



September 28, 2015

California Regional Water Quality Control Board
Los Angeles Region
ATTN: Mr. Paul Cho
320 West Fourth Street, Suite 200
Los Angeles, California 90013

Subject: Report Transmittal:
*Further Evaluation of Petroleum Hydrocarbons in Soil and Groundwater,
Vicinity of GMW-62,
DFSP Norwalk, 15306 Norwalk Boulevard, Norwalk, California 90650*

Dear Mr. Cho:

On behalf of the Defense Logistics Agency – Energy, The Source Group, Inc., is pleased to submit the above-referenced report for the Defense Fuel Support Point (DFSP) Norwalk facility in Norwalk, California. This document was uploaded to GeoTracker Global ID SLT43185183. If you have any questions or need additional information concerning this document, please contact Nicholas Carros at (703) 767-6624 or e-mail: nicholas.carros@dla.mil.

Thank you for your assistance in this matter.

Sincerely,

The Source Group, Inc.

A handwritten signature in blue ink that reads 'Daniel Swensson'.

Daniel Swensson
Principal Geologist

**FURTHER EVALUATION OF PETROLEUM
HYDROCARBONS IN SOIL AND GROUNDWATER
VICINITY OF GMW-62**

**Defense Fuel Support Point Norwalk
15306 Norwalk Boulevard
Norwalk, California 90650**

04-NDLA-008

Prepared For:



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1.0 INTRODUCTION

The Source Group, Inc. (SGI), is pleased to present this report of environmental assessment conducted to evaluate the extent and character of light, non-aqueous phase liquid (LNAPL) present in monitoring well GMW-62, located within Holifield Park east of the Defense Fuel Support Point (DFSP) Norwalk. DFSP San Norwalk is located at 15306 Norwalk Boulevard in Norwalk, California (Figure 1). A site plan of the northwest portion of Holifield Park abutting the northeast corner of DFSP Norwalk is presented on Figure 2. Assessment activities conducted during this investigation comprise drilling and collection of soil samples, installation and development of three groundwater monitoring wells, and the collection of groundwater and LNAPL samples. This investigation was conducted at the request of the Los Angeles Regional Water Quality Control Board (RWQCB) and in general accordance with the *Revised Work Plan for Further Evaluation of GMW-62 Light Non-Aqueous Phase Liquid* dated December 15, 2014 (SGI, 2014). The following activities were conducted during this investigation:

- Drilling permits were obtained from the County of Los Angeles Department of Public Health.
- The field schedule was coordinated with the City of Norwalk.
- Drilling locations were marked in the field.
- A geophysical survey was conducted to clear the proposed drilling locations of potential subsurface pipelines and other buried structures;
- Underground Service Alert was notified to identify the locations of buried utilities;
- Three soil borings were advanced to 45 or 47 feet below ground surface (bgs) and soil samples were collected for laboratory analysis;
- The soil borings were completed as groundwater monitoring wells;
- The newly installed wells were developed to remove fine-grained material from the wells and filter packs, to increase well efficiency, and to promote good communication between the monitoring wells and the surrounding water-bearing zone;
- Groundwater samples were collected for laboratory analysis;
- Soil and groundwater samples were submitted for analysis of total petroleum hydrocarbons (TPH; carbon chain characterization) and volatile organic compounds (VOCs);
- Selected soil cores were prepared and submitted for physical properties analyses;
- The new wells were surveyed;
- All investigation-derived waste was transported onto the DFSP Norwalk site for on-site treatment;

- Samples of the LNAPL present in wells located on the DFSP Norwalk site (monitoring wells GW-15 and TF-18) and groundwater present in GMW-62 were collected for forensic fingerprinting to evaluate the source of the LNAPL in GMW-62;
- Data was summarized and evaluated; and
- This assessment report was generated to document and present the results of this investigation.

The principal objective of this investigation was to evaluate the extent of LNAPL present in the area surrounding monitoring well GMW-62.

2.0 SITE DESCRIPTION AND BACKGROUND

DFSP Norwalk encompasses approximately 50 acres formerly used for storage and distribution of military fuels including Jet Propellant No.4 (JP-4), Jet Propellant No.5 (JP-5), and Jet Propellant No.8 (JP-8). AVGAS (aviation fuel for piston-engine aircraft) was also stored at the facility in the past. When the DFSP Norwalk was in service, fuels were transferred to and from the facility primarily via underground pipelines from the DFSP San Pedro facility, and from the nearby Powerine and Golden West refineries. Santa Fe Pacific Pipeline, L.P. (SFPP), an operating partnership of Kinder Morgan Energy Partners, L.P. (KMEP), operates a pump station along the southern property line on approximately 2 acres of land leased from DFSP Norwalk. The SFPP facility is used for the distribution of refined fuel products (e.g., gasoline, diesel, and jet fuel) via underground pipelines. These pipelines traverse the southern and eastern boundaries of DFSP Norwalk.

The Los Angeles Regional Water Quality Control Board (RWQCB) provides oversight of the assessment and environmental restoration of petroleum fuel releases at the facility.

The DFSP Norwalk facility is bordered on the north by Excelsior Drive and residential properties, on the west by Norwalk Boulevard and residential properties, on the south by residential properties, and on the east by Holifield Park. Assessment activities discussed in this report were conducted east of the DFSP Norwalk in Holifield Park.

2.1 LNAPL Accumulation in GMW-62

Monitoring well GMW-62 was installed in Holifield Park, approximately 28 feet east of the DFSP Norwalk eastern property boundary, in July 2007. LNAPL was observed in GMW-62 for the first time on January 1, 2011 (0.30 foot measured thickness). Since January 2011, LNAPL has been consistently present in GMW-62 at measured thicknesses ranging up to 5.63 feet (measured on October 27, 2014). Measured LNAPL thickness has declined in GMW-62 since October 2014. This decline in LNAPL thickness may be attributable to LNAPL recovery efforts which began in January 2015. On April 20, 2015, only 0.01 foot of LNAPL (measured thickness) was present in GMW-62.

2.2 Local Hydrogeology

Historically, the regional groundwater gradient for the uppermost groundwater zone in the vicinity of DFSP Norwalk is toward the northeast. However, remedial actions (i.e., groundwater pumping) conducted on the site have changed the local gradient. Current groundwater gradient conditions reflect a very low to nearly flat gradient in the central tank farm area with gradients converging toward the DFSP Norwalk from the west, southwest, south, southeast, and east (ranging from approximately 0.001 to 0.003 feet per foot [ft/ft]). The groundwater gradient in the vicinity of GMW-62 is westward toward the DFSP Norwalk at approximately 0.002 ft/ft.

3.0 PREPARATORY ACTIVITIES

Prior to the initiation of fieldwork, the following activities were completed:

- Well permits were obtained from the Los Angeles County Department of Public Health (Appendix A);
- The field schedule was coordinated with the City of Norwalk;
- Drilling locations were demarcated at the site;
- The Health and Safety Plan (HASP) was reviewed and updated in accordance with Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910.120;
- The RWQCB was notified of the work schedule;
- A geophysical survey was conducted to identify and mark the location of Tank 51 on the ground surface and to clear the proposed drilling locations of potential subsurface pipelines and other buried structures (Appendix B);
- The proposed drilling and sampling locations were cleared of underground utilities by Underground Service Alert (USA); and
- Drilling equipment was mobilized to the Site.

4.0 FIELD ACTIVITIES

4.1 Drilling and Soil Sampling

Prior to drilling with the hollow-stem augers, each drilling location was cleared to 5 feet bgs using a hand auger and posthole digger. The borings were drilled using a CME-85 hollow-stem-auger drill rig supplied and operated by ABC Liovin Drilling, Inc. (C57 License No.422904), from Signal Hill, California. A total of three borings (GMW-67, GMW-68, and GMW-69; Figure 2) were advanced to 45 or 47 feet bgs, total depth. A geologist, working under the direct oversight of a California Professional Geologist, supervised the drilling and collection of soil samples. Waste soil generated during drilling was collected in a hopper and a forklift was used to transport the waste soil to the DFSP Norwalk for on-site treatment.

Each soil boring was continuously cored. Soil samples were collected from the soil cores in laboratory-supplied 4-ounce sample jars (for TPH analysis) and soil samples were prepared for VOC analysis in accordance with Environmental Protection Agency (EPA) Method 5035. Between one and three samples were collected from each 5-foot soil core. Samples were labeled and placed on ice in a thermally insulated cooler. Samples for laboratory analysis were selected after the completion of drilling based upon field evidence of contamination and the goals of this assessment. Three to six soil samples from each boring were submitted for analysis of TPH (carbon chain characterization) in accordance with EPA Method 8015M, and VOCs, including benzene, toluene, ethylbenzene, and xylenes (BTEX compounds), gasoline-range organics (GRO), and fuel oxygenates in accordance with EPA Method 8260B. Samples selected for laboratory analysis were sealed, labeled, and placed on ice in a thermally insulated cooler pending transport under chain of custody to the analytical laboratory. In addition, soil core samples selected for physical property analyses were prepared by sealing the cores in Ziplock bags and packing in dry ice. Chemical analyses were conducted by state of California-certified American Analytics in Chatsworth, California. Soil physical property analyses were conducted by PTS Laboratories in Santa Fe Springs, California.

Subsurface soil was identified in accordance with the Unified Soil Classification System (USCS) and described with regard to soil type, grain-size distribution, color, moisture content, density, and the presence of hydrocarbon odors. The presence of volatile organic compounds (VOCs) was evaluated in the field using a calibrated photoionization detector (PID). Field calibration records are provided in Appendix C. Soil descriptions, PID readings, and the first occurrence of water-saturated soils were recorded on field boring logs (Appendix D).

All down-hole equipment was thoroughly decontaminated prior to and between each boring. Hollow-stem augers were steam-cleaned. All reusable sampling equipment was cleaned between

samples by washing in a non-phosphatic detergent solution and double-rinsed with distilled water to prevent cross-contamination between samples.

Northernmost location GMW-67 and southernmost location GMW-69 were drilled on July 13 and July 14, 2015, respectively. Because field evidence indicated only minor contamination and no LNAPL were observed in the soil cores collected from soil borings GMW-67 and GMW-69, the location for GMW-68 was moved approximately 30 feet west, closer to GMW-62 than what had been originally proposed in the Work Plan. The RWQCB was notified of this change in a voicemail to Dr. Paul Cho (July 14, 2015).

4.2 Groundwater Monitoring Well Construction and Development

Each soil boring was completed as a groundwater monitoring well to allow for groundwater sampling and future monitoring. Each monitoring well was constructed using four-inch-diameter, Schedule 40, polyvinyl chloride (PVC), flush-threaded blank casing and machine-milled, 0.020-inch slotted screen. The screened interval of each monitoring well extends from 25 to 45 feet bgs. The filter packs consist of #2/16 kiln-dried sand from total depth to approximately 23 feet bgs (two feet above the screened intervals). Prior to placement of the hydrated bentonite chip seal, each well was surged and bailed to settle the sand pack. Additional sand was added as necessary. A three-foot-thick hydrated bentonite chip seal was placed above the filter pack from approximately 23 to 20 feet bgs. Bentonite grout was placed above the bentonite chip seal to approximately 1.5 feet bgs. A traffic-rated wellbox was set in concrete at each well, and a locking cap was installed on each wellhead.

After allowing the well seal to cure, each well was developed using the surge-and-bail technique. Well development is conducted to optimize the efficiency of the wells by ensuring good communication between the monitoring well and the surrounding water-bearing zone. The screened interval of each well was surged using a rubber well-development surge block, and the wells were bailed using a stainless-steel bottom-loading bailer. The wells were alternately surged to mobilize fine-grained material in the filter sand and well and bailed to remove the fine-grained material from the well casing. A submersible pump was also utilized to remove groundwater and fine-grained material from the wells as part of the well-development process.

During development, groundwater quality was monitored using YSI 556 water quality instrument and Hach 2100 turbidity meter supplied by Geotech Environmental Equipment, Inc. The instruments were calibrated by Geotech (calibration certificates are provided in Appendix C). Each well was surged for approximately 35 to 38 minutes and approximately 108 to 126 gallons of groundwater were bailed from each well during development. At the end of development, temperature, specific conductance, and pH had stabilized to within 10 percent of the previous values, and final turbidity values were 31.6 nephelometric turbidity units (NTUs; GMW-67), 7.4 NTUs (GMW-68), and 9.8 NTUs (GMW-69).

Groundwater generated during well development was transported onto the DFSP Norwalk and transferred into the on-site groundwater remediation system for treatment. Field documentation of well development is provided in Appendix E.

4.3 Groundwater Sampling

Groundwater grab samples were collected from the newly installed monitoring wells after well development. The groundwater samples were collected using disposable polyethylene bailers. A separate bailer was used for each well. The groundwater samples were decanted directly into laboratory-supplied sample containers, sealed, labeled, and placed on ice in a thermally insulated cooler pending transport under chain of custody to the analytical laboratory. Each sample was analyzed for TPH (carbon chain characterization) in accordance with EPA Method 8015M; and VOCs, GRO, and fuel oxygenates in accordance with EPA Method 8260B.

4.4 Survey

The newly installed wells were surveyed by Evans Land Surveying and Mapping, a state of California-licensed land surveyor on April 24, 2013. Each well was surveyed in accordance with AB2886 requirements. Horizontal locations and ground-surface elevations were determined for each well location. Top-of-casing elevations were also determined for each well. Elevations were surveyed relative to mean sea level (MSL). The survey report is provided in Appendix F.

4.5 Groundwater Gauging

On July 22, 2015, all monitoring wells in Holifield Park were gauged using an interface probe well monitoring instrument. The interface probe differentiates between water and hydrocarbons using conductivity measurements. Hydrocarbons were not detected. The depth to groundwater in each well was measured to an accuracy of 0.01 foot from the top of each well casing. The interface probe was cleaned using Simple GreenTM detergent and double-rinsed with distilled water prior to each well measurement.

4.6 Samples Collected for Forensic Analysis

To aid in the evaluation of LNAPL present in GMW-62, samples were collected from three monitoring wells on July 28, 2015, and submitted to Pace Analytical (Zymax Forensics Division) in Pittsburgh, Pennsylvania, for analysis. Samples were collected from eastern off-site well GMW-62 (groundwater), eastern on-site well GW-15 (LNAPL), and from TF-18 (LNAPL) located in the central tank farm area. LNAPL samples were collected from GW-15 and TF-18. When the wells were sampled, there was insufficient LNAPL present in GMW-62 to allow the collection of a sufficient volume of LNAPL; therefore, a groundwater sample was collected. Product samples collected from GW-15 and TF-18 were analyzed for C3-C36 whole oil in accordance with American

Society for Testing and Materials (ASTM) Method D3328. ASTM D3328 cannot be performed on water samples, so an alternative analysis, ASTM D5739, was performed on the sample from GMW-62.

4.7 Waste Disposition

Because none of the investigation-derived waste (IDW) generated during this investigation was hazardous, the IDW was transported onto the DFSP Norwalk for on-site treatment. Waste soil was treated using the F4 technology concurrently with impacted soil from on-site remedial excavations. Waste liquids (decontamination rinse water and purged groundwater) were transferred into the on-site groundwater remediation system for treatment. None of the waste generated during this investigation was disposed off site.

5.0 RESULTS

5.1 Field Observations

Near-surface soils encountered during drilling consisted predominantly of silty sand (approximately 54 percent of the soils encountered were identified as silty sand), but silt, poorly graded sand with silt, well-graded sand with silt, poorly graded sand, well-graded sand, clay, and clayey sand were also identified. As observed in the majority of soil borings completed at and in the vicinity of DFSP Norwalk, the various soil types encountered were interbedded and appeared to be discontinuous. Groundwater was encountered during drilling at approximately 38 feet bgs in GMW-67, 37.5 feet bgs in GMW-68, and 32 feet bgs in GMW-69; stabilized depth to water observed in the three wells prior to well development was approximately 32 feet bgs. Boring logs are provided in Appendix D.

The presence of VOCs in soil was evaluated in the field using the PID. PID readings are recorded on the boring logs (Appendix D). PID summaries for each boring are as follows:

- In GMW-67, PID readings ranged from 0 parts per million (ppm) to 2.4 ppm from ground surface to approximately 25 feet bgs, 824 ppm at approximately 27 to 32 feet bgs, and 0 to 0.4 ppm from approximately 32 to 42 feet bgs;
- In GMW-68, PID readings ranged from 0 to 2.1 ppm from ground surface to approximately 17.5 feet bgs, 13.4 ppm from approximately 17.5 to 20 feet bgs, 0 to 2.0 ppm from approximately 20 to 30 feet bgs, 1,384 ppm from approximately 31.5 to 32.5 feet bgs, 5.9 to 60 ppm from approximately 32.5 to 42.5 feet bgs, and 0.5 ppm from approximately 42.5 to 44.5 feet bgs;
- In GMW-69, PID readings ranged from 0 to 5.7 ppm from ground surface to approximately 29 feet bgs, 150 ppm from approximately 30 to 32.5 feet bgs, 6.0 to 10.3 ppm from approximately 32.5 to 37.5 feet bgs, and 0 ppm from approximately 37.5 to 45 feet bgs.
- The maximum PID reading (1,384 ppm) was recorded in GMW-68 at approximately 31.5 to 32.5 feet bgs.

During drilling, hydrocarbon odors were noted in GMW-67 from approximately 27 to 32 feet bgs, in GMW-68 from approximately 31.5 to 42.75 feet bgs, and in GMW-69 from approximately 29 to 33.5 feet bgs. Otherwise, the soil encountered during drilling did not exhibit evidence of the presence of hydrocarbons (staining or odors). SGI also applied a LNAPL-detecting membrane manufactured by Flexible Liner Underground Technologies, LLC, to core sections with the highest PID measurements. The membrane did not indicate the presence of LNAPL.

5.2 Soil Chemical Analytical Results

Analytical results for soil are summarized in Table 2 (hydrocarbon chain characterization) and Table 3 (selected VOCs). Laboratory reports are provided in Appendix G. The distribution of petroleum hydrocarbons in soil is shown on Figure 4.

TPH was reported in two of the 12 analyzed soil samples. The 32-foot sample from GMW-68 was reported to contain 42 mg/kg TPH in the C13-C22 carbon range and the 31-foot sample from GMW-69 was reported to contain 650 mg/kg TPH in the C13-C22 carbon range. Heavier hydrocarbons were not reported in these two samples. The remainder of the analyzed samples were non-detect (<10 mg/kg) for TPH. Cleanup goals for soil have been developed for DFSP Norwalk. The cleanup goals for soil at depths greater than 5 feet bgs is 100 mg/kg for the carbon range C13-C22. The 32-foot sample from GMW-68 was below the cleanup goal, but the 31-foot sample from GMW-69 is above the 100-mg/kg cleanup goal for TPH in the C13-C22 carbon range.

Gasoline-range organics (GRO) were reported at 31 feet bgs in GMW-67 (0.82 mg/kg), at 32 feet bgs in GMW-68 (180 mg/kg), and at 31 feet bgs in GMW-69 (2,100 mg/kg). GRO were not reported at or above laboratory reporting limits (see Table 3) in the rest of the analyzed soil samples. The 100-mg/kg cleanup goal for C4-C12 hydrocarbons was exceeded in the 32-foot sample from GMW-68 and in the 31-foot sample from GMW-69.

Five soil samples (GMW-67-41.5', GMW-68-18.5', GMW-68-27', GMW-68-44', and GMW-69-38'), including the deepest analyzed sample from each boring, were non-detect for all VOCs. Fuel oxygenates were not detected at or above laboratory reporting limits in any of the analyzed soil samples. The following VOCs were reported in soil during this investigation:

- Acetone in three of the 12 samples, ranging up to 0.27 mg/kg at 31 feet in GMW-67, below the 0.994-mg/kg strictest cleanup goal for the site,
- Benzene in four of the 12 samples, ranging up to 1.3 mg/kg at 34.5 feet in GMW-68; the 0.011-mg/kg cleanup goal for benzene in soils below 5 feet bgs was exceeded in all four samples,
- Ethylbenzene in four of the 12 samples, ranging up to 16 mg/kg at 31 feet in GMW-69; the 1.07-mg/kg cleanup goal for ethylbenzene in soils below 5 feet bgs was exceeded in two samples (the 32-foot sample from GMW-68 and the 31-foot sample from GMW-69),
- Isopropylbenzene in one sample (0.012 mg/kg at 31 feet in GMW-67, below the 0.303-mg/kg cleanup goal for isopropylbenzene in soils below 5 feet bgs),
- Naphthalene in one sample (0.019 mg/kg at 31 feet in GMW-67, slightly above the 0.012-mg/kg cleanup goal for naphthalene in soils below 5 feet bgs),

- n-Propylbenzene in three of the 12 samples, ranging up to 8.5 mg/kg at 31 feet in GMW-69; the 0.114-mg/kg cleanup goal for n-propylbenzene in soils below 5 feet bgs was exceeded in two samples (the 32-foot sample from GMW-68 and the 31-foot sample from GMW-69),
- Toluene in one sample (2.6 mg/kg at 34.5 feet in GMW-68, exceeding the 0.356-mg/kg cleanup goal for toluene in soils below 5 feet bgs),
- 1,2,4-Trimethylbenzene in three of the 12 samples, ranging up to 29 mg/kg at 31 feet in GMW-69; the 0.12-mg/kg cleanup goal for 1,2,4-trimethylbenzene in soils below 5 feet bgs was exceeded in two samples (the 32-foot sample from GMW-68 and the 31-foot sample from GMW-69),
- 1,3,5-Trimethylbenzene in two samples (0.014 mg/kg at 31 feet in GMW-67 and 18 mg/kg at 31 feet in GMW-69); the 0.118-mg/kg cleanup goal for 1,3,5-trimethylbenzene in soils below 5 feet bgs was exceeded in the 31-foot sample from GMW-69, and
- Xylenes in five of the 12 samples, ranging up to 55 mg/kg at 31 feet in GMW-69; the 2.76-mg/kg cleanup goal for xylenes in soils below 5 feet bgs was exceeded in three samples (the 32-foot and 34.5-foot samples from GMW-68 and the 31-foot sample from GMW-69).

