	<0.00041	0.002 J	0.0023 J	0.00047 J	0.0018 J	<12	<12	<12	<12	<12	<12
T30-SO-07	6/3/2010	<0.0016	0.0017 J	<0.0023	0.0074 J	0.0027 J	0.0047 J	<15	270	65 J	21 J	360	360
T30-SO-08	6/3/2010	0.00047 J	<0.00043	0.00098 J	<0.00043	<0.00043	<0.00043	<12	75	<12	12 J	87	87
Ditch													
Ditch-SO-01	5/26/2010	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<13	22 J	<13	<13	22 J	22 J
Ditch-SO-02	5/26/2010	0.00088 J	<0.00054	<0.00076	0.00058 J	<0.00054	<0.00054	<16	250	30 J	<16	280	280
Ditch-SO-03	5/26/2010	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051	<15	62 J	<15	<15	62 J	62 J
Ditch-SO-04	5/26/2010	0.00062 J	<0.00048	0.00092 J	0.0014 J	<0.00048	0.0011	<14	28 J	<14	<14	27 J	27 J

Notes:
1) All samples collected from a depth of 0-6 inches below ground surface except where noted.
2) TPH Mixture PCL developed using TX 1006 data (see Table 2) and per TRRP-27 and associated spreadsheet.
3) Shading indicates the following:
YELLOW shading indicates the concentration exceeds the critical PCL
GREEN shading indicates that the method detection limit exceeds the critical PCL

TABLE 2
SOIL SAMPLE ANALYTICAL SUMMARY - TX 1006
SUPERIOR CRUDE GATHERING - INGLESIDE, TEXAS

Sample Location	Sample Date	TPH - Aliphatic Fractions (mg/Kg)						TPH - Aromatic Fractions (mg/Kg)						Total TPH
		>C6-C8	>C8-C10	>C10-C12	>C12-C16	>C16-C21	>C21-C35	C7-C8	>C8-C10	>C10-C12	>C12-C16	>C16-C21	>C21-C35	
T13-SO-08	5/18/2010	<71	<71	<71	420	310 J	720	<71	<71	<71	100 J	76 J	220 J	1,900
T13-SO-05	6/15/2010	<250	<250	<250	830 J	<250	1400	<250	<250	<250	<250	260 J	770 J	3,400 B
T26-SO-05	6/16/2010	<240	<240	<240	280 J	630 J	2300	<240	<240	<240	<240	260 J	1300	4,800 B