5.3 Soil Physical Properties Analyses

Field observations indicated that only one borehole location contained soil with potential LNAPL contamination, and only samples from location GMW-68 were submitted for analysis. Two soil cores from GMW-68 were selected for physical properties analysis. A core sample collected at approximately 32 feet bgs was submitted for analysis in accordance with American Petroleum Institute (API) Method RP-40 and American Society for Testing and Materials (ASTM) Method D425M, and a core sample collected at approximately 36 feet bgs was submitted for analysis by API Method RP-40. The analyses were conducted by PTS Laboratories, Inc., in Santa Fe Springs, California. A copy of the laboratory report is provided in Appendix H.

The 32-foot sample from GMW-68 was reported to contain a moisture content of 29.7 percent by volume. Dry bulk density was 1.33 grams per cubic centimeter (g/cc) and grain density was 2.72 g/cc. Total porosity was 51.1 percent bulk volume and air-filled porosity was 11.3 percent bulk volume. Pore fluid saturations were reported at 74.6 percent pore volume (water) and 3.3 percent pore volume (LNAPL).

For the 32-foot sample from GMW-68, results of free product mobility testing indicated a dry bulk density of 1.40 g/cc, grain density of 2.72 g/cc, and total porosity at 48.5 percent bulk volume. Initial fluid saturations were reported at 80.7 percent pore volume (water) and 1.8 percent pore volume (LNAPL). Residual fluid saturations after centrifuging at 1,000 x the force of gravity were 54.5 percent pore volume (water) and 1.7 percent pore volume (LNAPL).

The 38-foot sample from GMW-68 was reported to contain a moisture content of 32.3 percent by volume. Dry bulk density was 1.32 g/cc and grain density was 2.72 g/cc. Total porosity was 51.6 percent bulk volume and air-filled porosity was 9.0 percent bulk volume. Pore fluid saturations were reported at 81.1 percent pore volume (water) and 1.4 percent pore volume (LNAPL).

For the 38-foot sample from GMW-68, results of free product mobility testing indicated a dry bulk density of 1.32 g/cc, grain density of 2.76 g/cc, and total porosity at 52.1 percent bulk volume. Initial fluid saturations were reported at 81.2 percent pore volume (water) and 0.7 percent pore volume (LNAPL). Residual fluid saturations after centrifuging at 1,000 x the force of gravity were 15.7 percent pore volume (water) and 0.7 percent pore volume (LNAPL).

The LNAPL saturation levels at 1.8 and 0.7 percent pore volume appear to represent immobility condition and this is as expected when comparing the low values to expected residual saturation levels. Centrifuging at 1,000 x the force of gravity had little effect on LNAPL saturation in the analyzed core samples.

5.4 Groundwater Analytical Results

Analytical results for groundwater are summarized in Table 4 (hydrocarbon chain characterization) and Table 5 (selected VOCs). Laboratory reports are provided in Appendix G. The distribution of petroleum hydrocarbons in groundwater is shown on Figure 5. Cleanup goals for groundwater have not been established for DFSP Norwalk.

TPH was reported in the groundwater sample from GMW-68 (100 µg/L in the C13-C22 carbon range), but was not detected at or above the 100-µg/L laboratory reporting limit in the samples from GMW-67 and GMW-68. GRO were reported in GMW-67 (550 µg/L), GMW-68 (27,000 µg/L), and GMW-69 (10,000 µg/L).

The following VOCs were reported in groundwater during this investigation:

- Benzene (21 µg/L in GMW-67, 2,400 µg/L in GMW-68, and 500 µg/L in GMW-69),
- n-Butylbenzene (11 µg/L in GMW-68 and 7.1 µg/L in GMW-69),
- Ethylbenzene (34 µg/L in GMW-67, 990 µg/L in GMW-68, and 550 µg/L in GMW-69),
- Isopropylbenzene (4.1 µg/L in GMW-67, 2,400 µg/L in GMW-68, and 500 µg/L in GMW-69),
- 4-Isopropyltoluene (25 µg/L in GMW-68 and 12 µg/L in GMW-69),
- Naphthalene (7.0 µg/L in GMW-67, 240 µg/L in GMW-68, and 170 µg/L in GMW-69),
- n-Propylbenzene (4.2 µg/L in GMW-67, 120 µg/L in GMW-68, and 89 µg/L in GMW-69),
- Toluene (56 µg/L in GMW-68 and 14 µg/L in GMW-69),

- 1,2,4-Trimethylbenzene (17 µg/L in GMW-67, 530 µg/L in GMW-68, and 280 µg/L in GMW-69),
- 1,3,5-Trimethylbenzene (4.0 µg/L in GMW-67, 220 µg/L in GMW-68, and 68 µg/L in GMW-69), and
- Xylenes (74 µg/L in GMW-67, 5,200 µg/L in GMW-68, and 1,570 µg/L in GMW-69).

Fuel oxygenates were not detected at or above laboratory reporting limits in any of the groundwater samples collected during this investigation.

5.5 Evaluation of Local Groundwater Gradient

The newly installed monitoring wells were gauged on July 22, 2015. Gauging data and calculated groundwater elevations are summarized in Table 6. Field gauging data is provided in Appendix I. Depth to groundwater ranged from 31.92 feet below the top of casing (btc) in GMW-64 to 33.32 feet btc in GMW-63. Floating product was detected in GMW-62 (0.02 foot, measured thickness). Floating product was not present in any of the other wells in Holifield Park. Groundwater elevations ranged from 43.25 feet below MSL in GMW-67 and GMW-68 to 44.00 feet below MSL in GMW-63.

The groundwater potentiometric surface is depicted on Figure 6. The groundwater gradient in the Holifield Park area was westward at approximately 0.002 feet per foot (ft/ft), consimilar with gradients interpreted in this area during recent sitewide groundwater monitoring events.

5.6 Forensics Analysis Results

In 2011 and 2012, LNAPL samples were collected from monitoring well GMW-62. Testing results indicated the LNAPL was a blend of gasoline and middle distillate, suggesting JP-4 or a combination of JP-5 and gasoline.

During the current investigation, samples were collected from three wells to evaluate the source of LNAPL in GMW-62. Samples were collected from GMW-62, GW-15, and TF-18 on July 28, 2015. If LNAPL was present, three 40-milliliter volatile organic analysis vials of LNAPL were collected. If LNAPL was not present in sufficient quantity, 1 liter of groundwater was collected. Product samples collected from TF-18 and GW-15 were analyzed for C3-C36 whole oil in accordance with ASTM Method 3328, fuel oxygenates in accordance with Environmental Protection Agency (EPA) Method 1624, and simulated distillation in accordance with ASTM Method 2887. The groundwater sample collected from GMW-62 was analyzed for C8-C40 whole oil in accordance with ASTM Method 5739. Samples were analyzed by Pace Analytical Energy Services, Zymax Forensics Division in Pittsburgh, Pennsylvania. Pace Analytical provided a formal interpretive report based upon the analytical results. The report of forensic analysis is provided in Appendix J.

Based upon evaluation of the analytical results, the product samples collected from GW-15 and TF-18 contain JP-4 fuel. The sample from GW-15 is mildly weathered and the sample from TF-18 has been significantly weathered. The groundwater sample from GMW-62 was identified as kerosene or kerosene-based jet fuel (such as JP-5, JP-8, and Jet A); however, the chemist noted that it was possible the sample contained volatile hydrocarbons similar to the product samples from GW-15 and TF-18, but the volatile hydrocarbons were below the range that can be detected in the C8-C40 analysis.

6.0 DISCUSSION

SGI conducted this investigation to evaluate the extent and character of LNAPL in the vicinity of GMW-62. Three groundwater monitoring wells (GMW-63, GMW-64, and GMW-65) were installed east of GMW-62 in 2008 and 2009. Groundwater in these wells has been consistently non-detect for TPH, VOCs, and fuel oxygenates. The locations of the three wells installed during the current investigation were selected to evaluate the lateral (and vertical) extent of petroleum hydrocarbons present in GMW-62. This investigation was conducted general accordance with the *Revised Work Plan for Further Evaluation of GMW-62 Light Non-Aqueous Phase Liquid* dated December 15, 2014 (SGI, 2014).

The LNAPL saturation levels at 1.8 and 0.7 percent pore volume appear to represent immobility conditions and this is as expected when comparing the low values to expected residual saturation levels. Centrifuging at 1,000 x the force of gravity had little effect on LNAPL saturation in the analyzed core samples.

LNAPL has been present in GMW-62 since January 2011 at measured thicknesses ranging up to 5.63 feet in October 2014, and LNAPL has been removed from that well using various methods. Product was recovered in January 2015 using a vacuum truck, in March 2015 using a bailer, and fuel-absorbent socks have been utilized in GMW-62 since April 17, 2015. Product recovery efforts have been very effective in reducing the volume of LNAPL in GMW-62. When GMW-62 was gauged on September 9, 2015, no product was detected.

Based upon field observations and analytical data collected during the current investigation, hydrocarbon-impacted soil is concentrated near the groundwater table at around 30 feet bgs (approximately 27 to 33 feet bgs). Soils above and below this impacted zone were either clean or only weakly impacted.

High concentrations of GRO and benzene were reported in groundwater from GMW-69 (10,000 µg/L GRO and 500 µg/L benzene) and GMW-68 (27,000 µg/L GRO and 2,400 µg/L benzene). However, fuel oxygenates were not detected as would be expected if the impact to groundwater was associated with a release of commercial gasoline.

Forensic analysis of groundwater collected from GMW-62 indicated the sample contained hydrocarbons similar to the mildly weathered JP-4 identified in nearby, on-site well GW-15, but without data for the lighter-end hydrocarbons (C3-C7), the fuel in GMW-62 was identified as kerosene or kerosene-based jet fuel such as JP-5, JP-8, and Jet A.

Although the source of the LNAPL in GMW-62 is unknown, it does not appear to be related to an ongoing release because LNAPL has not rebounded to pre-recovery thicknesses. Absorbent socks will continue to be used in GMW-62 to remove any residual LNAPL.

Additionally, the GMW-62 area was targeted as a potential pilot testing area for LNAPL removal methods evaluation, as presented in the *Work Plan for LNAPL Mitigation Methods Evaluation, Northeastern LNAPL Area, Defense Fuel Support Point Norwalk* (SGI, June 30, 2015). Based upon the recent findings of limited LNAPL presence in the vicinity of GMW-62, pilot testing of LNAPL in this area is not considered technically appropriate. Dr. Paul Cho of the RWQCB agreed to postpone implementation of this work if significant LNAPL rebound does not occur in GMW-62 (Dr. Paul Cho, personal communication, September 16, 2015).

7.0 SUMMARY AND CONCLUSIONS

7.1 Summary

SGL conducted this investigation to evaluate the extent and character of LNAPL in GMW-62. Three soil borings were advanced to the total depths of 45 and 47 feet bgs and the borings were completed as groundwater monitoring wells GMW-67, GMW-68, and GMW-69. The wells were developed and groundwater samples were collected for analysis. Soil and groundwater samples were collected and submitted for analysis of TPH in accordance with EPA Method 8015M and VOCs, GRO, and fuel oxygenates in accordance with EPA Method 8260B. Two soil samples were submitted for physical properties analysis. Floating product and/or groundwater samples were collected from three monitoring wells (GMW-62, GW-15, and TF-18) and submitted for forensic analysis. Horizontal locations and elevations were determined by a California-licensed land surveyor. Depth to groundwater was measured in each well and the data was evaluated to determine the local groundwater gradient.

During drilling, the highest PID concentrations were recorded at approximately 32 feet bgs.

Hydrocarbon odors were noted during drilling from approximately 27 to 32 feet bgs in GMW-67, approximately 31.5 to 42.75 feet bgs in GMW-68, and from approximately 29 to 33.5 feet bgs in GMW-69.

TPH were reported in two of the 12 analyzed soil samples (42 mg/kg TPH in the 32-foot sample from GMW-68 and 650 mg/kg TPH in the 31-foot sample from GMW-69). TPH was detected in the C13-C22 carbon range.

GRO were reported in three soil samples: at 31 feet bgs in GMW-67 (0.82 mg/kg GRO) and GMW-69 (1,200 mg/kg), and at 32 feet bgs in GMW-68 (180 mg/kg).

Several VOCs were detected in soil, generally at low concentrations (see Table 3). Benzene was reported in four of the 12 analyzed samples ranging up to 1.3 mg/kg at 34.5 feet bgs in GMW-68.

TPH were reported in the groundwater sample collected from GMW-68 (100 µg/L TPH; in the C13-C22 carbon range), but was not detected (<100 µg/L) in the groundwater samples from GMW-67 or GMW-69.

GRO were reported in groundwater samples from all three wells (550 µg/L GRO in GMW-67, 27,000 µg/L GRO in GMW-68, and 10,000 µg/L GRO in GMW-69).

Several VOCs were detected in groundwater samples collected from the newly installed wells. The highest concentrations were reported in the sample from GMW-68. Benzene was reported in GMW-67 (21 µg/L), GMW-68 (2,400 µg/L), and GMW-69 (500 µg/L).

Depth to groundwater on July 22, 2015, ranged from 31.92 feet below top of casing (btc) in GMW-64 to 33.32 feet btc in GMW-63. Floating product was present in GMW-62 (0.02 feet, measured thickness) and not in the three newly installed wells. Groundwater gradient, based upon depth to water measured in the Holifield Park wells on July 22, 2015, was westward at approximately 0.002 ft/ft, similar to historical gradients for this area.

The LNAPL saturation levels at 1.8 and 0.7 percent pore volume appear to represent immobility condition and this is as expected when comparing the low values to expected residual saturation levels. Centrifuging at 1,000 x the force of gravity had little effect on LNAPL saturation in the analyzed core samples.

Forensic analysis of samples collected from GMW-62 (groundwater), GW-15 (LNAPL), and TF-18 (LNAPL) suggested the LNAPL in GW-15 and TF-18 is weathered JP-4 (the sample from TF-18 was more significantly biodegraded). The groundwater sample from GMW-62 was identified as kerosene or kerosene-based jet fuel.

7.2 Conclusions

Results of this investigation show that LNAPL present in GMW-62 is very localized and does not represent a significant LNAPL plume extending eastward under Holifield Park. The former accumulation of LNAPL in off-site monitoring well GMW-62 had become a concern as measured LNAPL thickness increased to 5.63 feet in October 2014. However, LNAPL recovery operations have effectively reduced measured LNAPL thickness to 0.01 foot (April 2015). Because LNAPL has not rebounded to pre-recovery thicknesses, the source of the LNAPL does not appear to be related to an ongoing release. Absorbent socks will continue to be utilized in GMW-62 until the RWQCB and DLA Energy agree that a change is appropriate, and no LNAPL removal pilot testing will be implemented in this area unless additional significant LNAPL is detected.

8.0 STATEMENT OF LIMITATIONS

This document was prepared for the exclusive use of the Defense Logistics Agency – Energy (DLA Energy) and the Regional Water Quality Control Board (RWQCB) for the express purpose of complying with a client- or regulatory directive for environmental investigation or restoration. SGI and DLA Energy must approve any re-use of this work product in whole or in part for a different purpose or by others in writing. If any such unauthorized use occurs, it shall be at the user's sole risk without liability to SGI or DLA Energy.

To the extent that this report is based on information provided to SGI by third parties, including DLA Energy, their direct contractors, previous workers, and other stakeholders, SGI cannot guarantee the completeness or accuracy of this information, even where efforts were made to verify third-party information. SGI has exercised professional judgment to collect and present findings and opinions of a scientific and technical nature. The opinions expressed are based on the conditions of the Site existing at the time of the field investigation, current regulatory requirements, and any specified assumptions.

The presented findings and recommendations in this report are intended to be taken in their entirety to assist DLA Energy and RWQCB personnel in applying their own professional judgment in making decisions related to the property. SGI cannot provide conclusions on environmental conditions outside the completed scope of work. SGI cannot guarantee that future conditions will not change and affect the validity of the presented conclusions and recommended work. No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, conclusions, and recommendations.

9.0 REFERENCES

- The Source Group, Inc. 2014. *Revised Work Plan for Further Evaluation of GMW-62 Light Non-Aqueous Phase Liquid, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard, Norwalk, California 90650*. December 15.
- The Source Group, Inc. 2015. *Work Plan for LNAPL Mitigation Methods Evaluation, Northeastern LNAPL Area, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard, Norwalk, CA 90650*. June 30.

TABLES

TABLE 1
WELL CONSTRUCTION SUMMARY
 GMW-62 Assessment, Defense Fuel Support Point Norwalk
 15306 Norwalk Boulevard, Norwalk, California 90650

Well ID	Date Installed	Total Depth (feet bgs)	Ground Surface Elevation (feet MSL)	Casing Diameter (inches)	Screened Interval(s) (feet bgs)	Casing Elevation (feet MSL)
GMW-67	7/13/2015	47	76.4	4	25 - 45	76.00
GMW-68	7/15/2015	45	76.0	4	25 - 45	75.52
GMW-69	7/14/2015	45	76.0	4	25 - 45	75.31

Notes: feet bgs = feet below ground surface
 feet MSL = feet above Mean Sea Level

TABLE 2
SOIL HYDROCARBON CHAIN CHARACTERIZATION
 GMW-62 Assessment, Defense Fuel Support Point Norwalk
 15306 Norwalk Boulevard, Norwalk, California 90650

Sample ID	Depth (ft bgs)	Date Sampled	Hydrocarbon Chain Identification (concentrations in mg/kg)			TPH (C13-C44) (mg/kg)
			C13-C22	C23-C32	C33-C44	
GMW-67-20'	20	7/13/2015	<10	<10	<10	<10
GMW-67-31'	31	7/13/2015	<10	<10	<10	<10
GMW-67-41.5'	41.5	7/13/2015	<10	<10	<10	<10
GMW-68-18.5'	18.5	7/15/2015	<10	<10	<10	<10
GMW-68-27'	27	7/15/2015	<10	<10	<10	<10
GMW-68-32'	32	7/15/2015	42	<10	<10	42
GMW-68-34.5'	34.5	7/15/2015	<10	<10	<10	<10
GMW-68-39.5'	39.5	7/15/2015	<10	<10	<10	<10
GMW-68-44'	44	7/15/2015	<10	<10	<10	<10
GMW-69-15'	15	7/14/2015	<10	<10	<10	<10
GMW-69-31'	31	7/14/2015	650	<10	<10	650
GMW-69-38'	38	7/14/2015	<10	<10	<10	<10

Notes: Samples analyzed in accordance with EPA Method 8015M.
 Detected concentrations are shown in **bold**.
 mg/kg = milligrams per kilogram
 TPH = total petroleum hydrocarbons
 ft bgs = feet below ground surface
 C13-C44 = carbon chain ranging from C13 through C44
 <10 = not detected at or above the indicated laboratory reporting limit

TABLE 3
ANALYTICAL RESULTS FOR SELECTED VOLATILE ORGANIC COMPOUNDS IN SOIL
GMW-62 Assessment, Defense Fuel Support Point Norwalk
15306 Norwalk Boulevard, Norwalk, California 90650

Sample ID ID	Depth (ft bgs)	Date Sampled	Acetone (mg/kg)	Benzene (mg/kg)	n-Butylbenzene (mg/kg)	1,2-Dibromoethane (EDB) (mg/kg)	1,2-Dichloroethane (EDC) (mg/kg)	Diisopropyl Ether (DIPE) (mg/kg)	Ethylbenzene (mg/kg)	Ethyl tertiary-Butyl Ether (ETBE) (mg/kg)	Gasoline-Range Organics (mg/kg)	Isopropylbenzene (mg/kg)	4-Isopropyltoluene (mg/kg)	Methyl tertiary-Butyl Ether (MTBE) (mg/kg)	Naphthalene (mg/kg)	n-Propylbenzene (mg/kg)	tertiary-Amyl Methyl Ether (TAME) (mg/kg)	tertiary-Butyl Alcohol (TBA) (mg/kg)	Toluene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)	Total Xylenes (mg/kg)
GMW-67-20'	20	7/13/2015	0.14	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.50	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.020	<0.0020	<0.0050	<0.0050	<0.0040
GMW-67-31'	31	7/13/2015	0.27	0.047	<0.0050	<0.0050	<0.0050	<0.0050	0.13	<0.0050	0.82	0.012	<0.0050	<0.0050	0.019	0.012	<0.0050	<0.020	<0.0020	0.037	0.014	0.171
GMW-67-41.5'	41.5	7/13/2015	<0.050	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.50	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.020	<0.0020	<0.0050	<0.0050	<0.0040
GMW-68-18.5'	18.5	7/15/2015	<0.050	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.50	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.020	<0.0020	<0.0050	<0.0050	<0.0040
GMW-68-27'	27	7/15/2015	<0.050	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.50	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.020	<0.0020	<0.0050	<0.0050	<0.0040
GMW-68-32'	32	7/15/2015	<5.0	0.84	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	180	<0.50	<0.50	<0.50	<1.0	0.72	<0.50	<2.0	<0.20	2.9	<0.50	5.3
GMW-68-34.5'	34.5	7/15/2015	<5.0	1.3	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<2.0	2.6	<0.50	<0.50	3.31
GMW-68-39.5'	39.5	7/15/2015	<5.0	0.27	<0.50	<0.50	<0.50	<0.50	<0.20	<0.50	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<2.0	<0.20	<0.50	<0.50	1.13
GMW-68-44'	44	7/15/2015	<0.050	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.50	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.020	<0.0020	<0.0050	<0.0050	<0.0040
GMW-69-15'	15	7/14/2015	0.15	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.50	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.020	<0.0020	<0.0050	<0.0050	<0.0040
GMW-69-31'	31	7/14/2015	<50	<2.0	<5.0	<5.0	<5.0	<5.0	16	<5.0	2,100	<5.0	<5.0	<5.0	<10	8.5	<5.0	<20	<2.0	29	18	55
GMW-69-38'	38	7/14/2015	<0.050	<0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.50	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.020	<0.0020	<0.0050	<0.0050	<0.0040

Notes: Detected concentrations are shown in **bold**.
Samples analyzed in accordance with EPA Method 8260B.
EDB = ethylene dibromide (1,2-Dibromoethane)
EDC = ethylene dichloride (1,2-Dichloroethane)
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
<0.050 = not detected at or above the indicated laboratory reporting limit

TABLE 4
GROUNDWATER HYDROCARBON CHAIN CHARACTERIZATION
 GMW-62 Assessment, Defense Fuel Support Point Norwalk
 15306 Norwalk Boulevard, Norwalk, California 90650

Sample ID	Date Sampled	Hydrocarbon Chain Identification (concentrations in µg/L)			TPH (C13-C44) (µg/L)
		C13-C22	C23-C32	C33-C44	
GMW-67	7/21/2015	<100	<100	<100	<100
GMW-68	7/22/2015	100	<100	<100	100
GMW-69	7/21/2015	<100	<100	<100	<100

Notes: Samples analyzed in accordance with EPA Method 8015M.
 Detected concentrations are shown in **bold**.
 µg/L = micrograms per liter
 TPH = total petroleum hydrocarbons
 C13-C44 = carbon chain ranging from C13 through C44
 TPH = total petroleum hydrocarbons
 <100 = not detected at or above the 10-µg/L laboratory reporting limit

TABLE 5
ANALYTICAL RESULTS FOR SETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
GMW-62 Assessment, Defense Fuel Support Point Norwalk
15306 Norwalk Boulevard, Norwalk, California 90650

Sample ID	Date Sampled	Acetone (µg/L)	Benzene (µg/L)	n-Butylbenzene (µg/L)	1,2-Dibromoethane (EDB) (µg/L)	1,2-Dichloroethane (EDC) (µg/L)	Diisopropyl Ether (DIPE) (µg/L)	Ethylbenzene (µg/L)	Ethyl tertirary-Butyl Ether (ETBE) (µg/L)	Gasoline-Range Organics (µg/L)	Isopropylbenzene (µg/L)	Methyl tertiary-Butyl Ether (MTBE) (µg/L)	4-Isopropyltoluene (µg/L)	Naphthalene (µg/L)	n-Propylbenzene (µg/L)	tertiary-Amyl Methyl Ether (TAME) (µg/L)	tertiary-Butyl Alcohol (TBA) (µg/L)	Toluene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	1,3,5-Trimethylbenzene (µg/L)	Total Xylenes (µg/L)
GMW-67	7/21/2015	<10	21	<0.50	<0.50	<0.50	<2.0	34	<2.0	550	4.1	<2.0	<1.0	7.0	4.2	<2.0	<10	<0.50	17	4.0	74
GMW-68	7/22/2015	<200	2,400	11	<10	<10	<40	990	<40	27,000	100	<40	25	240	120	<40	<200	56	530	220	5,200
GMW-69	7/21/2015	<100	500	7.1	<5.0	<5.0	<20	550	<20	10,000	78	<20	12	170	89	<20	<100	14	280	68	1,570
QCTB-1	7/21/2015	<10	<0.50	<0.50	<0.50	<0.50	<2.0	<0.50	<2.0	<100	<0.50	<2.0	<1.0	<2.0	<0.50	<2.0	<10	<0.50	<0.50	<0.50	<1.5

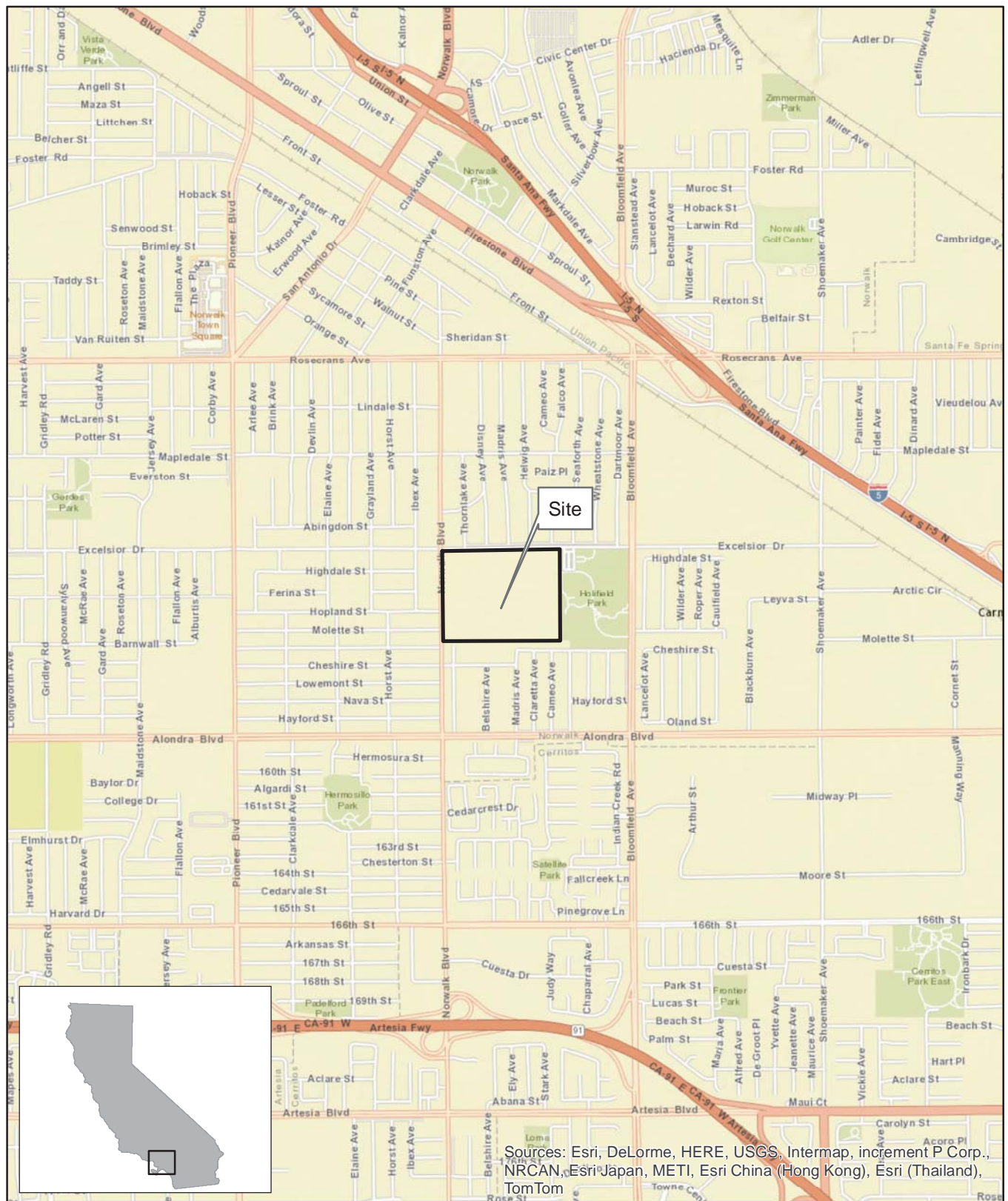
Notes: Detected concentrations shown in **bold**.
Samples analyzed in accordance with EPA Method 8260B.
EDB = ethylene dibromide (1,2-Dibromoethane)
EDC = ethylene dichloride (1,2-Dichloroethane)
µg/L = micrograms per liter
<10 = not detected at or above the incidated laboratory reporting limit
QCTB-1 = trip blank sample

TABLE 6
GROUNDWATER ELEVATIONS AND GAUGING DATA
 GMW-62 Assessment, Defense Fuel Support Point Norwalk
 15306 Norwalk Boulevard, Norwalk, California 90650

Well ID	Date Measured	Casing Elevation (feet MSL)	Depth to Product (feet btc)	Depth to Groundwater (feet btc)	Measured Product Thickness (feet)	Groundwater Elevation (feet MSL)
GMW-62	7/22/2015	76.34	33.29	33.31	0.02	-----
GMW-63	7/22/2015	77.32	-----	33.32	-----	44.00
GMW-64	7/22/2015	75.84	-----	31.92	-----	43.92
GMW-65	7/22/2015	76.78	-----	33.31	-----	43.47
GMW-67	7/22/2015	76.00	-----	32.75	-----	43.25
GMW-68	7/22/2015	75.52	-----	32.27	-----	43.25
GMW-69	7/22/2015	75.31	-----	31.97	-----	43.34

Notes: feet MSI = feet below mean sea level
 feet btc = feet below top of well casing
 ----- = not applicable

FIGURES



Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

SOURCE:
ESRI 7.5 MINUTE TOPOGRAPHIC MAP.
<http://resources.esri.com/arcgisonline/services>

PROJECT NO.:	DATE:	DR.BY:	APP.BY:
04-NDLA-001	5/28/2014	JK	PP

SCALE= 1:24,000

0 1,000 2,000 4,000 Feet

N



FIGURE

1

SGI THE SOURCE GROUP, INC.
environmental
1962 FREEMAN AVENUE
SIGNAL HILL, CA 90755
(562) 597-1055

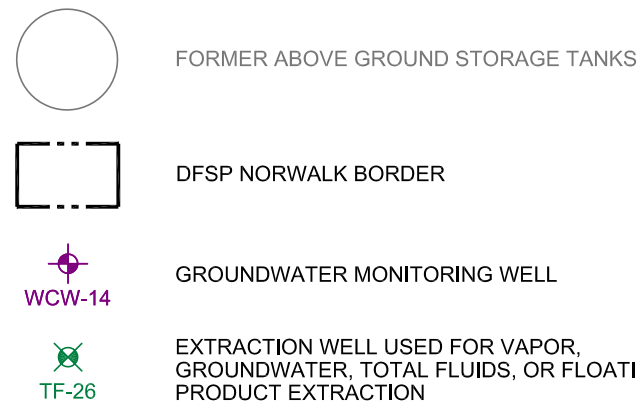
**DEFENSE FUEL SUPPORT POINT
NORWALK**

15306 NORWALK BOULEVARD
NORWALK, CALIFORNIA

SITE LOCATION MAP



EXPLANATION:



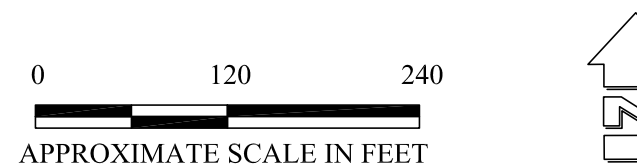
NOTES:

CONVERSE CONSULTANTS BORING LOCATIONS
SHOWN FOR NORTH TANK FARM ONLY.

CONVERSE CONSULTANTS BORING 44A IN SAME
LOCATION AS FLUOR DANIEL GTI BORING B44-1

ALL CONTOURS IN FEET ABOVE MEAN SEA
LEVEL (MSL)

WHITE'S POINT TUNNEL FLOOR APPROXIMATELY
12 FEET BELOW SEA LEVEL.



DATE: 8/2015	FILE NAME: DFSP-Norwalk-BaseMap.dwg
PROJECT No.: 4-NDLA-008	CONTRACT: SPO-600-14-D-5410

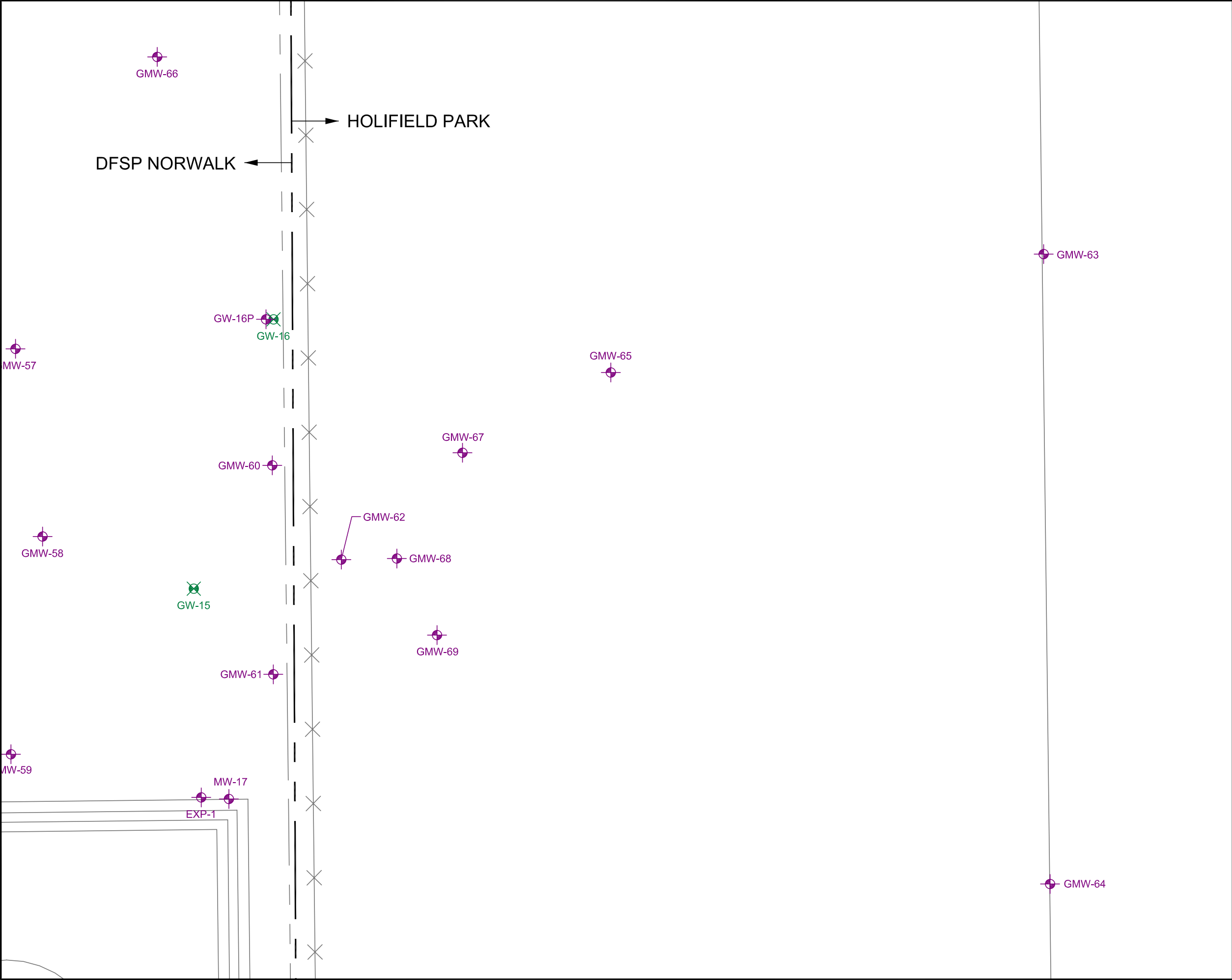
GROUNDWATER MONITORING WELL LOCATION MAP

DFSP NORWALK
15306 NORWALK BOULEVARD
NORWALK, CALIFORNIA

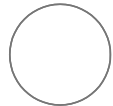





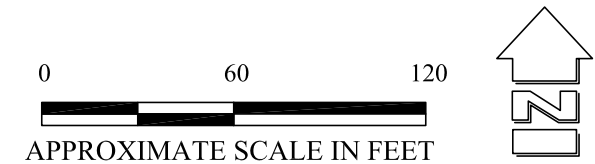
FIGURE

2



EXPLANATION:

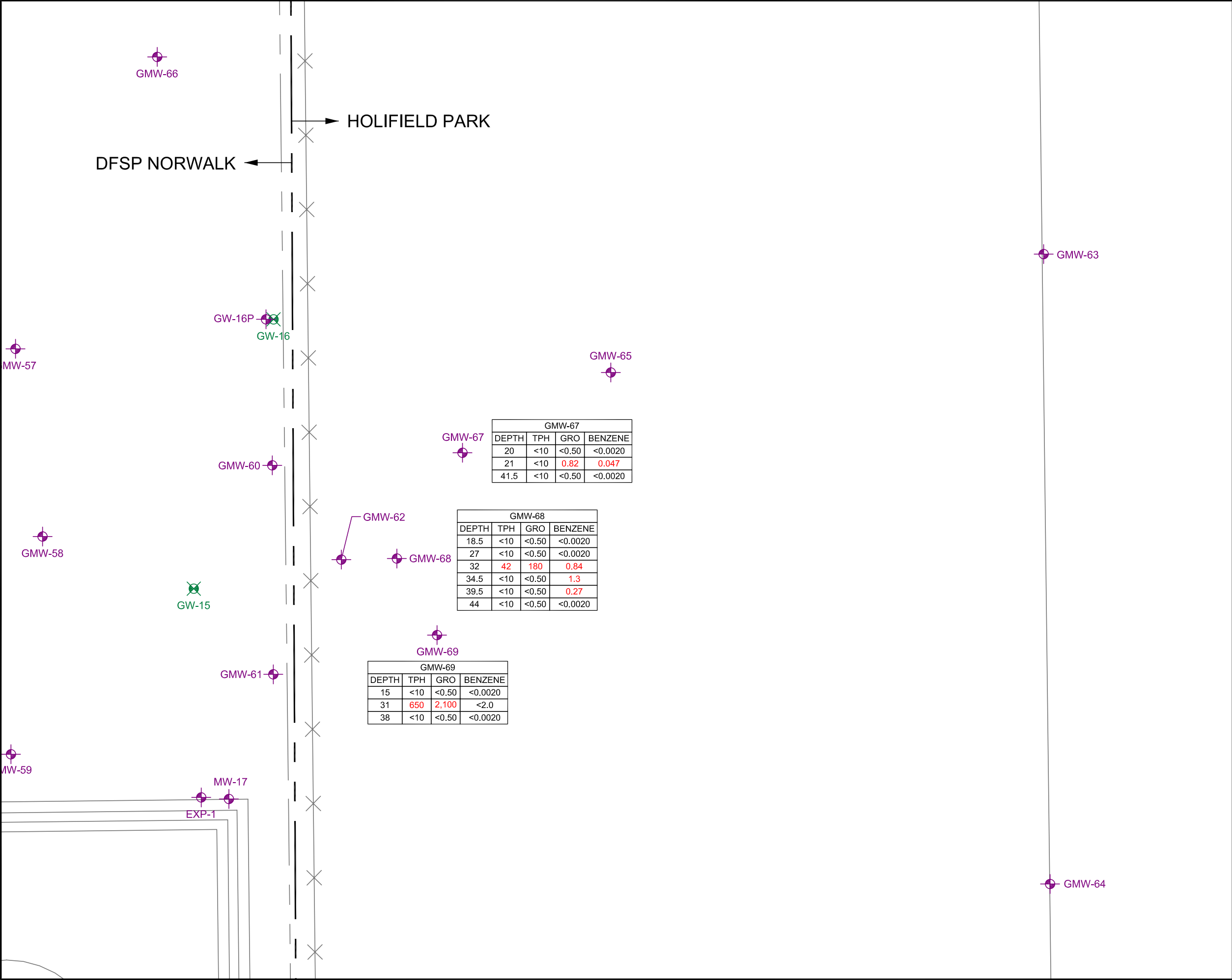
-  FORMER ABOVEGROUND STORAGE TANKS
-  DFSP NORWALK BORDER
-  EXTRACTION WELL USED FOR VAPOR, GROUNDWATER, TOTAL FLUIDS, OR FLOATING PRODUCT EXTRACTION
-  GROUNDWATER MONITORING WELL



DATE: 08/2015	FILE NAME: DFSP-Nrwlk-Q2-15B.DWG	PROJECT No.: 04-NDLA-008
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SITE PLAN
HOLIFIELD PARK AREA

DFSP NORWALK
15306 NORWALK BOULEVARD
NORWALK, CALIFORNIA



EXPLANATION:

FORMER ABOVEGROUND STORAGE TANKS

DFSP NORWALK BORDER

EXTRACTION WELL USED FOR VAPOR, GROUNDWATER, TOTAL FLUIDS, OR FLOATING PRODUCT EXTRACTION

GROUNDWATER MONITORING WELL

GMW-69			
DEPTH	TPH	GRO	BENZENE
15	<10	<0.50	<0.0020
21	650	2,100	<2.0
38	<10	<0.50	<0.0020

WELL ID

ANALYTE

CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)

DEPTH IN FEET BELOW GROUND SURFACE

TPH

TOTAL PETROLEUM HYDROCARBONS

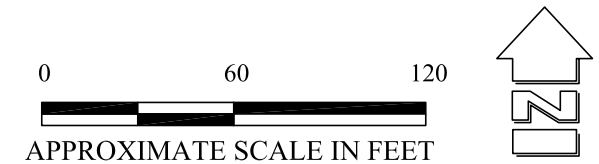
GRO

GASOLINE-RANGE ORGANICS

<10

NOT DETECTED AT OR ABOVE THE INDICATED LABORATORY REPORTING LIMIT

DETECTED CONCENTRATIONS ARE SHOWN IN RED



DATE:
08/2015

FILE NAME:
DFSP-Nrwlk-Q2-15B.DWG

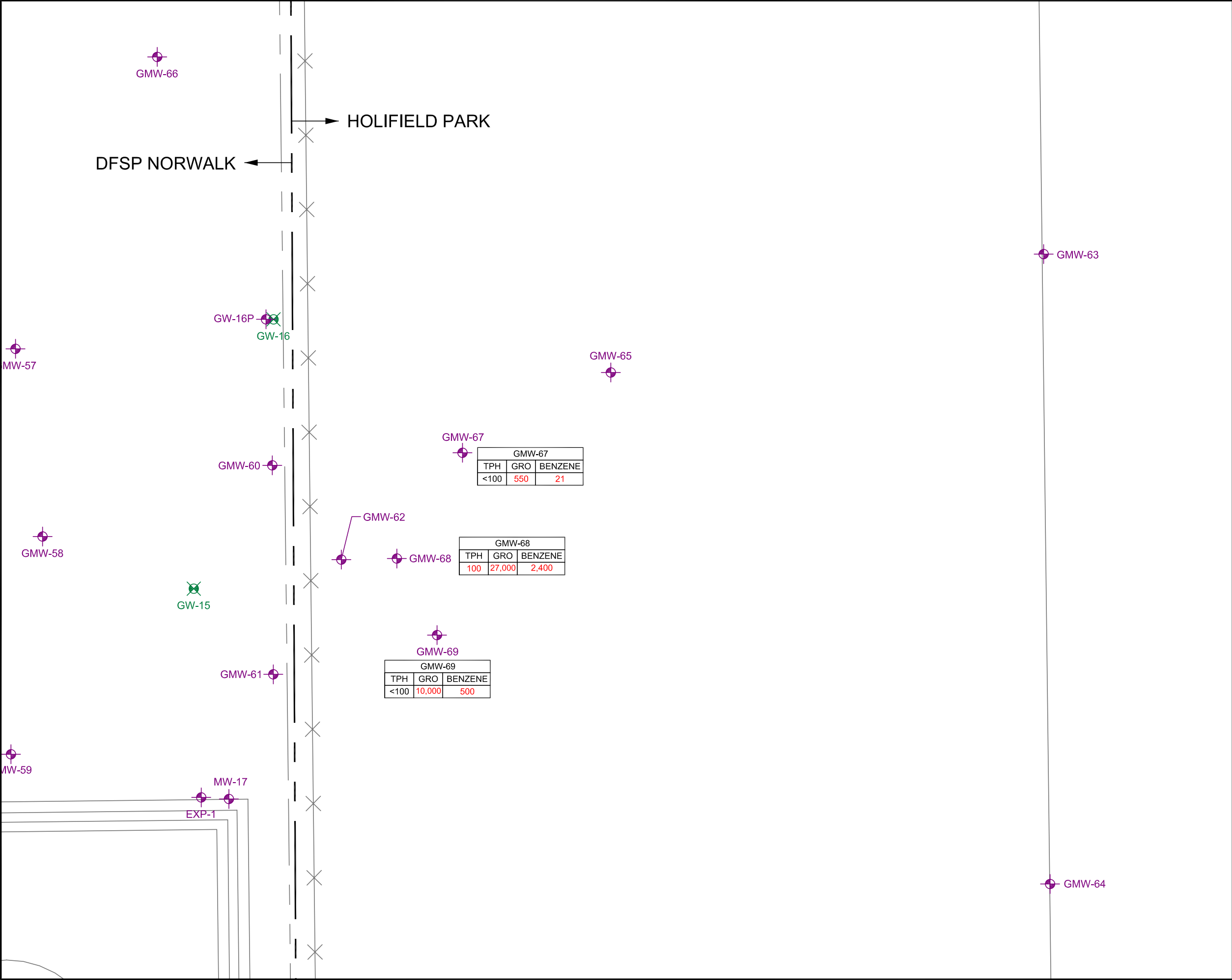
PROJECT No.:
04-NDLA-008

HYDROCARBON DISTRIBUTION
IN SOIL

DFSP NORWALK
15306 NORWALK BOULEVARD
NORWALK, CALIFORNIA

THE SOURCE GROUP, INC.