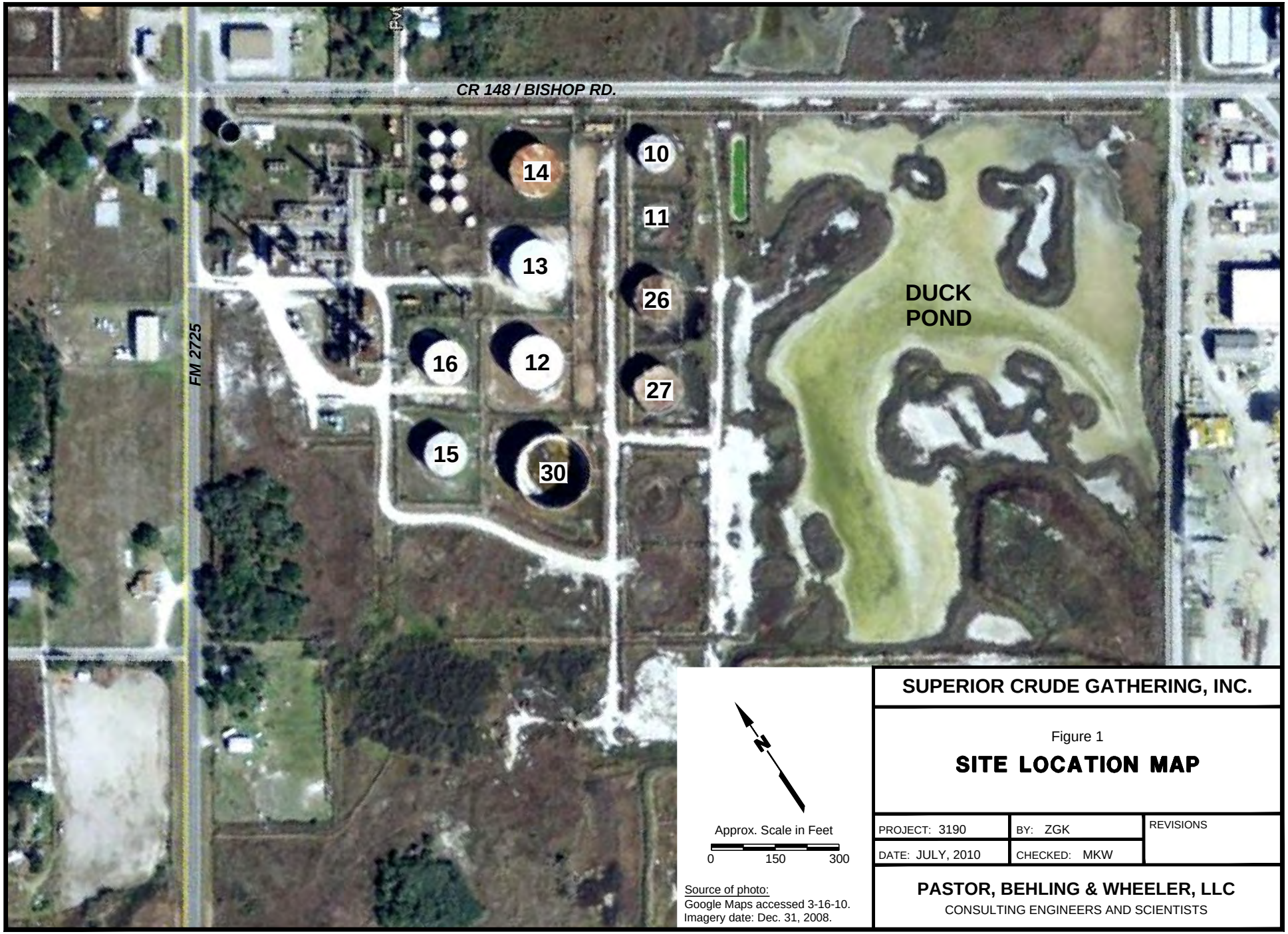
Notes:
1) Samples collected from a depth of 0-6 inches below ground surface.

TABLE 3
GROUNDWATER SAMPLE ANALYTICAL SUMMARY
SUPERIOR CRUDE GATHERING - INGLESIDE, TEXAS

Sample ID	Collection Date	Constituents (mg/L)										
								Total Petroleum Hydrocarbons (TPH)				
		Benzene	Ethylbenzene	Toluene	Total Xylenes	o-Xylene	m&p-Xylene	C6-C12	C12-C28	C28-C35	C35-C40	C6-C40
TRRP Tier 1 Residential Groundwater PCLs $^{GW}GW_{Ing}$		0.005	0.7	1	10	10	10	0.98	0.98	0.98	---	---
TRRP Tier 1 Residential Groundwater PCLs (30 acre source) $^{Air}GW_{Inh-V}$		23	2000	8200	1300	98000	1200	230	970	970	---	---
TRRP Tier 1 C/I Groundwater PCLs $^{GW}GW_{Ing}$		0.005	0.7	1	1000	1000	1000	2.9	2.9	2.9	---	---
TRRP Tier 1 C/I Groundwater PCLs (30 acre source) $^{Air}GW_{Inh-V}$		39	2800	12000	1900	140000	1700	320	1400	1400	---	---
T13-WA-04	6/16/2010	<0.0002	<0.0002	<0.0002	<0.00023	<0.0002	<0.00023	<0.84	1.4 J	<0.84	<0.84	1.4 J
T30-WA-06	6/16/2010	0.0018	0.0072	<0.0002	0.0015 J	0.0012	0.00034 J	<0.83	1.3 J	<0.83	<0.83	1.3 J

Notes:
Shading indicates the following:
YELLOW indicates that the estimated (J-flagged) concentration exceeds the critical PCL

FIGURES



SUPERIOR CRUDE GATHERING, INC.