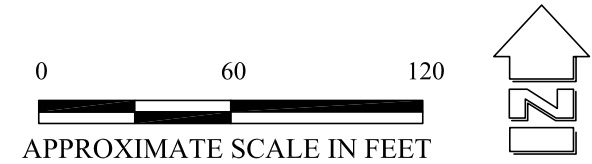
FIGURE
4



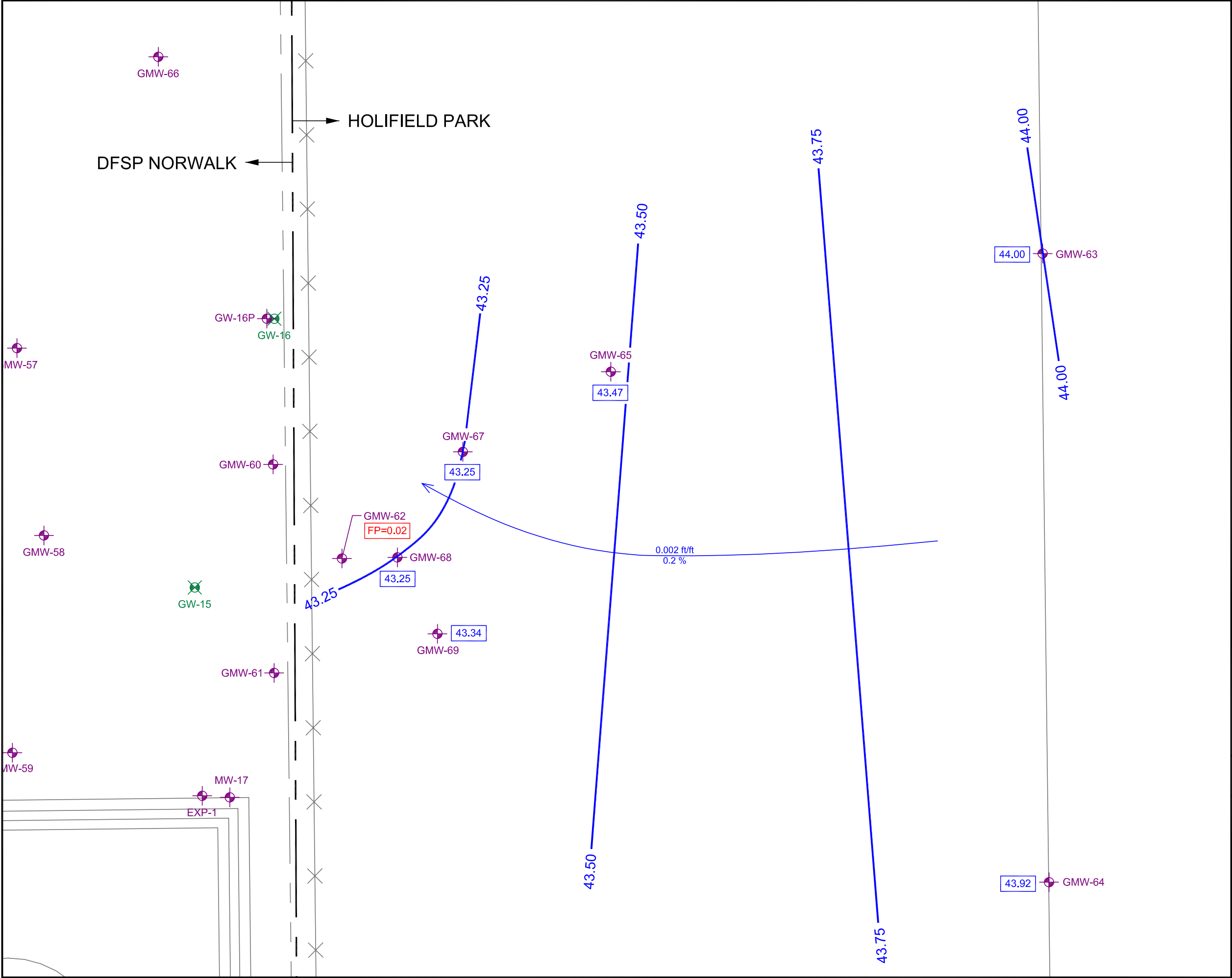
EXPLANATION:

- FORMER ABOVEGROUND STORAGE TANKS
 - DFSP NORWALK BORDER
 - EXTRACTION WELL USED FOR VAPOR, GROUNDWATER, TOTAL FLUIDS, OR FLOATING PRODUCT EXTRACTION
 - GROUNDWATER MONITORING WELL
- | GMW-69 | | | WELL ID |
|--------|--------|---------|--|
| TPH | GRO | BENZENE | ANALYTE |
| <100 | 10,000 | 500 | CONCENTRATION IN MICROGRAMS PER LITER (µg/L) |
- TPH TOTAL PETROLEUM HYDROCARBONS
- GRO GASOLINE-RANGE ORGANICS
- <100 NOT DETECTED AT OR ABOVE THE INDICATED LABORATORY REPORTING LIMIT

DETECTED CONCENTRATIONS ARE SHOWN IN RED

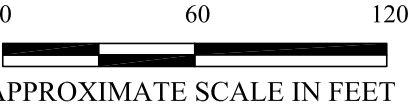


DATE: 08/2015	FILE NAME: DFSP-Nrwlk-Q2-15B.DWG	PROJECT No.: 04-NDLA-008
HYDROCARBON DISTRIBUTION IN GROUNDWATER		
DFSP NORWALK 15306 NORWALK BOULEVARD NORWALK, CALIFORNIA		
SGI THE SOURCE GROUP, INC. environmental		FIGURE 5



EXPLANATION:

- FORMER ABOVEGROUND STORAGE TANKS
- DFSP NORWALK BORDER
- EXTRACTION WELL USED FOR VAPOR, GROUNDWATER, TOTAL FLUIDS, OR FLOATING PRODUCT EXTRACTION
- GROUNDWATER MONITORING WELL
- GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL) MEASURED JULY 22, 2015
- FLOATING PRODUCT IN WELL WITH MEASURED PRODUCT THICKNESS IN FEET
- LINE OF EQUAL GROUNDWATER ELEVATION (REFERENCE = MEAN SEA LEVEL) CONTOUR INTERVAL = 0.25 FOOT
- GROUNDWATER GRADIENT DIRECTION IN FEET PER FOOT (ft/ft) AND PERCENT



DATE: 08/2015	FILE NAME: DFSP-Nrwlk-Q2-15B.DWG	PROJECT No.: 04-NDLA-008
------------------	-------------------------------------	-----------------------------

**GROUNDWATER CONTOUR MAP
JULY 22, 2015**

DFSP NORWALK
15306 NORWALK BOULEVARD
NORWALK, CALIFORNIA



APPENDIX A

DRILLING PERMIT



ENVIRONMENTAL HEALTH

Drinking Water Program



5050 Commerce Drive, Baldwin Park, CA 91706

Telephone: (626) 430-5420 • Facsimile: (626) 813-3013 • Email: waterquality@ph.lacounty.gov

http://publichealth.lacounty.gov/eh/ep/dw/dw_main.htm

Well Permit Approval

TO BE COMPLETED BY APPLICANT:


WORK SITE ADDRESS 15306 Norwalk Blvd.	CITY Norwalk	ZIP 90650	EMAIL ADDRESS FOR WELL PERMIT APPROVAL pparmentier@thesourcegroup.net
--	-----------------	--------------	--

NOTICE:

- WORK PLAN APPROVALS ARE VALID FOR 180 DAYS. 30 DAY EXTENSIONS OF WORK PLAN APPROVALS ARE CONSIDERED ON AN INDIVIDUAL (CASE-BY-CASE) BASIS AND MAY BE SUBJECT TO ADDITIONAL PLAN REVIEW FEES (HOURLY RATE AS APPLICABLE).
- WORK PLAN MODIFICATIONS MAY BE REQUIRED IF WELL AND GEOLOGIC CONDITIONS ENCOUNTERED AT THE SITE INSPECTION ARE FOUND TO DIFFER FROM THE SCOPE OF WORK PRESENTED TO THE DEPARTMENT OF PUBLIC HEALTH—DRINKING WATER PROGRAM.
- THIS WELL PERMIT APPROVAL IS LIMITED TO COMPLIANCE WITH THE CALIFORNIA WELL STANDARDS AND THE LOS ANGELES COUNTY CODE AND DOES NOT GRANT ANY RIGHTS TO CONSTRUCT, RENOVATE, OR DECOMMISSION ANY WELL. THE APPLICANT IS RESPONSIBLE FOR SECURING ALL OTHER NECESSARY PERMITS SUCH AS WATER RIGHTS, PROPERTY RIGHTS, COASTAL COMMISSION APPROVALS, USE COVENANTS, ENCROACHMENT PERMISSIONS, UTILITY LINE SETBACKS, CITY/COUNTY PUBLIC WORKS RIGHTS OF WAY, ETC.
- ALL FIELD WORK MUST BE CONDUCTED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL GEOLOGIST LICENSED IN THE STATE OF CALIFORNIA.
- THIS PERMIT IS NOT COMPLETE UNTIL ALL OF THE FOLLOWING REQUIREMENTS ARE SIGNED BY THE DEPUTY HEALTH OFFICER. WORK SHALL NOT BE INITIATED WITHOUT A WORK PLAN APPROVAL STAMPED BY THE DEPARTMENT OF PUBLIC HEALTH—DRINKING WATER PROGRAM.
- NOTIFY THE DRINKING WATER PROGRAM BY EMAIL 3 BUSINESS DAYS BEFORE WORK IS SCHEDULED TO BEGIN.

Juan Rodriguez 626-430-5386 or Jrodriguez@ph.lacounty.gov

TO BE COMPLETED BY DEPARTMENT OF PUBLIC HEALTH—DRINKING WATER PROGRAM:

<input type="checkbox"/> WORK PLAN INCOMPLETE; SUBMIT THE FOLLOWING:	<input checked="" type="checkbox"/> WORK PLAN APPROVED Los Angeles County Drinking Water stamp  R.E.H.S. NO: <u>6330</u> <i>Juan Rodriguez</i>	DATE: <u>5/13/15</u> ADDITIONAL APPROVAL CONDITIONS: <i>On 5/8/15 \$1,557.00 was paid for Permit #890918 to install 3 groundwater monitoring wells: GMW-67, GMW-68 and GMW-69 at above site.</i>
---	---	--

<input type="checkbox"/> ANNULAR SEAL FINAL INSPECTION REQUIRED DATE ACCEPTED: _____ REHS signature _____	<input type="checkbox"/> WELL COMPLETION LOG REQUIRED DATE ACCEPTED: _____ REHS signature _____
<input type="checkbox"/> WATER QUALITY—BACTERIOLOGICAL STANDARDS REQUIRED DATE ACCEPTED: _____ REHS signature _____	<input type="checkbox"/> WATER QUALITY—CHEMICAL STANDARDS REQUIRED DATE ACCEPTED: _____ REHS signature _____
<input type="checkbox"/> WATER SUPPLY YIELD REQUIRED DATE ACCEPTED: _____ REHS signature _____	<input type="checkbox"/> OTHER REQUIREMENT DATE ACCEPTED: _____ REHS signature _____

APPENDIX B

GEOPHYSICAL REPORT



July 7, 2015

Project/Invoice No. 15-242

The Source Group

1962 Freeman Avenue
Signal Hill, California 0755

Attn: Ken Wall

Re: Geophysical Investigation Report, Fmr DFSP Norwalk , 15306 Norwalk Blvd, Norwalk, California

This report is to present the results of our geophysical survey carried out over portions of a public park adjacent to the former DFSP Norwalk located at 15306 Norwalk Boulevard in Norwalk, California (Figure 1). The survey was performed on July 6, 2015, and its purpose was to detect and delineate, insofar as possible, all pipes, lines, conduits, utilities, and other underground objects or obstructions within a single designated area.

A combination of electromagnetic induction (EM), magnetometry, and ground penetrating radar (GPR) were applied to the search. Utility locators with line tracing capabilities were also brought to the field and used where risers exist onto which a signal could be impressed and traced.

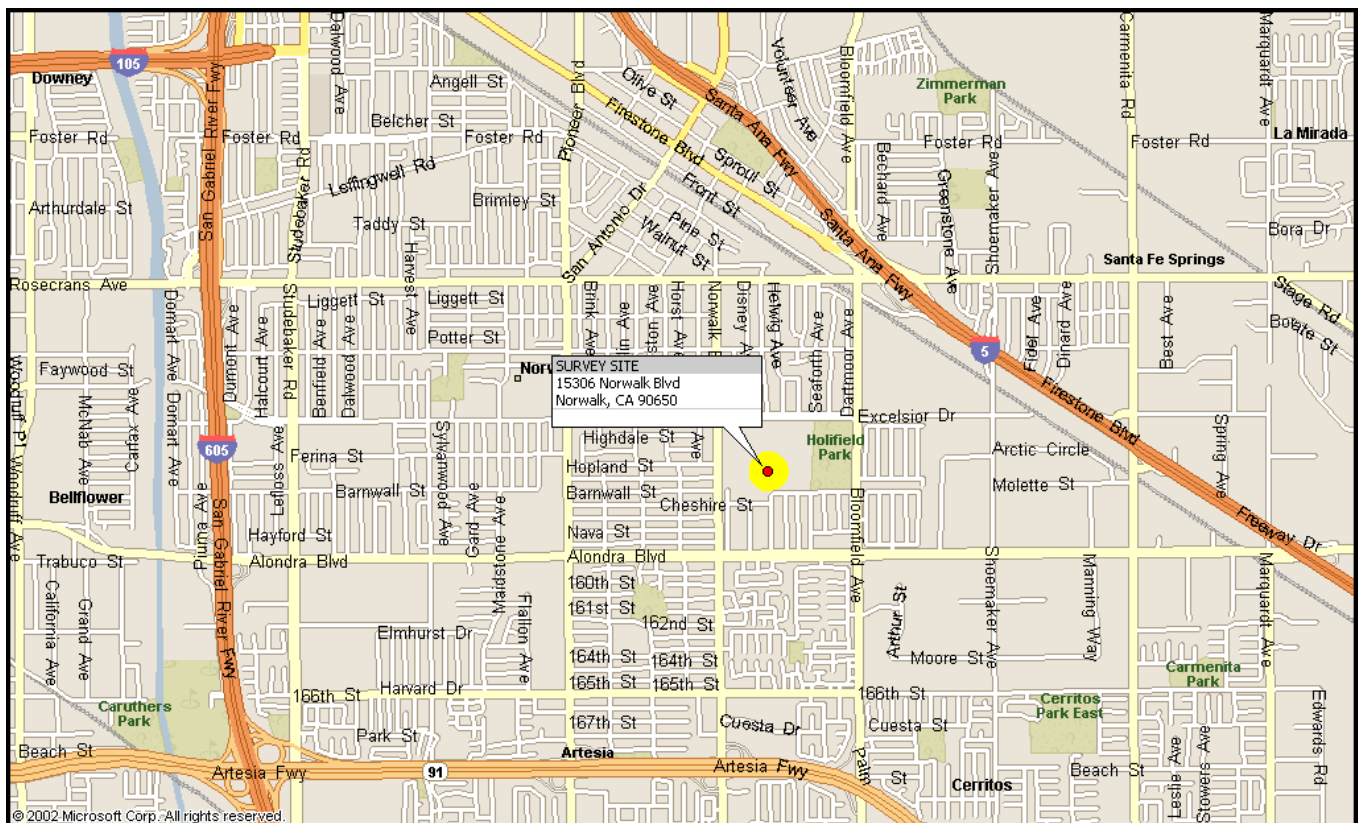


FIGURE 1. Site location map.

Survey Design – The survey area was indicated in the field by the client and included portions of a public park east of and immediately adjacent to the former DFSP facility. The survey centered on an existing monitoring well within the park, located immediately adjacent to a concrete walkway, which was in turn immediately adjacent to the DFSP’s eastern-most fence line. This well was also 157 feet south of the asphalt parking lot. Areas surveyed included portions of the grass landscaping 90 feet east of the well and 90 feet north and south of the well.

For this particular site and survey objectives the best use of time was achieved by systematically free-traversing with the instruments while monitoring them manually, continuously, and in real-time to determine which responses were significant and due to true subsurface targets, and which were due to other non-target or above-ground features and must be ignored (an example being nearby light standards and chain-link fencing). In these situations, the free-traversing method is advantageous in that it allows for immediate detection of anomalous objects and facilitates the opportunity to investigate them further despite the obstructions and without the need to first download data. Where space was available for traversing, the EM devices, magnetic gradiometer, and GPR were traversed systematically over the survey areas in multiple, organized directions. Other traverses were taken for detailing and confirmation where anomalous conditions were found.

In addition, the line tracers were used to impress signals onto pipes, generally through accessible risers and tracer wires when present, to delineate the lines’ locations and orientations. The instruments were also used in passive mode, configured to detect 60 Hz electrical signals and other common radio-frequency signals found in active electrical and communication lines.

A Geonic’s model EM61 and a Fischer TW-6 M-Scope were used for the EM sampling. A Sensors & Software Noggin Ground Penetrating Radar unit with a 500 MHz antenna produced the radar images. The magnetic gradiometer was a Schonstedt GA-52, and a Metrotech 9890 and RIDGID SR-60 SeekTech utility locator rounded out the tools applied.

Brief Description of the Geophysical Methods Applied – The EM61 instrument is a high resolution, time-domain device for detecting buried conductive objects. It consists of a powerful transmitter that generates a pulsed primary magnetic field when its coils are energized, which induces eddy currents in nearby conductive objects. The decay of the eddy currents, following the input pulse, is measured by the coils, which in turn serve as receiver coils. The decay rate is measured for two coils, mounted concentrically, one above the other. By making the measurements at a relatively long time interval (measured in milliseconds) after termination of the primary pulse, the response is nearly independent of the electrical conductivity of the ground. Thus, the instrument is a super-sensitive metal detector. Due to its unique coil arrangement, the response curve is a single well-defined positive peak directly over a buried conductive object. This facilitates quick and accurate location of targets.

The M-Scope device energizes the ground by producing an alternating primary magnetic field with AC current in a transmitting coil. If conducting materials are within the area of influence of the primary field, AC eddy currents are induced to flow in the conductors. A receiving coil senses the secondary magnetic field produced by these eddy currents, and outputs the response as anomalous conditions. The strength of the secondary field is a function of the conductivity of the object; say a pipe, tank or cluster of drums, its size, and its depth and position relative to the instrument's two coils. Conductive objects, to a depth of approximately 7 feet below ground surface (bgs) for the M-Scope are sensed. The device is also somewhat

focused; that is, it is more sensitive to conductors below the instrument than they are to conductors off to the side.

The GPR instrument beams energy into the ground from its transducer/antenna, in the form of electromagnetic waves. A portion of this energy is reflected back to the antenna at a boundary in the subsurface across which there is an electrical contrast. The instrument produces a continuous record of the reflected energy as the antenna is traversed across the ground surface. The greater the electrical contrast, the higher the amplitude of the returned energy. The radar wave travels at a velocity unique to the material properties of the ground being investigated, and when these velocities are known, the two-way travel times can be converted to depth. The depth of penetration and image resolution produced are a function of ground electrical conductivity and dielectric constant.

The magnetic gradiometer has two flux gate magnetic fixed sensors that are passed closely to and over the ground. When not in close proximity to a magnetic object, that is, only in the earth's field, the instrument emits a sound signal at a low frequency. When the instrument passes over a buried iron or steel object, so that locally there is a high magnetic gradient, the frequency of the emitted sound increases. The frequency is a function of the gradient between the two sensors.

The line locator is used to passively detect energized high voltage electric lines and electrical conduit (50-60 Hz), VLF signals (14-22 kHz), as well as to actively trace other utilities. Where risers are present, the utility locator transmitter can be connected directly to the object, and a signal (9.8-82 kHz) is sent traveling along the conductor, pipe, conduit, etc. In the absence of a riser, the transmitter can be used to impress an input signal on the utility by induction. In either case, the receiver unit is tuned to the input signal, and is used to actively trace the signal along the pipe's surface projection.

Interpretation and Conclusions - The interpretation took place in real time as the survey progressed, and accordingly, the findings of our investigation were reported to the client and further documented with a site utility map (Figure 2) and site photographs of all findings (Figures 3-8). Note that due to the sensitivity surrounding this particular site, no permanent markings of detected utilities were left in the field.

Items detected were marked on site and additionally highlighted in the accompanying graphics using red for electric. Please review the site utility map and the site photographs for the locations and orientations of all items detected during the course of the survey. Also observable in Figures 4 and 5 is the location of the existing monitoring well.

Please note that non-metallic sprinkler irrigation lines almost certainly exist within most portions of the survey area as occasional sprinkler heads were visually observed in various areas. These shallow, narrow-diameter, non-metallic lines are not reliably or consistently detectable with GPR and were only occasionally and sporadically observed with radar as it was traversed throughout the survey area. To further complicate matters, numerous mature trees were present within the survey area and shallow roots are often indistinguishable from PVC. Where the irrigation lines were detected, they appeared to be approximately 1 to 1.25 feet below ground level.

Due to our inability to positively detect the irrigation lines the client is strongly encouraged to hand-auger prior to drilling at least to a depth of 2 feet below ground level.

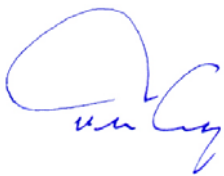
Limitations and Further Recommendations - It should be understood that limitations inherent in geophysical instruments and/or surveying techniques exist at all sites, and nearly all sites exhibit conditions under which such might not perform optimally. Consequently, the detection of buried objects in all circumstances **cannot be guaranteed**. Such limitations are numerous and include, but are not limited to, rebar-reinforced ground cover, abrupt changes in ground cover type, above-ground obstacles preventing full traverses or traverses in one direction only, above-ground conductive objects interfering with instrument signal, nearby powerlines or EM transmitters, highly conductive background soil conditions, limited GPR penetration, non-metallic targets, shallower or larger objects shielding deeper or smaller targets, tracing signal jumping from one line to another, and inaccessible risers, cleanouts, valve boxes, and manholes. If one or more geophysical instrument is rendered ineffective and cannot be utilized, the quality of the survey can be somewhat degraded.

For the above reasons, and in the interest of maximum safety, we encourage our clients to take advantage of Underground Service Alert (USA), Dig Alert, or other similar services, when possible. Furthermore, we recommend hand-auguring and the use of a drilling method known as air knifing or vacuum extraction, when feasible or if applicable to this project. These methods may significantly limit damage to underground pipes, conduits, and utilities that might not have been detectable during the course of this survey. Please bear in mind, that geophysical surveying is only one of several levels of protection that is available to our clients.

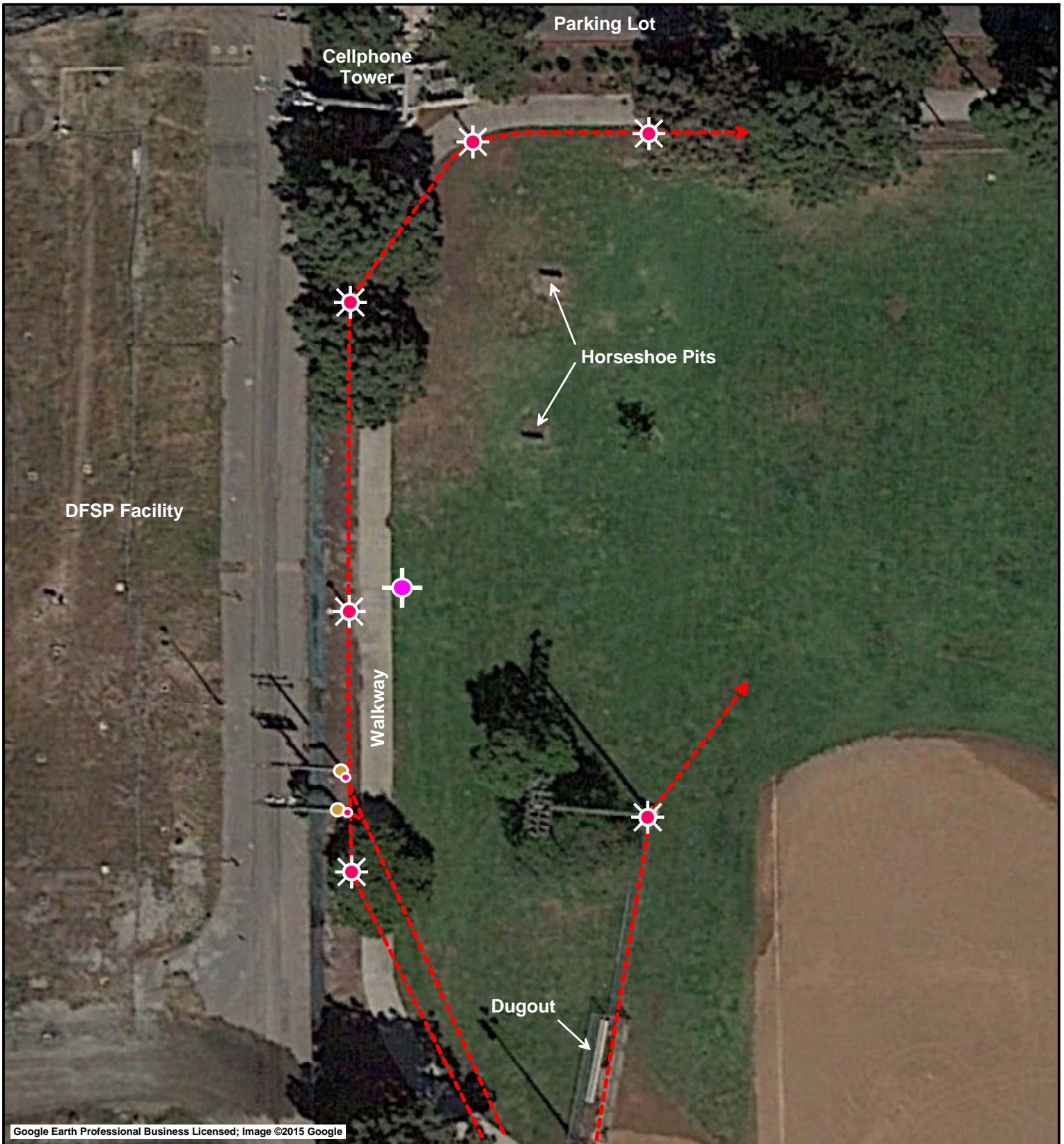
SubSurface Surveys may include maps in some reports. While they are an accurate general representation of the site and our findings, they are not of engineering quality (i.e., measured and mapped by a licensed land surveyor).

SubSurface Surveys and Associates makes no guarantee either expressed or implied regarding the accuracy of the findings and interpretations present. And, in no event will SubSurface Surveys and Associates be liable for any direct, indirect, special, incidental, or consequential damages resulting from interpretations and opinions presented herewith.

All data generated on this project are in confidential file in this office, and are available for review by authorized persons at any time. The opportunity to participate in this investigation is very much appreciated. Please call, if there are questions.



Travis Crosby
California State Geophysics Registration GP1044
Senior Geophysicist, SubSurface Surveys






	SITE: Adjacent To: DFSP Norwalk 15306 Norwalk Boulevard Norwalk, California	TITLE: Site Utility Map	SURVEY DATE: July 6, 2015	
		PREPARED FOR: The Source Group	SSS PROJECT NO: 15-242	
LEGEND: <div><div><div>--- Electric Conduit</div><div>● Electric Riser</div><div>⊙ Light Standard</div></div><div><div>⊕ Existing Monitoring Well</div><div>● Power Pole</div></div></div>				<div>SCALE  0 38ft</div> <div>FIGURE 2</div>



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8



SITE:
Adjacent To:
DFSP Norwalk
15306 Norwalk Boulevard
Norwalk, California

TITLE:
Site Utility Photographs

PREPARED FOR:
The Source Group

SURVEY DATE:
July 6, 2015

SSS PROJECT NO:
15-242

APPENDIX C

INSTRUMENT CALIBRATION RECORDS



Calibrated at Geotech's California South service center

1411 North Batavia Street, Suite 112
Orange, CA 92867

Fax: (714) 998-7382

556 Calibration Certificate

Unit Number: 4443

Calibration Date 7/10/2015

Serial Number: 14F102323

Technician: Aerrin Louie

- ☒ Display is clear, and free of damage
 - ☒ Cable and accessories are free of damage
- Display Battery: 5.72 V **Pass**
Spare Battery: 6.48 V **Pass**

Cable Length: 20M
Cable Lot #: 13L24
Cond Probe Lot #: 14g100547
pH Probe Lot #: 15B

Cable Flex Test: **Pass**
Bath Temp: 27.64 °C
Meter Temp: 27.62 °C
Variance: -0.02 °C **Pass**

Cond

Calibration	Reading	Buffer Lot #	Exp. Date	Gain
1.413 mS	1.413 mS	5GF041	6/16	Pass 0.998063 Pass

pH

Point Test	Calibration	Reading	mV	Slope	Buffer Lot #	Exp. Date	Gain
2 Point	pH 7	pH 7	-4 mV	171 Pass	5AC145	3/17	Pass -5.21892 Pass
	pH 10	pH 10	-175 mV		4AE567	5/16	Pass

ORP

Calibration	Reading	Buffer Lot #	Exp. Date	Offset
220 mV	220 mV	5AD222	1/16	Pass 18.21 Pass

DO

Barometer	Calibration	Reading	Variance	Test Fluid	Gain
756.5 mmHg	99.5 %	99.5 %	0.0% Pass	Water Saturated Air	1.004627 Pass
Time: Min. Sec.	Reading	Nitrogen Lot #			
1 0	1.8 Pass	14-400537956			

Geotech Environmental Equipment, Inc. takes pride in ensuring this instrument is tested to function as specified by the manufacturer and was calibrated in accordance to manufacturer specifications. All calibration standards used are NIST traceable. With the provided lot numbers we can provide NIST documents on request. Call us at (800) 833-7958 and we will be glad to help.



Calibrated at Geotech's California South service center

1411 North Batavia Street, Suite 112
Orange, CA 92867

Fax: (714) 998-7382

Hach 2100 Calibration Certificate

Unit Number: 4503

Calibration Date 7/10/2015

Serial Number: 14090C035457

Technician: Aerrin Louie

- ☒ Cleaned Turbidity meter and Case
- ☒ Visually inspect for damage and missing parts

Calibrated / Checked

- ☐ Calibrated
- ☒ Checked

Battery: 6 V **Pass**
Spare Battery: 6.4 V **Pass**

Calibration

	<u>Reading</u>		<u>Lot #</u>	<u>Exp Date</u>	
20 NTU:	20.3 ntu	Pass	A4261	12/15	Pass
100 NTU:	100 ntu	Pass	A4261	12/15	Pass
800 NTU:	817 ntu	Pass	A4261	12/15	Pass

Check Sources

	<u>Labeled</u>	<u>Reading</u>	<u>Variance</u>
Source 1	5.81 ntu	5.84 ntu	0.52%
Source 2	57 ntu	56.5 ntu	-0.88%
Source 3	546 ntu	552 ntu	1.10%

Verify Calibration

	<u>Reading</u>		<u>Lot #</u>	<u>Exp Date</u>	
10 NTU:	10.2 ntu	Pass	A4253	12/15	Pass

Geotech Environmental Equipment, Inc. takes pride in ensuring this instrument is tested to function as specified by the manufacturer and was calibrated in accordance to manufacturer specifications. All calibration standards used are NIST traceable. With the provided lot numbers we can provide NIST documents on request. Call us at (800) 833-7958 and we will be glad to help.



AIR MONITORING EQUIPMENT CALIBRATION/CHECK LOG

[illegible]

APPENDIX D

BORING LOGS

PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, Northeast of GMW-62

START DATE: 7-13-15

FINISH DATE: 7-13-15

CASING TOP ELEV. (FT MSL): 76.00

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.4'

GW DEPTH (FT BGS): 38'

DRILL EQUIP: CME-85

NORTHING: 1,783,760.18

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-Stem Auger

EASTING: 6,541,317.85

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 47

CONTRACTOR: ABC Liovin (C57 #422904)

HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swenson

DEPTH (FT.)	Time	SAMPLE ID	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION
0.0	08:55					Boring cleared to 5 feet bgs with hand auger and/or posthole digger.	
-1.0							Concrete
-2.0			0.0		SM	SILTY SAND [0;60;40;<1], dark brown (10YR 3/3), slightly moist, fine- to medium-grained, poorly graded, no plasticity, no hydrocarbon odor.	
-3.0							
-4.0							
-5.0	09:30		0.0		SW	WELL-GRADED SAND [0;100;0;0], light olive gray (5Y 6/2), dry, fine- to coarse-grained, no hydrocarbon odor.	4-inch Diam. Blank PVC Casing
-6.0							
-7.0			0.0		SM	SILTY SAND [10;70;30;<1], dark brown (10YR 3/3), slightly moist, fine- to medium-grained, poorly graded, no plasticity, no hydrocarbon odor.	
-8.0	09:35						
-9.0			0.0		SM	SILTY SAND [0;50;45;5], dark brown (10YR 3/3), slightly moist, fine- to medium-grained, poorly graded, low plasticity, no hydrocarbon odor.	
-10.0			0.0		SW	WELL-GRADED SAND [0;100;0;0], yellowish brown (10YR 5/4), slightly moist, fine- to coarse-grained, micaceous, no hydrocarbon odor.	
-11.0						(No Recovery.)	Bentonite/ Cement Grout
-12.0							

PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, Northeast of GMW-62

START DATE: 7-13-15

FINISH DATE: 7-13-15

CASING TOP ELEV. (FT MSL): 76.00

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.4'

GW DEPTH (FT BGS): 38'

DRILL EQUIP: CME-85

NORTHING: 1,783,760.18

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-Stem Auger

EASTING: 6,541,317.85

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 47

CONTRACTOR: ABC Liovin (C57 #422904)

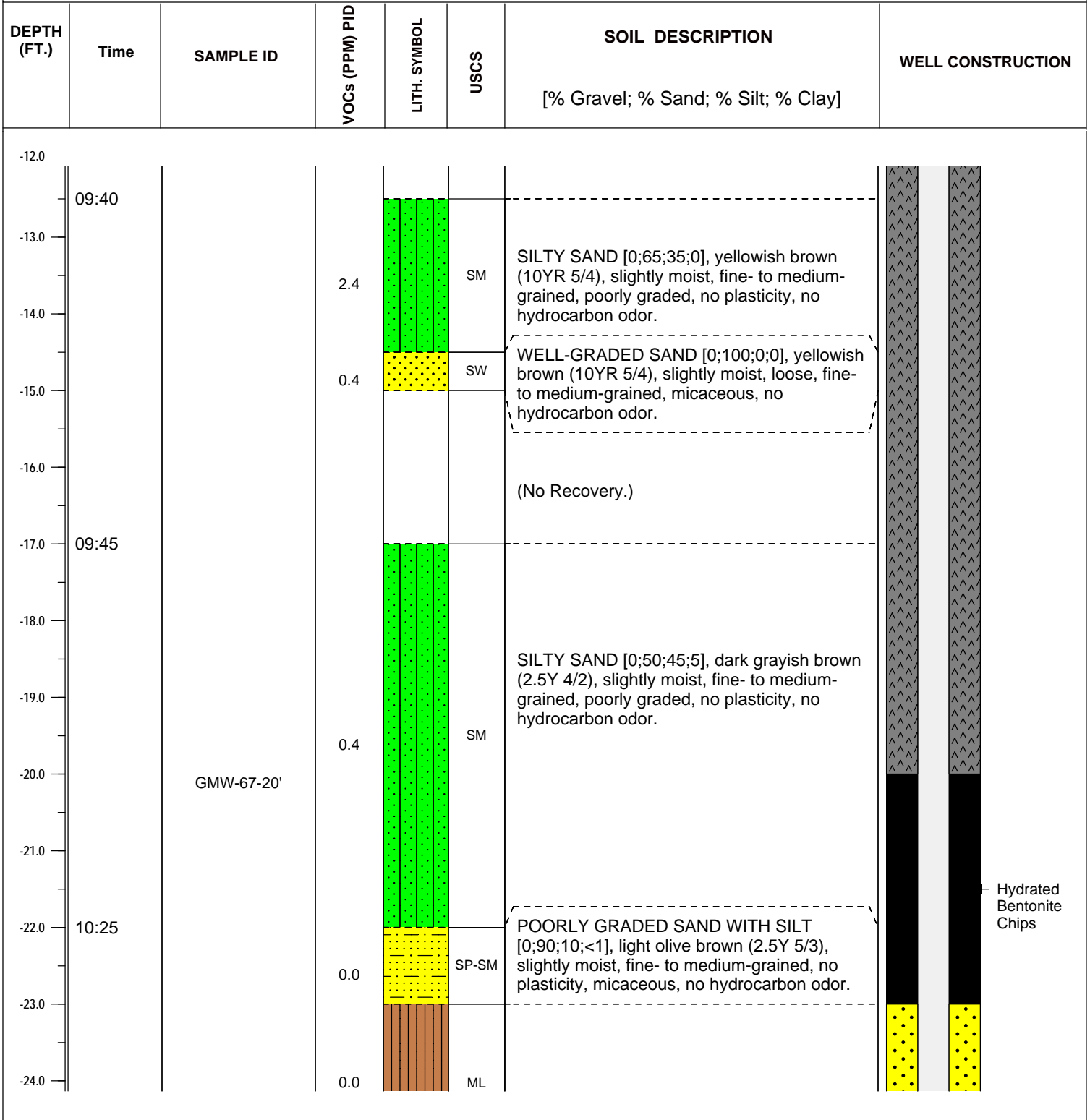
HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swensson



PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, Northeast of GMW-62

START DATE: 7-13-15

FINISH DATE: 7-13-15

CASING TOP ELEV. (FT MSL): 76.00

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.4'

GW DEPTH (FT BGS): 38'

DRILL EQUIP: CME-85

NORTHING: 1,783,760.18

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-Stem Auger

EASTING: 6,541,317.85

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 47

CONTRACTOR: ABC Liovin (C57 #422904)

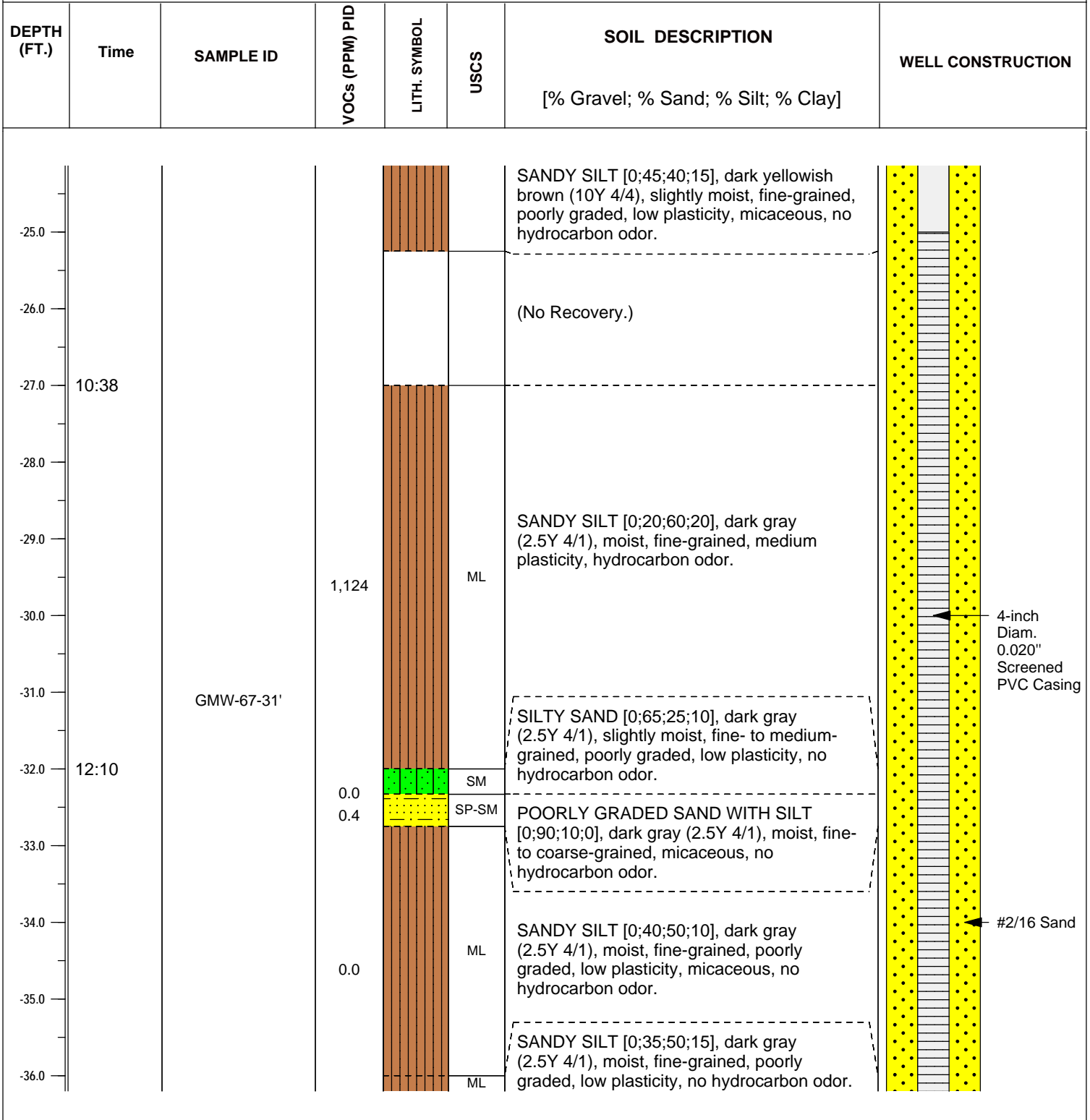
HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swensson



The Source Group, Inc.