Figure 1

SITE LOCATION MAP

PROJECT: 3190	BY: ZGK	REVISIONS
DATE: JULY, 2010	CHECKED: MKW	

PASTOR, BEHLING & WHEELER, LLC

CONSULTING ENGINEERS AND SCIENTISTS

SUPERIOR CRUDE GATHERING, INC.

Figure 2

EXTENT OF CRUDE OIL RELEASE

PROJECT: 3190	BY: ZGK	REVISIONS
DATE: JULY, 2010	CHECKED: MKW	

PASTOR, BEHLING & WHEELER, LLC

CONSULTING ENGINEERS AND SCIENTISTS

EXPLANATION

- Extent of Oil Release (Land)
- Extent of Oil Release (Duck Pond)
- Soil Sample Location

Approx. Scale in Feet

0 75 150

Source of photo:
Google Maps accessed 3-16-10. Imagery date: Dec. 31, 2008.

SUPERIOR CRUDE GATHERING, INC.

Figure 3

SOIL SAMPLE LOCATIONS

PROJECT: 3190	BY: ZGK	REVISIONS
DATE: JULY, 2010	CHECKED: MKW	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXPLANATION

Extent of Oil Release (Land)

Extent of Oil Release (Duck Pond)

1 ● Soil Sample Location

Notes:
1. Samples collected from 0-0.5 ft interval unless otherwise noted.
2. Results reported in mg/kg.
3. < - indicates concentration not detected above the MDL.
4. J - flag indicates concentration detected above the MDL but below the MQL, value is an estimate.

N

Approx. Scale in Feet
0 30 60

Source of photo:
Google Maps accessed 3-16-10. Imagery date: Dec. 31, 2008.

SUPERIOR CRUDE GATHERING, INC.

Figure 4A

TPH CONCENTRATIONS IN SOILS

PROJECT: 3190	BY: ZGK	REVISIONS
DATE: JULY, 2010	CHECKED: MKW	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXPLANATION

Extent of Oil Release (Land)

Extent of Oil Release (Duck Pond)

1 ● Soil Sample Location

Notes:
1. Samples collected from 0-0.5 ft interval unless otherwise noted.
2. Results reported in mg/kg.
3. < - indicates concentration not detected above the MDL.
4. J - flag indicates concentration detected above the MDL but below the MQL, value is an estimate.

N

Approx. Scale in Feet

0 30 60

Source of photo:
Google Maps accessed 3-16-10. Imagery date: Dec. 31, 2008.

SUPERIOR CRUDE GATHERING, INC.

Figure 4B

TPH CONCENTRATIONS IN SOILS

PROJECT: 3190	BY: ZGK	REVISIONS
DATE: JULY, 2010	CHECKED: MKW	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXPLANATION

Extent of Oil Release (Land)

Extent of Oil Release (Duck Pond)

1 ● Soil Sample Location

Notes:
1. Samples collected from 0-0.5 ft interval unless otherwise noted.
2. Results reported in mg/kg.
3. < - indicates concentration not detected above the MDL.
4. J - flag indicates concentration detected above the MDL but below the MQL, value is an estimate.

N

Approx. Scale in Feet

0 30 60

Source of photo:
Google Maps accessed 3-16-10. Imagery date: Dec. 31, 2008.