WELL NO. [BORING ID]: **GMW-67**

PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, Northeast of GMW-62

START DATE: 7-13-15

FINISH DATE: 7-13-15

CASING TOP ELEV. (FT MSL): 76.00

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.4'

GW DEPTH (FT BGS): 38'

DRILL EQUIP: CME-85

NORTHING: 1,783,760.18

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-Stem Auger

EASTING: 6,541,317.85

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 47

CONTRACTOR: ABC Liovin (C57 #422904)

HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swensson

DEPTH (FT.)	Time	SAMPLE ID	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION
-37.0	12:30		0.0			(No Recovery.)	
-38.0			0.0		SM	SILTY SAND [0;60;30;10], dark gray (2.5Y 4/1), very moist, fine- to medium-grained, poorly graded, low plasticity, micaceous, no hydrocarbon odor.	
-39.0						Groundwater encountered at ~38 feet bgs.	
-40.0			0.0		SM	SILTY SAND [0;85;15;<1], dark gray (2.5Y 4/1), saturated, fine-to medium-grained, poorly graded, no plasticity, micaceous, no hydrocarbon odor.	
-41.0		GMW-67-41.5'					
-42.0	12:35					(No Recovery.)	
-43.0							
-44.0							
-45.0							Threaded End Cap
-46.0							#2/16 Sand
-47.0							

The Source Group, Inc.

WELL NO. [BORING ID]: GMW-68

PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, East of GMW-62

START DATE: 7-15-15

FINISH DATE: 7-15-15

CASING TOP ELEV. (FT MSL): 75.52

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.0'

GW DEPTH (FT BGS): 32'

DRILL EQUIP: CME-85

NORTHING: 1,783,692.87

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-stem Auger

EASTING: 6,541,276.10

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 45

CONTRACTOR: ABC Liovin (C57 #422904)

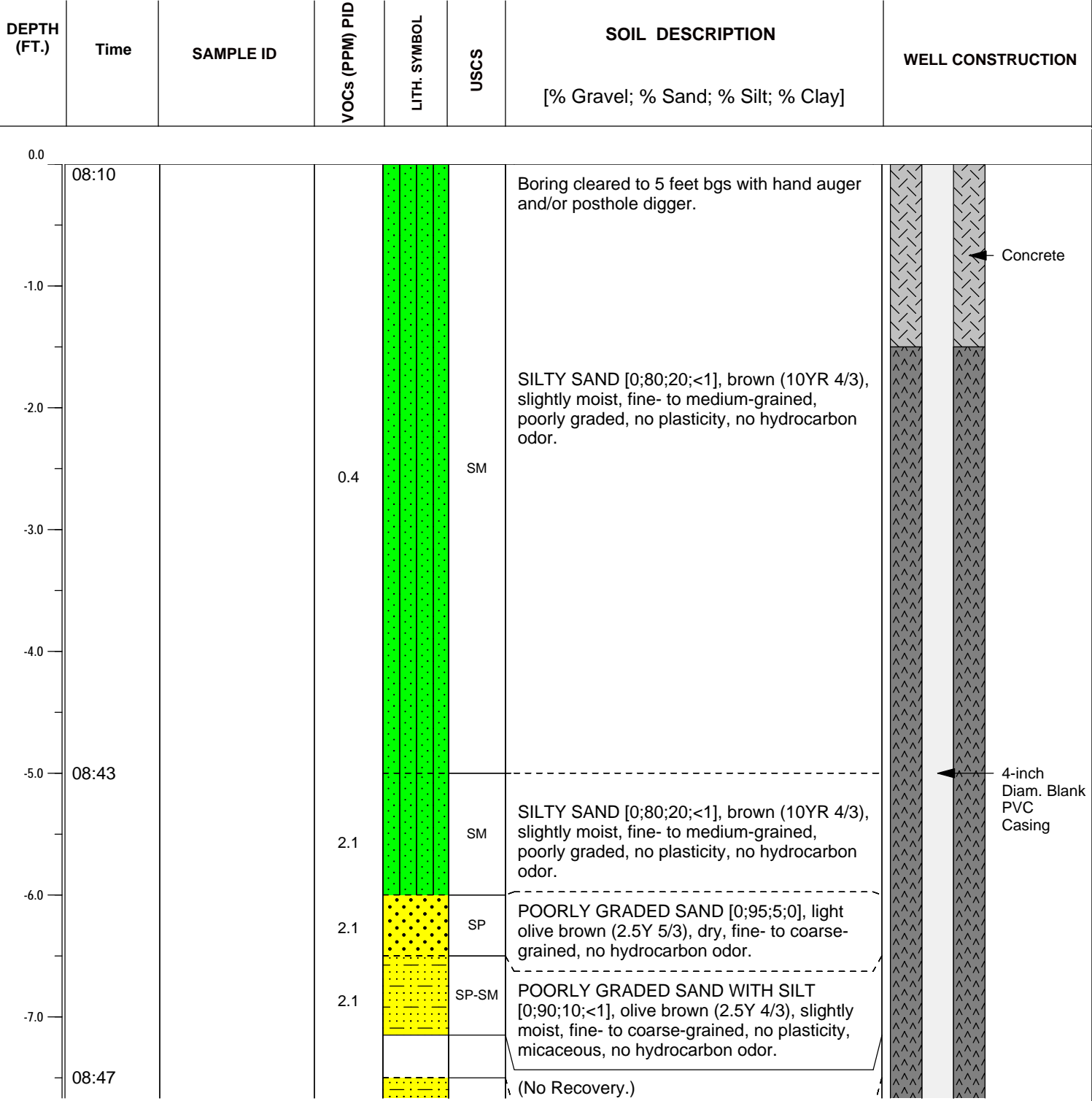
HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swensson



PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, East of GMW-62

START DATE: 7-15-15

FINISH DATE: 7-15-15

CASING TOP ELEV. (FT MSL): 75.52

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.0'

GW DEPTH (FT BGS): 32'

DRILL EQUIP: CME-85

NORTHING: 1,783,692.87

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-stem Auger

EASTING: 6,541,276.10

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 45

CONTRACTOR: ABC Liovin (C57 #422904)

HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swensson

DEPTH (FT.)	Time	SAMPLE ID	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION
-8.0				SP-SM		POORLY-GRADED SAND WITH SILT [0;90;10;<1], brown (10YR 4/3), slightly moist, fine- to medium-grained, no plasiticity, micaceous, no hydrocarbon odor.	
-9.0			0.5	SP		POORLY GRADED SAND [0;95;5;0], light olive brown (2.5Y 5/3), dry, fine- to coarse-grained, micaceous, no hydrocarbon odor.	
-10.0	08:53		0.5	ML		SANDY SILT [0;35;50;15], dark grayish brown (10YR 3/2), slightly moist, soft, fine-grained, poorly graded, low plasticity, micaceous, no hydrocarbon odor.	
-11.0			0.2	SM		SILTY SAND [0;60;30;10], brown (10YR 4/3), slightly moist, fine- to medium-grained, poorly graded, low plasticity, micaceous, no hydrocarbon odor.	
-12.0	08:58		0.2	SM		SILTY SAND [0;85;15;<1], light olive brown (2.5Y 5/3), slightly moist, fine- to medium-grained, soft, poorly graded, low plasticity, micaceous, no hydrocarbon odor.	
-13.0			0.5	SM		SILTY SAND [0;55;35;10], olive brown (2.5Y 4/4), slightly moist, fine- to medium-grained, poorly graded, low plasticity, micaceous, no hydrocarbon odor.	
-14.0							
-15.0	09:53						

← Bentonite/
Cement
Grout

WELL NO. [BORING ID]: **GMW-68**

LOCATION: Holified Park, East of GMW-62

CASING TOP ELEV. (FT MSL): 75.52

GW DEPTH (FT BGS): 32'

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

TOTAL WELL DEPTH (FT BGS): 45

LOGGED BY: Stephanie Lapeyre-Montrose

CHECKED BY: Daniel Swensson

PAGE 3 OF 6

PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, East of GMW-62

START DATE: 7-15-15

FINISH DATE: 7-15-15

CASING TOP ELEV. (FT MSL): 75.52

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.0'

GW DEPTH (FT BGS): 32'

DRILL EQUIP: CME-85

NORTHING: 1,783,692.87

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-stem Auger

EASTING: 6,541,276.10

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 45

CONTRACTOR: ABC Liovin (C57 #422904)

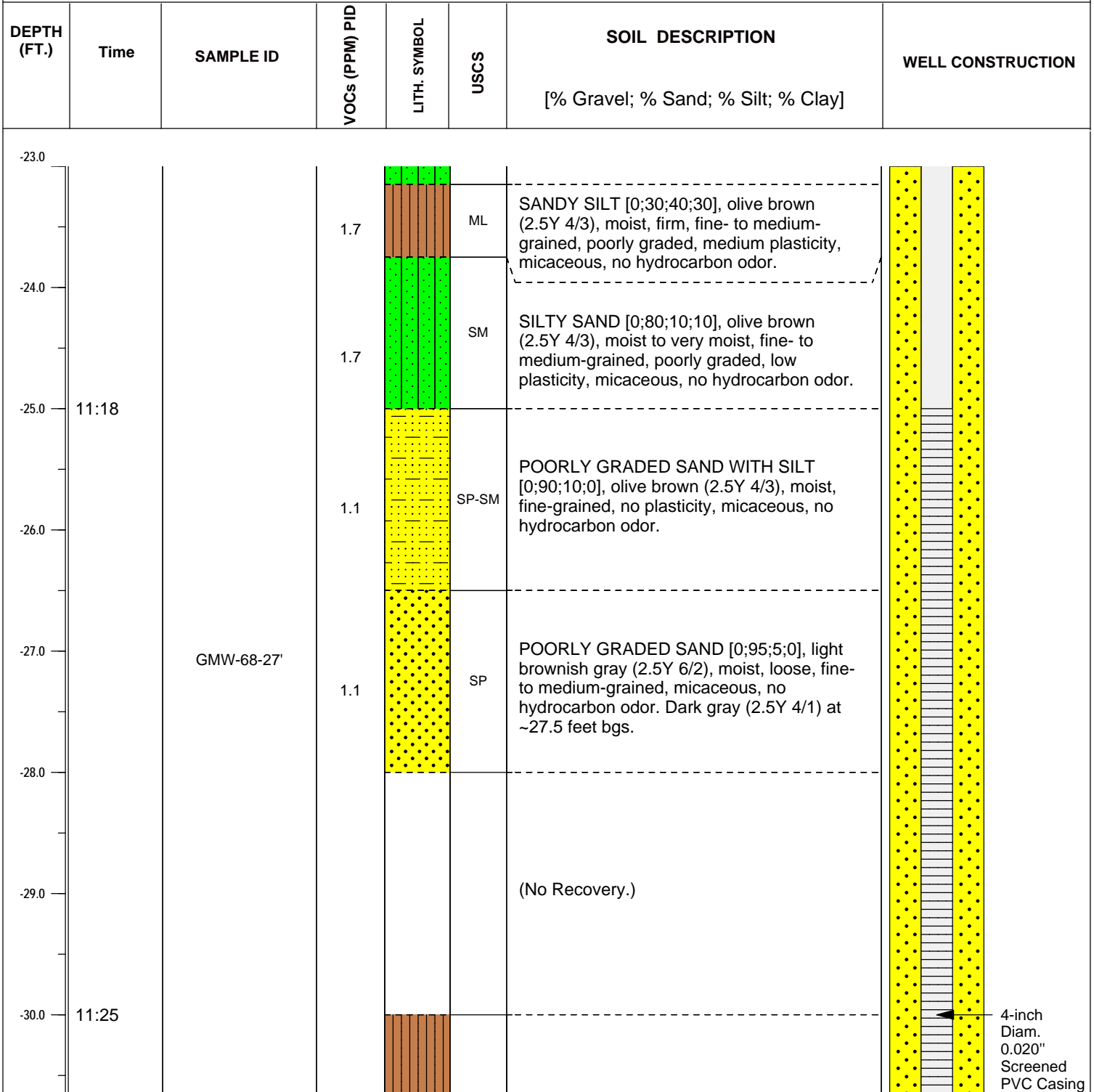
HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

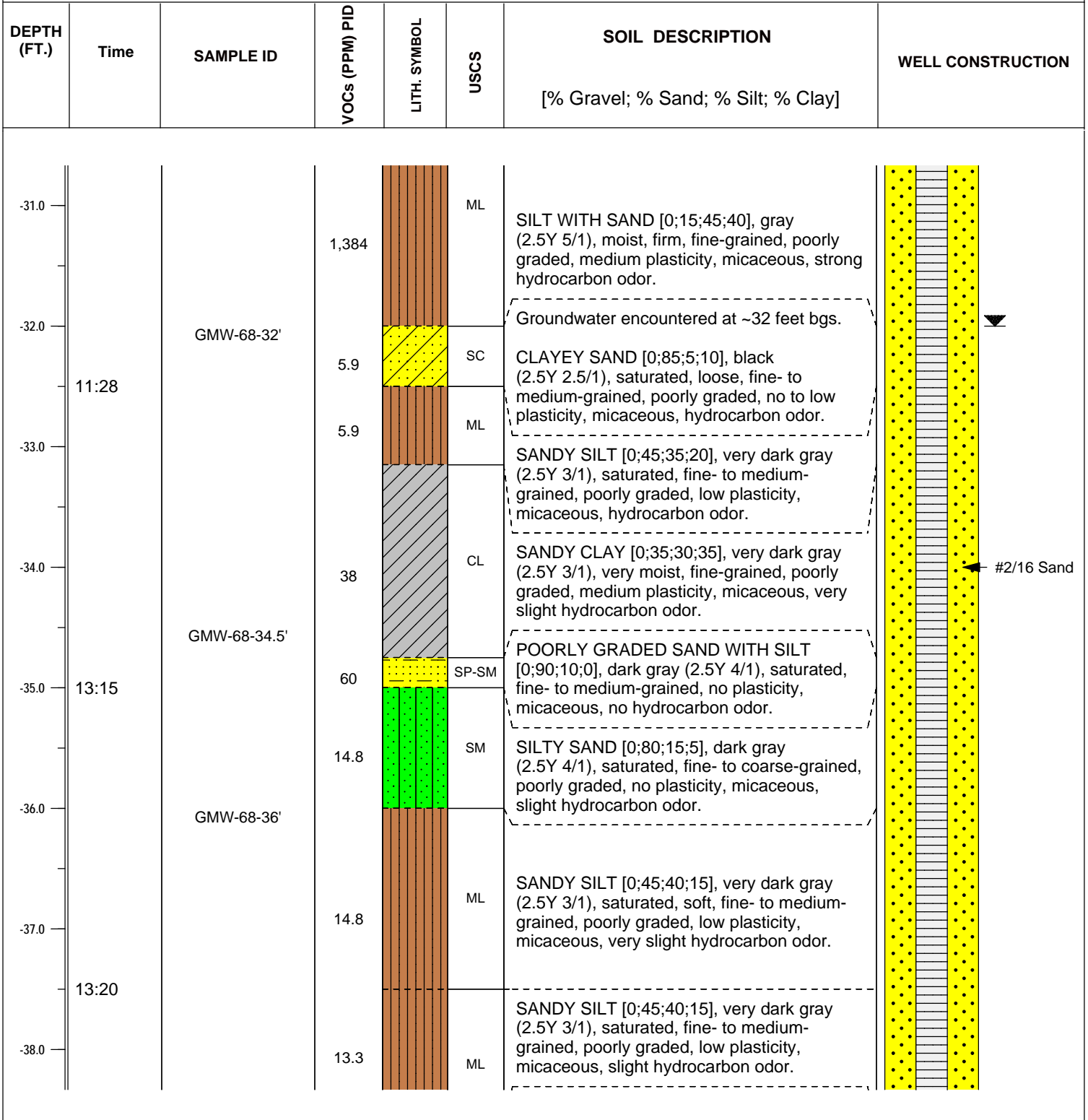
CHECKED BY: Daniel Swensson



PROJECT NAME/NO.: DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, East of GMW-62

START DATE: 7-15-15	FINISH DATE: 7-15-15	CASING TOP ELEV. (FT MSL): 75.52
DRILLER: ABC Liovin	SURFACE ELEV. (FT MSL): 76.0'	GW DEPTH (FT BGS): 32'
DRILL EQUIP: CME-85	NORTHING: 1,783,692.87	SCREEN INTERVAL (FT BGS): 25-45 ft bgs
DRILL METHOD: Hollow-stem Auger	EASTING: 6,541,276.10	SCREEN DIAM/SLOT SIZE (INCHES): 0.020"
SAMPLE METHOD: Continuous Core/Quorpac Jars with 5035	BORE ANGLE: Vertical	TOTAL WELL DEPTH (FT BGS): 45
CONTRACTOR: ABC Liovin (C57 #422904)	HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"	LOGGED BY: Stephanie Lapeyre-Montrose
MONITORING DEVICE: Mini Rae 2000 PID	BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout	CHECKED BY: Daniel Swensson



PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, East of GMW-62

START DATE: 7-15-15

FINISH DATE: 7-15-15

CASING TOP ELEV. (FT MSL): 75.52

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.0'

GW DEPTH (FT BGS): 32'

DRILL EQUIP: CME-85

NORTHING: 1,783,692.87

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-stem Auger

EASTING: 6,541,276.10

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 45

CONTRACTOR: ABC Liovin (C57 #422904)

HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swensson

DEPTH (FT.)	Time	SAMPLE ID	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION
-39.0							
		GMW-68-39.5'					
-40.0	13:24						
-41.0							
-42.0	13:27						
-43.0							
-44.0		GMW-68-44'					
-45.0							

The Source Group, Inc.

WELL NO. [BORING ID]: GMW-69

PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, Southeast of GMW-62

START DATE: 7-14-15

FINISH DATE: 7-14-15

CASING TOP ELEV. (FT MSL): 75.31

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.0'

GW DEPTH (FT BGS): 37.5'

DRILL EQUIP: CME-85

NORTHING: 1,783,644.14

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-stem Auger

EASTING: 6,541,301.63

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 45

CONTRACTOR: ABC Liovin (C57 #422904)

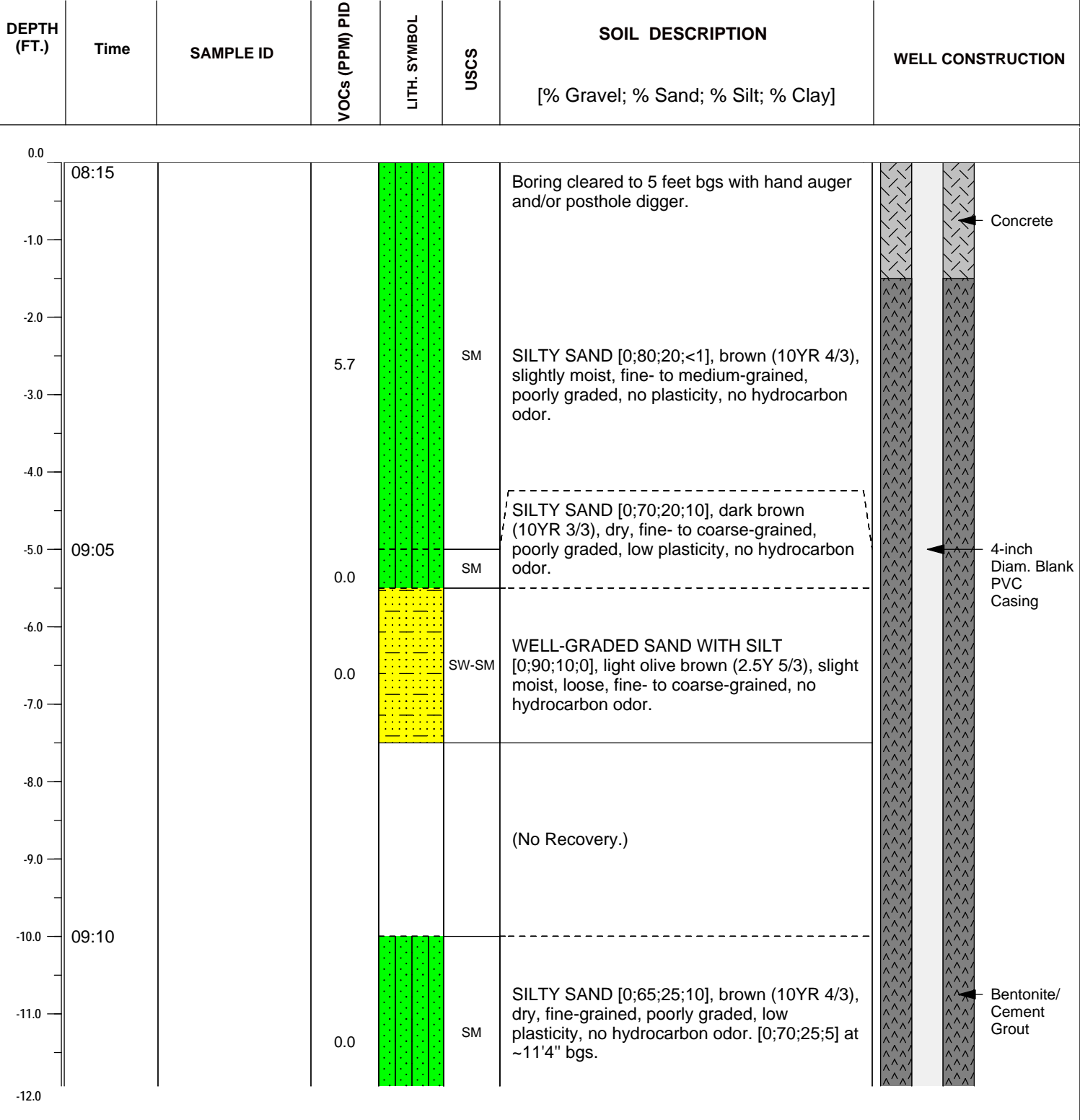
HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swenson



PROJECT NAME/NO.: DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, Southeast of GMW-62

START DATE: 7-14-15

FINISH DATE: 7-14-15

CASING TOP ELEV. (FT MSL): 75.31

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.0'

GW DEPTH (FT BGS): 37.5'

DRILL EQUIP: CME-85

NORTHING: 1,783,644.14

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-stem Auger

EASTING: 6,541,301.63

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD: Continuous Core/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 45

CONTRACTOR: ABC Liovin (C57 #422904)

HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swensson

DEPTH (FT.)	Time	SAMPLE ID	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION
-12.0	09:45	GMW-69-15'	0.0		SM	SILTY SAND [0;50;40;10], brown (10YR 4/3), slightly moist, fine- to coarse-grained, poorly graded, low plasticity, no hydrocarbon odor.	
-13.0			0.0		SM	SILTY SAND [0;85;15;<1], olive brown (2.5YR 4/3), slightly moist, fine- to coarse-grained, poorly graded, no plasticity, no hydrocarbon odor.	
-14.0			0.0		SM	SILTY SAND [0;85;15;<1], olive brown (2.5YR 4/3), slightly moist, fine- to coarse-grained, poorly graded, no plasticity, no hydrocarbon odor.	
-15.0	09:47		0.0		SP-SM	POORLY-GRADED SAND WITH SILT [0;90;10;0], light olive brown (2.5Y 5/3), slightly moist, fine- to medium-grained, no plasticity, micaceous, no hydrocarbon odor.	
-16.0			0.0		SP-SM	POORLY-GRADED SAND WITH SILT [0;90;10;0], light olive brown (2.5Y 5/3), slightly moist, fine- to medium-grained, no plasticity, micaceous, no hydrocarbon odor.	
-17.0	09:49		2.3		ML	SILT [0;0;75;25], olive brown (2.5Y 4/3), moist, medium- to high plasticity, no hydrocarbon odor.	
-18.0			0.0		SM	SILTY SAND [0;60;25;15], brown (10YR 4/3), slightly moist, fine- to medium-grained, poorly graded, low plasticity, micaceous, no hydrocarbon odor.	
-19.0			0.0		SM	SILTY SAND [0;60;25;15], brown (10YR 4/3), slightly moist, fine- to medium-grained, poorly graded, low plasticity, micaceous, no hydrocarbon odor.	
-20.0	09:56		0.0		SM	SILTY SAND [0;70;30;0], dark grayish brown (10YR 4/2), slightly moist, fine- to coarse-grained, poorly graded, no plasticity, micaceous, no hydrocarbon odor.	
-21.0			0.0		SW	WELL-GRADED SAND [0;95;5;0], light olive brown (2.5Y 5/3), slightly moist, loose, fine- to coarse-grained, no plasticity, no hydrocarbon odor.	
-22.0						(No Recovery.)	
-23.0	10:55		0.0		SW	WELL-GRADED SAND [0;95;5;0], light olive brown (2.5Y 5/3), slightly moist, loose, fine- to coarse-grained, no plasticity, no hydrocarbon odor.	
			3.4				Hydrated Bentonite Chips

PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, Southeast of GMW-62

START DATE: 7-14-15

FINISH DATE: 7-14-15

CASING TOP ELEV. (FT MSL): 75.31

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.0'

GW DEPTH (FT BGS): 37.5'

DRILL EQUIP: CME-85

NORTHING: 1,783,644.14

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-stem Auger

EASTING: 6,541,301.63

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 45

CONTRACTOR: ABC Liovin (C57 #422904)

HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swensson

DEPTH (FT.)	Time	SAMPLE ID	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION
-24.0					SM	SILTY SAND [0;55;30;15], light olive brown (2.5Y 5/3), slightly moist, fine-grained, poorly graded, low to medium plasticity, micaceous, no hydrocarbon odor.	
-25.0	11:02				SM	SILTY SAND [0;70;15;15], olive brown (2.5Y 4/3), slightly moist, fine-grained, poorly graded, low plasticity, no hydrocarbon odor.	
-26.0			0.4				
-27.0			0.4		ML	SANDY SILT [0;40;45;15], olive brown (2.5Y 4/3), slightly moist, fine-grained, poorly graded, low plasticity, no hydrocarbon odor.	
-28.0	11:05				SM	SILTY SAND [0;65;25;10], olive brown (2.5Y 4/3), slightly moist, fine-grained, poorly graded, low plasticity, micaceous, no hydrocarbon odor.	
-29.0			4.0				
-30.0	11:15				ML	SILT [0;10;60;30], black (2.5Y 5/1), slightly moist, fine-grained, firm, poorly graded, medium- to high plasticity, strong hydrocarbon odor.	
-31.0		GMW-69-31'	671		ML	SILT WITH SAND [0;20;55;25], black (2.5Y 2.5/1), slightly moist, fine-grained, poorly graded, medium plasticity, hydrocarbon odor. Dark gray (2.5Y 4/1) at 30'10" bgs.	4-inch Diam. 0.020" Screened PVC Casing
-32.0					SM	SILTY SAND [0;65;25;10], black (2.5Y 2.5/1), slightly moist, fine-grained, low plasticity, hydrocarbon odor.	
-33.0	12:47		10.3		SM	SILTY SAND [0;80;10;10], dark gray (5Y 4/1), slightly moist, fine-grained, poorly graded, low plasticity, micaceous, very slight hydrocarbon odor.	
-34.0			10.3		SP-SM	POORLY GRADED SAND WITH SILT [0;90;10;0], very moist, loose, fine- to medium-grained, no plasticity, micaceous, no hydrocarbon odor.	#2/16 Sand
-35.0	12:50					(No Recovery.)	

PROJECT NAME/NO.:DFSP Norwalk; 04-NDLA-008

LOCATION: Holified Park, Southeast of GMW-62

START DATE: 7-14-15

FINISH DATE: 7-14-15

CASING TOP ELEV. (FT MSL): 75.31

DRILLER: ABC Liovin

SURFACE ELEV. (FT MSL): 76.0'

GW DEPTH (FT BGS): 37.5'

DRILL EQUIP: CME-85

NORTHING: 1,783,644.14

SCREEN INTERVAL (FT BGS): 25-45 ft bgs

DRILL METHOD: Hollow-stem Auger

EASTING: 6,541,301.63

SCREEN DIAM/SLOT SIZE (INCHES): 0.020"

SAMPLE METHOD Continuos Cove/Quorpac Jars with 5035

BORE ANGLE: Vertical

TOTAL WELL DEPTH (FT BGS): 45

CONTRACTOR: ABC Liovin (C57 #422904)

HOLE DIAM. (IN.)/DEPTH (FT BGS): 10"

LOGGED BY: Stephanie Lapeyre-Montrose

MONITORING DEVICE: Mini Rae 2000 PID

BACKFILL MATERIAL: #2/16 Sand/ Hyd. Bent. Chips/Grout

CHECKED BY: Daniel Swensson

DEPTH (FT.)	Time	SAMPLE ID	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION
-36.0							
-37.0	12:55		6.0		SP-SM	POORLY GRADED SAND WITH SILT [0;90;10;0], gray (2.5Y 5/1), very moist, fine-to medium-grained, no plasticity, micaceous, no hydrocarbon odor.	
-38.0		GMW-69-38'				Groundwater encountered at ~37.5 feet bgs.	
-39.0			0.0		SP-SM	POORLY GRADED SAND WITH SILT [0;90;10;0], gray (2.5Y 5/1), saturated, fine-to medium-grained, no plasticity, micaceous, no hydrocarbon odor.	
-40.0	13:00						
-41.0			0.0		SW-SM	WELL-GRADED SAND WITH SILT [0;90;10;0], gray (2.5Y 5/1), saturated, fine-to coarse-grained, no plasticity, micaceous, no hydrocarbon odor.	
-42.0							
-43.0	13:20		0.0		SW-SM	WELL-GRADED SAND WITH SILT [0;90;10;0], gray (2.5Y 5/1), saturated, fine-to coarse-grained, no plasticity, micaceous, no hydrocarbon odor.	
-44.0						(No Recovery.)	
-45.0							Threaded End Cap

APPENDIX E

WELL DEVELOPMENT RECORDS

WELL DEVELOPMENT RECORD

Well ID: <u>GMW-67</u>	Well Diameter (inches): 4-inch ✓	Site ID: Defense Fuel Support Point Norwalk
Static Water Level (ft bgs): <u>32.74</u>	Total Well Depth (ft bgs): 45 feet bgs ✓	Address: 15306 Norwalk Blvd., Norwalk, CA 90650
Initial Well Depth (ft bgs): <u>44.10 soft</u>	Screen Length (feet): 20 feet ✓	Project Number: 04-NDLA-008/Task 1.0
Final Well Depth (ft bgs): <u>HARD</u>	Screen Depths (ft bgs): 25 - 45 feet bgs ✓	Personnel: <u>DAVID L., TODD ABC LIONAW</u>

Date	Time	Surge/ Bail	Duration/ Volume	Temp. (°C)	Sp. Cond. (µS/cm)	pH (pH units)	Turbidity (NTU)	Other <u>ORP</u>	Comments (e.g., water clarity, color, odors, silt content, etc.)
Parameter Stability Guidance:				±0.5 °C	±3%	±0.2 units	±10% if >10		
7-21-15	10 ⁴⁴ AM	SURGE	@ 20 min.	—	—	—	—	—	WC @ 12.24 x .66 = 8.08 CAS/16 VOL.
"	11 ⁰⁸ AM	BAIL	@ 21 GAL	21.02	2.213	7.75	71000.0	NT	pump @ 1.5-1.75 GPM
"	11 ³⁰ AM	SURGE	@ 15 min.	20.53	2.176	7.70	—	—	min. sample depth @ <u>36.92</u>
"	11 ⁴⁵ AM	BAIL	@ 21 GAL	20.53	2.176	7.70	71000	NT	
"	12 ¹⁰ PM	pump →	@ 3 GAL	19.86	2.230	7.41	981	NT	
"	12 ¹⁵ PM	"	✓ 8 GAL	19.81	2.300	7.30	935	-69	
"	12 ²⁰ PM	"	✓ 8 GAL	19.78	2.300	7.31	1000+	-74	
"	12 ²⁵ PM	"	✓ 8 GAL	19.76	2.300	7.21	676	-82	
"	12 ³⁰ PM	"	✓ 8 GAL	19.77	2.290	7.05	306	-80	* offloaded @ <u>230</u> GAL into sump of
"	12 ³⁵ PM	"	✓ 8 GAL	19.74	2.290	6.99	133	-86	treatment compound per Glen A.
"	12 ⁴⁰ PM	"	✓ 8 GAL	19.72	2.290	6.98	103	-89	
"	12 ⁴⁵ PM	"	✓ 8 GAL	19.74	2.290	7.00	71.3	-91	
"	12 ⁵⁰ PM	"	✓ 8 GAL	19.77	2.280	7.33	39.1	-120.0	
"	12 ⁵⁵ PM	"	✓ 8 GAL	19.80	2.280	7.33	42.3	-117	
"	1 ⁰⁰ PM	"	8 GAL	19.83	2.290	7.31	31.6	-115.0	sample depth @ <u>32.80</u> @ 1 ⁰⁰ PM

Notes: ft bgs = feet bgs

Temp. = temperature

Sp. Cond. = specific conductance

@ 80 CM
pumped

°C = degrees Celsius

µS/cm = microSiemens per centimeter

NTU = nephelometric turbidity unit

Total Surge Time (minutes): @ 35 min.

Volume of Water Added During Development (gallons): 0

Volume of Groundwater Extracted (gallons): 122 GAL.

42 BAIL, 80 pump

* MARKED I.D. ON CAP

1.5 min per ft.

The Source Group, Inc.

WELL DEVELOPMENT RECORD

Well ID: <u>GMW-68</u>	Well Diameter (inches): <u>✓</u> 4-inch	Site ID: Defense Fuel Support Point Norwalk
Static Water Level (ft bgs): <u>32.27</u>	Total Well Depth (ft bgs): <u>✓</u> 45 feet bgs	Address: 15306 Norwalk Blvd., Norwalk, CA 90650
Initial Well Depth (ft bgs): <u>45.05</u>	Screen Length (feet): <u>✓</u> 20 feet	Project Number: 04-NDLA-008/Task 1.0
Final Well Depth (ft bgs): <u>45.10</u>	Screen Depths (ft bgs): <u>✓</u> 25 - 45 feet bgs	Personnel: <u>DAVID Lebban TODD ABC-L</u>

Date	Time	Surge/ Bail	Duration/ Volume	Temp. (°C)	Sp. Cond. (µS/cm)	pH (pH units)	Turbidity (NTU)	Other	Comments (e.g., water clarity, color, odors, silt content, etc.)
Parameter Stability Guidance:				±0.5 °C	±3%	±0.2 units	±10% if >10		
7-22-15	7 ²⁷ AM	SURGE	@ 23 min	—	—	—	—	—	NO ODOR DETECTED
"	7 ⁵⁰ AM	BAIL	@ 24 GAL	21.07	2.316	7.69	71000	NT	
"	8 ¹⁵ AM	SURGE	@ 15 min	—	—	—	—	—	
"	8 ⁴⁰ AM	BAIL	@ 18 GAL	20.87	2.267	7.43	71000	NT	slight odor/HCL
"	9 ⁰⁸ AM	pump	@ 4 GAL	19.93	2.800	7.51	71000	ORP <u>4.0</u>	
"	9 ¹¹ AM	"	8 GAL	19.84	2.670	7.18	793	-67.3	(WC = 12.78 x .66 = 8.43 CASING VOL.
"	9 ¹⁶ AM	"	8 GAL	19.81	2.530	7.09	319	-81.0	$.80 \times WC = 10.22 = 34.83$ MIN. SAMPLE
"	9 ²⁶ AM	"	8 GAL	19.80	2.470	7.08	229	-84.0	<u>depth</u>
"	9 ²⁶ AM	"	8 GAL	19.76	2.350	7.06	67.3	-107.0	sampled @ 33.15. GOOD TO GO
"	9 ³¹ AM	"	8 GAL	19.77	2.400	7.08	57.3	-107.0	obtain @ 10 ¹⁵ AM
"	9 ³⁶ AM	"	8 GAL	19.78	2.430	7.09	39.3	-109.0	
"	9 ⁴¹ AM	"	8 GAL	19.79	2.450	7.10	26.4	-109.0	
"	9 ⁴⁶ AM	"	8 GAL	19.81	2.460	7.11	19.6	-110.0	
"	9 ⁵¹ AM	"	8 GAL	19.81	2.440	7.11	11.7	-112.0	
"	9 ⁵⁷ AM	"	8 GAL	19.81	2.430	7.11	7.4	-113.0	

Notes: ft bgs = feet bgs

Temp. = temperature

Sp. Cond. = specific conductance

°C = degrees Celsius

µS/cm = microSiemens per centimeter

NTU = nephelometric turbidity unit

Total Surge Time (minutes): 38 min.

Volume of Water Added During Development (gallons): 8

Volume of Groundwater Extracted (gallons): @ 126 GAL

42 BAIL, 84 purge pump

WELL DEVELOPMENT RECORD

Well ID: GMW-69	Well Diameter (inches): 4-inch ✓	Site ID: Defense Fuel Support Point Norwalk
Static Water Level (ft bgs): 31.98	Total Well Depth (ft bgs): 45 feet bgs ✓	Address: 15306 Norwalk Blvd., Norwalk, CA 90650
Initial Well Depth (ft bgs): 44.30 Soft	Screen Length (feet): 20 feet ✓	Project Number: 04-NDLA-008/Task 1.0
Final Well Depth (ft bgs): 44.65 HARD	Screen Depths (ft bgs): 25 - 45 feet bgs ✓	Personnel: DAVID S61 - TODD ABC-LIONIN

Date	START Time	Surge/ Bail	Duration/ Volume	Temp. (°C)	Sp. Cond. (µS/cm)	pH (pH units)	Turbidity (NTU)	Other	Comments (e.g., water clarity, color, odors, silt content, etc.)
Parameter Stability Guidance:				±0.5 °C	±3%	±0.2 units	±10% if >10		13.02 WC x .66 = 8.60 CASING VOL.
7-21-15	7:38	S	@ 20 min	21.09	2134	7.72	71000		* @ 1.5 GAL REMOVED PER BAIL.
"	8:02	BAIL	@ 18 GAL	21.09	2134	7.72	71000		REMOVED 4" silt.
"	8:38	S	@ 15 min						
"	8:47	BAIL	@ 18 GAL	20.69	2.085	7.70	715		
"	9:15 AM	pump	@ 1.5 GPM	20.31	2.070	7.51	675		@ 1.5 - 1.75 GPM
"	9:25	"	@ 8 GAL	20.13	2.070	7.50	613		
"	9:30	"	@ 8 GAL	19.93	2.070	7.49	561		
"	9:35	"	@ 8 GAL	19.92	2.070	7.48	451		WC .80% 10.42
"	9:40	"	@ 8 GAL	19.91	2.080	7.46	333		min. sample depth → 34.23
"	9:45	"	@ 8 GAL	19.90	2.070	7.45	203		DTW @ 10:15 AM @ 32.03. Ready for sample
"	9:50	"	@ 8 GAL	19.90	2.080	7.42	110		obtained @ 10:20 AM
"	9:55 A	"	↓	19.89	2.080	7.39	52.5	-103.0 (ORP)	
"	10:00 A	@ 56	@ 8 GAL	18.88	2.090	7.35	23.2		
"	10:05 AM	@ 64	@ 8 GAL	19.88	2.090	7.33	16.1		
"	10:10 AM	@ 72	@ 8 GAL	19.88	2.090	7.31	9.8	-118.0 (ORP)	Horiba U-22 ABC-LIONIN

Notes: ft bgs = feet bgs

°C = degrees Celsius

Total Surge Time (minutes): **35 min.**

Temp. = temperature

µS/cm = microSiemens per centimeter

Volume of Water Added During Development (gallons): **8**

Sp. Cond. = specific conductance

NTU = nephelometric turbidity unit

Volume of Groundwater Extracted (gallons): **108 GAL**

36 BAIL 72 pump

DTW @ 32.45

13.02
.66
8.59 CASE VOL.

APPENDIX F
SURVEY REPORT

Evans Land Surveying and Mapping

The Source Group, Inc.

DFSP-Norwalk Site Norwalk, California

Groundwater Monitoring Well Locations
July 24, 2015

Designation	Northing	Easting	Elevation (ft.)	Description
GMW-67	1,783,760.18	6,541,317.85	76.00	TOC
			76.53	COVER
			76.4	GS
GMW-68	1,783,692.87	6,541,276.10	75.52	TOC
			76.08	COVER
			76.0	GS
GMW-69	1,783,644.14	6,541,301.63	75.31	TOC
			76.00	COVER
			76.0	GS

Legend:

TOC = Top of PVC well Casing
COVER = Existing Well access Cover
GS = Existing Ground Surface

Datum:

Horizontal = North American Datum of 1983 (**NAD'83**)
CCS'83 , Zone V (0405) (2011.00 epoch)
CRTN Station "BLSA"

Vertical = National Geodetic Vertical Datum of 1929 (**NGVD'29**)
Based on *off-site* DFSP well "**GMW-63**"
Elev.= 76.34' MSL (TOC) (provided)




Stephen E. Evans , PLS 7017

Evans Land Surveying and Mapping

The Source Group, Inc.

DFSP-Norwalk Site
Norwalk, California

Groundwater Monitoring Well Locations
July 24, 2015

Designation	Latitude (N)	Longitude (W)	Elevation (ft.)	Description
GMW-67	33.8938543	118.0670504	76.00	TOC
			76.53	COVER
			76.4	GS
GMW-68	33.8936693	118.0671878	75.52	TOC
			76.08	COVER
			76.0	GS
GMW-69	33.8935354	118.0671035	75.31	TOC
			76.00	COVER
			76.0	GS

Legend:

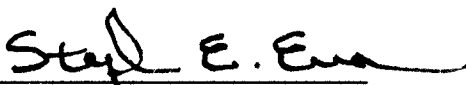
TOC = Top of PVC well Casing
COVER = Existing Well access Cover
GS = Existing Ground Surface

Datum:

Horizontal = North American Datum of 1983 (**NAD'83**)
CCS'83 , Zone V (0405) (2011.00 epoch)
CRTN Station "BLSA"

Vertical = National Geodetic Vertical Datum of 1929 (**NGVD'29**)
Based on *off-site* DFSP well "**GMW-63**"
Elev.= 76.34' MSL (TOC) (provided)




Stephen E. Evans , PLS 7017

Groundwater Monitoring Wells (off-site)

date of field survey: July 24, 2015

DATUM:

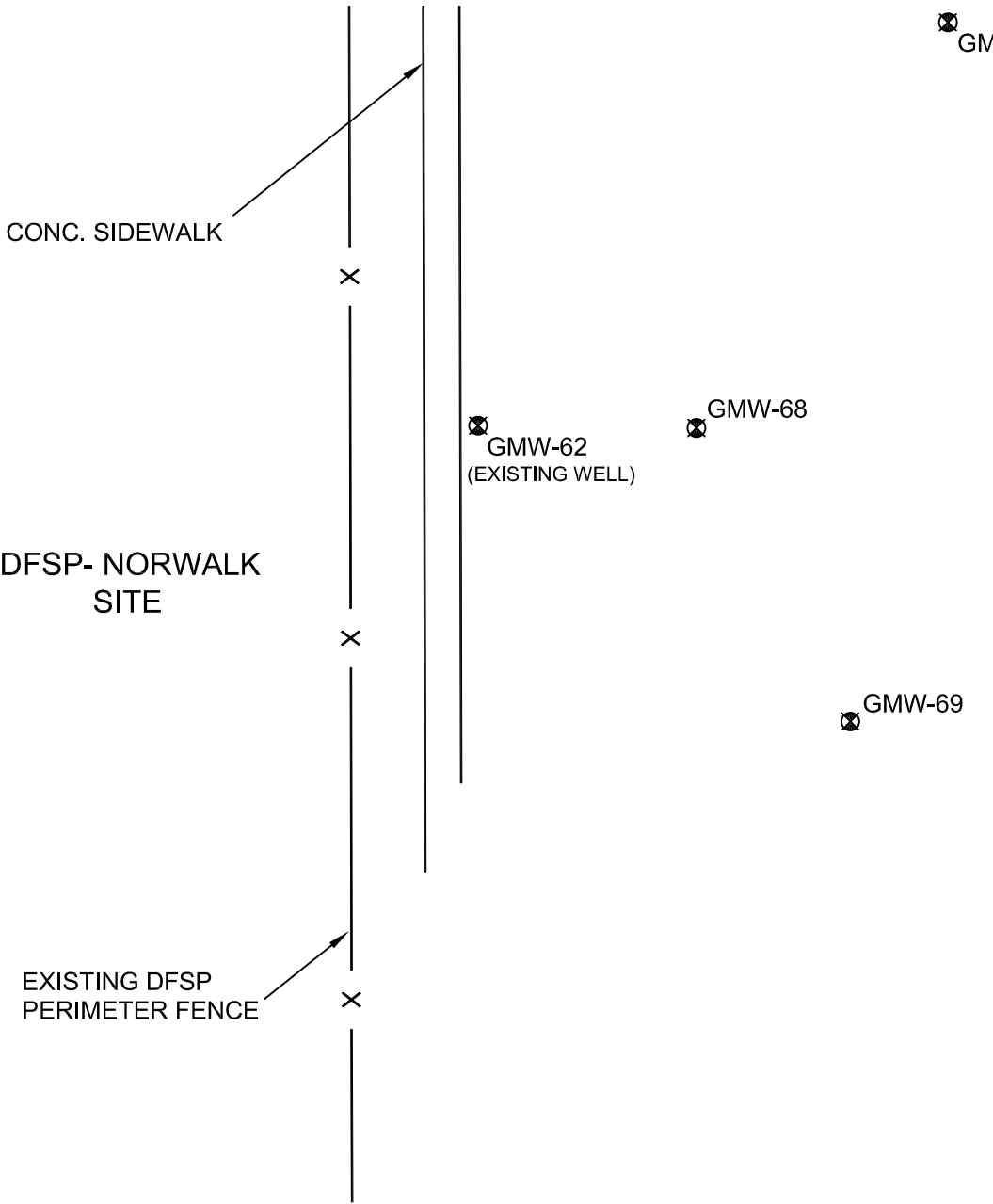
HORIZONTAL:

North American Datum of 1983 (NAD'83)
CCS'83, Zone V (0405) , (2011.00 epoch)
Based on California Real Time Network (CRTN) Station "BLSA"

BENCH MARK:

Los Angeles County Dept. of Public Works
Designation: CY 8835 (Artesia Quad)
Description:
CS BM MON IN S END C.B. 1M(3.3') N/O BCR @ NW COR
ALONDRA BLVD & NORWALK BLVD MKD (BM 41-7A 1970)

Elevation= 69.014 feet (NGVD'29)(1980 adj.)