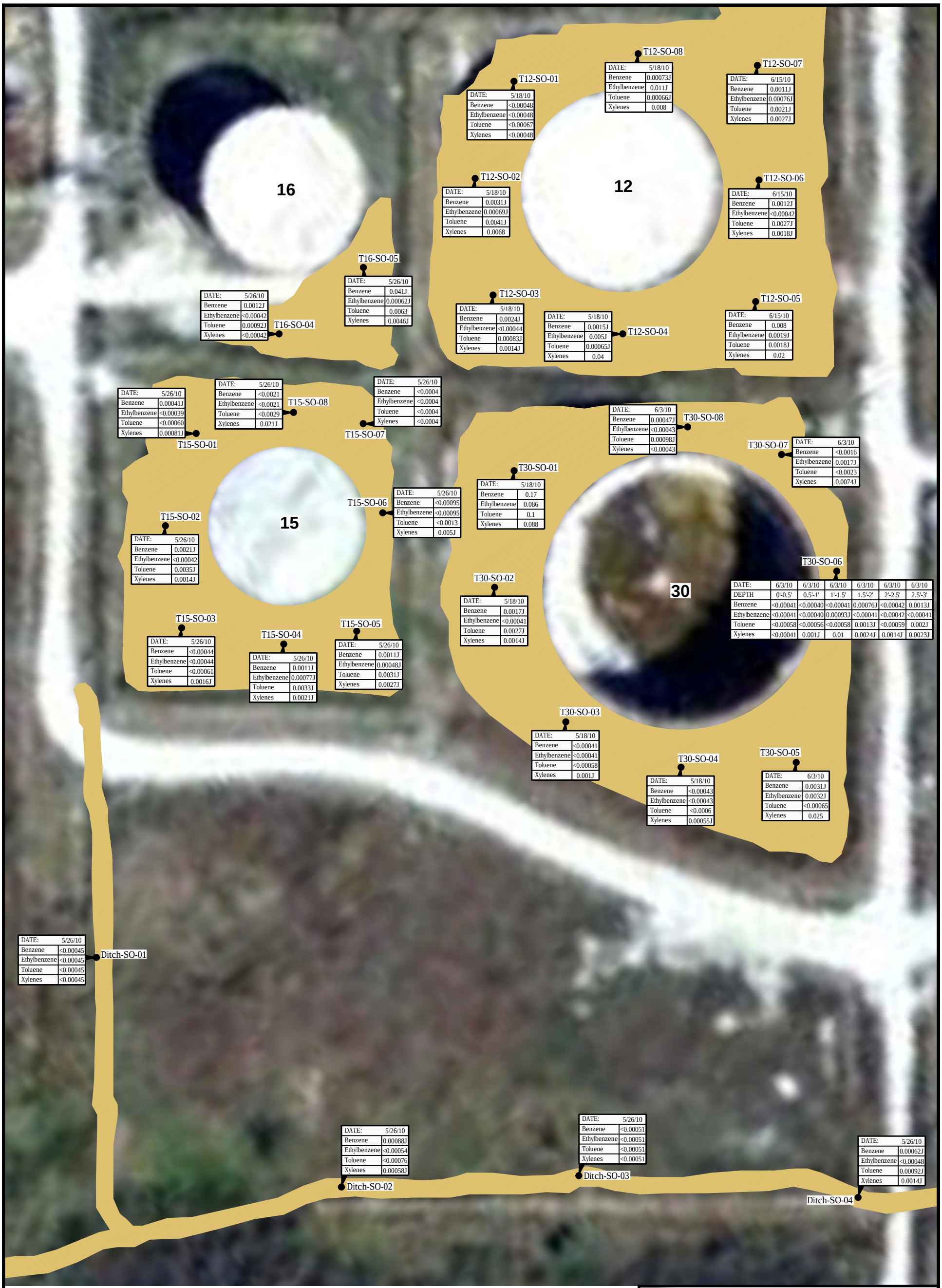
SUPERIOR CRUDE GATHERING, INC.

Figure 5A

BTEX CONCENTRATIONS IN SOILS

PROJECT: 3190	BY: ZGK	REVISIONS
DATE: JULY, 2010	CHECKED: MKW	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

Extent of Oil Release (Land)

Extent of Oil Release (Duck Pond)

1 ● Soil Sample Location

Notes:
1. Samples collected from 0-0.5 ft interval unless otherwise noted.
2. Results reported in mg/kg.
3. < - indicates concentration not detected above the MDL.
4. J - flag indicates concentration detected above the MDL but below the MQL, value is an estimate.

N

Approx. Scale in Feet

0 30 60

Source of photo:
Google Maps accessed 3-16-10. Imagery date: Dec. 31, 2008.

SUPERIOR CRUDE GATHERING, INC.

Figure 5B

BTEX CONCENTRATIONS IN SOILS

PROJECT: 3190	BY: ZGK	REVISIONS
DATE: JULY, 2010	CHECKED: MKW	

PASTOR, BEHLING & WHEELER, LLC
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