THIS DRAWING WAS PREPARED UNDER MY SUPERVISION
USING DATA FROM FIELD SURVEYS PERFORMED BY
ELS&M AND DATA PROVIDED BY THE SOURCE GROUP, INC.



STEPHEN E. EVANS, PLS 7017

DRAWN BY: S.E.		REVISIONS:		PREPARED FOR:		PROJECT		PREPARED BY:		SHT. NO.	
APPROVED BY: S.EVANS		INITIAL SITE VISIT, 6/04/2015		The Source Group, Inc.		DFSP - Norwalk		EVANS LAND SURVEYING and MAPPING		1 OF 1	
DATE: 7/07/2015											
DWG. NO.: DFSP-NORWALK.DWG											
				1962 Freeman Avenue		Signal Hill, CA 90755		15306 Norwalk Blvd.		Norwalk, CA 90650	
								3436 Paloma Avenue		ph. (909) 592-5501	
								La Verne, CA 91750			

APPENDIX G

LABORATORY REPORTS – CHEMICAL ANALYSIS



9765 Eton Avenue
Chatsworth
California 91311
Tel: (818) 998-5547
Fax: (818) 998-7258

July 30, 2015

Neil Irish

The Source Group, Inc. (SH)

1962 Freeman Ave.

Signal Hill, CA 90755

Re : DFSP Norwalk / 04-NDLA-008

A5331413 / 5G14008

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 07/14/15 09:49 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report or require additional information please call me at American Analytics.

Sincerely,

Viorel Vasile

Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
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8260B/5035 +OXY+TPHG

GMW-67-20'	5G14008-01	Soil	5	07/13/15 09:45	07/14/15 09:49
GMW-67-31'	5G14008-02	Soil	5	07/13/15 10:38	07/14/15 09:49
GMW-67-41.5'	5G14008-03	Soil	5	07/13/15 12:30	07/14/15 09:49

Carbon Chain Custom

GMW-67-20'	5G14008-01	Soil	5	07/13/15 09:45	07/14/15 09:49
GMW-67-31'	5G14008-02	Soil	5	07/13/15 10:38	07/14/15 09:49
GMW-67-41.5'	5G14008-03	Soil	5	07/13/15 12:30	07/14/15 09:49

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15
Units: mg/kg

Date Sampled:	07/13/15	07/13/15	07/13/15	
Date Prepared:	07/14/15	07/14/15	07/14/15	
Date Analyzed:	07/14/15	07/14/15	07/14/15	
AA ID No:	5G14008-01	5G14008-02	5G14008-03	
Client ID No:	GMW-67-20'	GMW-67-31'	GMW-67-41.5'	
Matrix:	Soil	Soil	Soil	
Dilution Factor:	1	1	1	MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035)

Acetone	0.14	0.27	<0.050	0.050
tert-Amyl Methyl Ether (TAME)	<0.0050	<0.0050	<0.0050	0.0050
Benzene	<0.0020	0.047	<0.0020	0.0020
Bromobenzene	<0.0050	<0.0050	<0.0050	0.0050
Bromochloromethane	<0.0050	<0.0050	<0.0050	0.0050
Bromodichloromethane	<0.0050	<0.0050	<0.0050	0.0050
Bromoform	<0.0050	<0.0050	<0.0050	0.0050
Bromomethane	<0.0050	<0.0050	<0.0050	0.0050
2-Butanone (MEK)	<0.050	<0.050	<0.050	0.050
tert-Butyl alcohol (TBA)	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.0050	<0.0050	<0.0050	0.0050
tert-Butylbenzene	<0.0050	<0.0050	<0.0050	0.0050
n-Butylbenzene	<0.0050	<0.0050	<0.0050	0.0050
Carbon Disulfide	<0.0050	<0.0050	<0.0050	0.0050
Carbon Tetrachloride	<0.0050	<0.0050	<0.0050	0.0050
Chlorobenzene	<0.0050	<0.0050	<0.0050	0.0050
Chloroethane	<0.0050	<0.0050	<0.0050	0.0050
Chloroform	<0.0050	<0.0050	<0.0050	0.0050
Chloromethane	<0.0050	<0.0050	<0.0050	0.0050
2-Chlorotoluene	<0.0050	<0.0050	<0.0050	0.0050
4-Chlorotoluene	<0.0050	<0.0050	<0.0050	0.0050
1,2-Dibromo-3-chloropropane	<0.010	<0.010	<0.010	0.010
Dibromochloromethane	<0.0050	<0.0050	<0.0050	0.0050
1,2-Dibromoethane (EDB)	<0.0050	<0.0050	<0.0050	0.0050
Dibromomethane	<0.0050	<0.0050	<0.0050	0.0050
1,4-Dichlorobenzene	<0.0050	<0.0050	<0.0050	0.0050
1,3-Dichlorobenzene	<0.0050	<0.0050	<0.0050	0.0050

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15
Units: mg/kg

Date Sampled:	07/13/15	07/13/15	07/13/15	
Date Prepared:	07/14/15	07/14/15	07/14/15	
Date Analyzed:	07/14/15	07/14/15	07/14/15	
AA ID No:	5G14008-01	5G14008-02	5G14008-03	
Client ID No:	GMW-67-20'	GMW-67-31'	GMW-67-41.5'	
Matrix:	Soil	Soil	Soil	
Dilution Factor:	1	1	1	MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035) (continued)

1,2-Dichlorobenzene	<0.0050	<0.0050	<0.0050	0.0050
Dichlorodifluoromethane (R12)	<0.0050	<0.0050	<0.0050	0.0050
1,1-Dichloroethane	<0.0050	<0.0050	<0.0050	0.0050
1,2-Dichloroethane (EDC)	<0.0050	<0.0050	<0.0050	0.0050
trans-1,2-Dichloroethylene	<0.0050	<0.0050	<0.0050	0.0050
cis-1,2-Dichloroethylene	<0.0050	<0.0050	<0.0050	0.0050
1,1-Dichloroethylene	<0.0050	<0.0050	<0.0050	0.0050
2,2-Dichloropropane	<0.0050	<0.0050	<0.0050	0.0050
1,3-Dichloropropane	<0.0050	<0.0050	<0.0050	0.0050
1,2-Dichloropropane	<0.0050	<0.0050	<0.0050	0.0050
trans-1,3-Dichloropropylene	<0.0050	<0.0050	<0.0050	0.0050
1,1-Dichloropropylene	<0.0050	<0.0050	<0.0050	0.0050
cis-1,3-Dichloropropylene	<0.0050	<0.0050	<0.0050	0.0050
Diisopropyl ether (DIPE)	<0.0050	<0.0050	<0.0050	0.0050
Ethylbenzene	<0.0020	0.13	<0.0020	0.0020
Ethyl-tert-Butyl Ether (ETBE)	<0.0050	<0.0050	<0.0050	0.0050
Gasoline Range Organics (GRO)	<0.50	0.82	<0.50	0.50
Hexachlorobutadiene	<0.010	<0.010	<0.010	0.010
2-Hexanone (MBK)	<0.050	<0.050	<0.050	0.050
Isopropylbenzene	<0.0050	0.012	<0.0050	0.0050
4-Isopropyltoluene	<0.0050	<0.0050	<0.0050	0.0050
Methyl-tert-Butyl Ether (MTBE)	<0.0050	<0.0050	<0.0050	0.0050
Methylene Chloride	<0.050	<0.050	<0.050	0.050
4-Methyl-2-pentanone (MIBK)	<0.050	<0.050	<0.050	0.050
Naphthalene	<0.010	0.019	<0.010	0.010
n-Propylbenzene	<0.0050	0.012	<0.0050	0.0050

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15
Units: mg/kg

Date Sampled:	07/13/15	07/13/15	07/13/15
Date Prepared:	07/14/15	07/14/15	07/14/15
Date Analyzed:	07/14/15	07/14/15	07/14/15
AA ID No:	5G14008-01	5G14008-02	5G14008-03
Client ID No:	GMW-67-20'	GMW-67-31'	GMW-67-41.5'
Matrix:	Soil	Soil	Soil
Dilution Factor:	1	1	1
			MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035) (continued)

Styrene	<0.0050	<0.0050	<0.0050	0.0050
1,1,1,2-Tetrachloroethane	<0.0050	<0.0050	<0.0050	0.0050
1,1,2,2-Tetrachloroethane	<0.0050	<0.0050	<0.0050	0.0050
Tetrachloroethylene (PCE)	<0.0050	<0.0050	<0.0050	0.0050
Toluene	<0.0020	<0.0020	<0.0020	0.0020
1,2,4-Trichlorobenzene	<0.0050	<0.0050	<0.0050	0.0050
1,2,3-Trichlorobenzene	<0.0050	<0.0050	<0.0050	0.0050
1,1,2-Trichloroethane	<0.0050	<0.0050	<0.0050	0.0050
1,1,1-Trichloroethane	<0.0050	<0.0050	<0.0050	0.0050
Trichloroethylene (TCE)	<0.0050	<0.0050	<0.0050	0.0050
Trichlorofluoromethane (R11)	<0.0050	<0.0050	<0.0050	0.0050
1,2,3-Trichloropropane	<0.0050	<0.0050	<0.0050	0.0050
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.0050	<0.0050	<0.0050	0.0050
1,3,5-Trimethylbenzene	<0.0050	0.014	<0.0050	0.0050
1,2,4-Trimethylbenzene	<0.0050	0.037	<0.0050	0.0050
Vinyl chloride	<0.0050	<0.0050	<0.0050	0.0050
o-Xylene	<0.0020	0.011	<0.0020	0.0020
m,p-Xylenes	<0.0020	0.16	<0.0020	0.0020

Surrogates				%REC Limits
4-Bromofluorobenzene	102%	105%	103%	70-140
Dibromofluoromethane	113%	115%	117%	70-140
Toluene-d8	95%	98%	98%	70-140

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk
Method: Carbon Chain by GC/FID

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15
Units: mg/kg

Date Sampled:	07/13/15	07/13/15	07/13/15	
Date Prepared:	07/16/15	07/16/15	07/16/15	
Date Analyzed:	07/16/15	07/17/15	07/17/15	
AA ID No:	5G14008-01	5G14008-02	5G14008-03	
Client ID No:	GMW-67-20'	GMW-67-31'	GMW-67-41.5'	
Matrix:	Soil	Soil	Soil	
Dilution Factor:	1	1	1	MRL

Carbon Chain Custom (EPA 8015M)

C13-C22	<10	<10	<10	10
C23-C32	<10	<10	<10	10
C33-C44	<10	<10	<10	10

Surrogates

o-Terphenyl	94%	118%	115%	<u>%REC Limits</u> 50-150
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Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1404 - EPA 5035

Blank (B5G1404-BLK1)

Prepared & Analyzed: 07/14/15

Acetone	<0.050	0.050	mg/kg
tert-Amyl Methyl Ether (TAME)	<0.0050	0.0050	mg/kg
Benzene	<0.0020	0.0020	mg/kg
Bromobenzene	<0.0050	0.0050	mg/kg
Bromochloromethane	<0.0050	0.0050	mg/kg
Bromodichloromethane	<0.0050	0.0050	mg/kg
Bromoform	<0.0050	0.0050	mg/kg
Bromomethane	<0.0050	0.0050	mg/kg
2-Butanone (MEK)	<0.050	0.050	mg/kg
tert-Butyl alcohol (TBA)	<0.020	0.020	mg/kg
sec-Butylbenzene	<0.0050	0.0050	mg/kg
tert-Butylbenzene	<0.0050	0.0050	mg/kg
n-Butylbenzene	<0.0050	0.0050	mg/kg
Carbon Disulfide	<0.0050	0.0050	mg/kg
Carbon Tetrachloride	<0.0050	0.0050	mg/kg
Chlorobenzene	<0.0050	0.0050	mg/kg
Chloroethane	<0.0050	0.0050	mg/kg
Chloroform	<0.0050	0.0050	mg/kg
Chloromethane	<0.0050	0.0050	mg/kg
2-Chlorotoluene	<0.0050	0.0050	mg/kg
4-Chlorotoluene	<0.0050	0.0050	mg/kg
1,2-Dibromo-3-chloropropane	<0.010	0.010	mg/kg
Dibromochloromethane	<0.0050	0.0050	mg/kg
1,2-Dibromoethane (EDB)	<0.0050	0.0050	mg/kg
Dibromomethane	<0.0050	0.0050	mg/kg
1,4-Dichlorobenzene	<0.0050	0.0050	mg/kg
1,3-Dichlorobenzene	<0.0050	0.0050	mg/kg
1,2-Dichlorobenzene	<0.0050	0.0050	mg/kg
Dichlorodifluoromethane (R12)	<0.0050	0.0050	mg/kg
1,1-Dichloroethane	<0.0050	0.0050	mg/kg
1,2-Dichloroethane (EDC)	<0.0050	0.0050	mg/kg

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1404 - EPA 5035

Blank (B5G1404-BLK1) Continued

Prepared & Analyzed: 07/14/15

trans-1,2-Dichloroethylene	<0.0050	0.0050	mg/kg
cis-1,2-Dichloroethylene	<0.0050	0.0050	mg/kg
1,1-Dichloroethylene	<0.0050	0.0050	mg/kg
2,2-Dichloropropane	<0.0050	0.0050	mg/kg
1,3-Dichloropropane	<0.0050	0.0050	mg/kg
1,2-Dichloropropane	<0.0050	0.0050	mg/kg
trans-1,3-Dichloropropylene	<0.0050	0.0050	mg/kg
1,1-Dichloropropylene	<0.0050	0.0050	mg/kg
cis-1,3-Dichloropropylene	<0.0050	0.0050	mg/kg
Diisopropyl ether (DIPE)	<0.0050	0.0050	mg/kg
Ethylbenzene	<0.0020	0.0020	mg/kg
Ethyl-tert-Butyl Ether (ETBE)	<0.0050	0.0050	mg/kg
Gasoline Range Organics (GRO)	<0.50	0.50	mg/kg
Hexachlorobutadiene	<0.010	0.010	mg/kg
2-Hexanone (MBK)	<0.050	0.050	mg/kg
Isopropylbenzene	<0.0050	0.0050	mg/kg
4-Isopropyltoluene	<0.0050	0.0050	mg/kg
Methyl-tert-Butyl Ether (MTBE)	<0.0050	0.0050	mg/kg
Methylene Chloride	<0.050	0.050	mg/kg
4-Methyl-2-pentanone (MIBK)	<0.050	0.050	mg/kg
Naphthalene	<0.010	0.010	mg/kg
n-Propylbenzene	<0.0050	0.0050	mg/kg
Styrene	<0.0050	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	<0.0050	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	<0.0050	0.0050	mg/kg
Tetrachloroethylene (PCE)	<0.0050	0.0050	mg/kg
Toluene	<0.0020	0.0020	mg/kg
1,2,4-Trichlorobenzene	<0.0050	0.0050	mg/kg
1,2,3-Trichlorobenzene	<0.0050	0.0050	mg/kg
1,1,2-Trichloroethane	<0.0050	0.0050	mg/kg
1,1,1-Trichloroethane	<0.0050	0.0050	mg/kg

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1404 - EPA 5035

Blank (B5G1404-BLK1) Continued

Prepared & Analyzed: 07/14/15

Trichloroethylene (TCE)	<0.0050	0.0050	mg/kg
Trichlorofluoromethane (R11)	<0.0050	0.0050	mg/kg
1,2,3-Trichloropropane	<0.0050	0.0050	mg/kg
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.0050	0.0050	mg/kg
1,3,5-Trimethylbenzene	<0.0050	0.0050	mg/kg
1,2,4-Trimethylbenzene	<0.0050	0.0050	mg/kg
Vinyl chloride	<0.0050	0.0050	mg/kg
o-Xylene	<0.0020	0.0020	mg/kg
m,p-Xylenes	<0.0020	0.0020	mg/kg

Surrogate: 4-Bromofluorobenzene	0.0993		mg/kg	0.10		99.3	70-140
Surrogate: Dibromofluoromethane	0.0997		mg/kg	0.10		99.7	70-140
Surrogate: Toluene-d8	0.0990		mg/kg	0.10		99.0	70-140

LCS (B5G1404-BS1)

Prepared & Analyzed: 07/14/15

Benzene	0.0321	0.0020	mg/kg	0.040		80.2	75-125
Bromodichloromethane	0.0392	0.0050	mg/kg	0.040		98.1	75-125
Bromoform	0.0419	0.0050	mg/kg	0.040		105	75-125
Carbon Tetrachloride	0.0376	0.0050	mg/kg	0.040		94.0	75-125
Chlorobenzene	0.0418	0.0050	mg/kg	0.040		105	75-125
Chloroethane	0.0340	0.0050	mg/kg	0.040		84.9	75-125
Chloroform	0.0371	0.0050	mg/kg	0.040		92.6	75-125
Chloromethane	0.0365	0.0050	mg/kg	0.040		91.2	65-125
Dibromochloromethane	0.0433	0.0050	mg/kg	0.040		108	75-125
1,4-Dichlorobenzene	0.0416	0.0050	mg/kg	0.040		104	75-125
1,1-Dichloroethane	0.0365	0.0050	mg/kg	0.040		91.4	70-125
1,2-Dichloroethane (EDC)	0.0352	0.0050	mg/kg	0.040		88.1	75-125
trans-1,2-Dichloroethylene	0.0394	0.0050	mg/kg	0.040		98.4	75-125
cis-1,2-Dichloroethylene	0.0312	0.0050	mg/kg	0.040		77.9	75-125
1,1-Dichloroethylene	0.0386	0.0050	mg/kg	0.040		96.4	70-130
1,2-Dichloropropane	0.0364	0.0050	mg/kg	0.040		91.0	75-130
cis-1,3-Dichloropropylene	0.0352	0.0050	mg/kg	0.040		88.0	75-125

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1404 - EPA 5035

LCS (B5G1404-BS1) Continued

Prepared & Analyzed: 07/14/15

Ethylbenzene	0.0414	0.0020	mg/kg	0.040		104	75-125			
Methyl-tert-Butyl Ether (MTBE)	0.0365	0.0050	mg/kg	0.040		91.3	75-125			
Methylene Chloride	0.0374	0.050	mg/kg	0.040		93.6	75-130			
1,1,2,2-Tetrachloroethane	0.0471	0.0050	mg/kg	0.040		118	70-135			
Tetrachloroethylene (PCE)	0.0420	0.0050	mg/kg	0.040		105	75-125			
Toluene	0.0403	0.0020	mg/kg	0.040		101	75-125			
1,1,2-Trichloroethane	0.0423	0.0050	mg/kg	0.040		106	75-125			
1,1,1-Trichloroethane	0.0379	0.0050	mg/kg	0.040		94.8	75-125			
Trichloroethylene (TCE)	0.0348	0.0050	mg/kg	0.040		87.1	75-125			
Vinyl chloride	0.0363	0.0050	mg/kg	0.040		90.7	75-125			
o-Xylene	0.0416	0.0020	mg/kg	0.040		104	75-125			

Surrogate: 4-Bromofluorobenzene	0.0986		mg/kg	0.10		98.6	70-140			
Surrogate: Dibromofluoromethane	0.0922		mg/kg	0.10		92.2	70-140			
Surrogate: Toluene-d8	0.100		mg/kg	0.10		100	70-140			

LCS Dup (B5G1404-BS1)

Prepared: 07/14/15 Analyzed: 07/15/15

Benzene	0.0341	0.0020	mg/kg	0.040		85.2	75-125	6.04	30	
Bromodichloromethane	0.0406	0.0050	mg/kg	0.040		102	75-125	3.41	30	
Bromoform	0.0387	0.0050	mg/kg	0.040		96.6	75-125	7.95	30	
Carbon Tetrachloride	0.0396	0.0050	mg/kg	0.040		99.0	75-125	5.13	30	
Chlorobenzene	0.0406	0.0050	mg/kg	0.040		101	75-125	3.11	30	
Chloroethane	0.0433	0.0050	mg/kg	0.040		108	75-125	24.1	30	
Chloroform	0.0337	0.0050	mg/kg	0.040		84.3	75-125	9.44	30	
Chloromethane	0.0450	0.0050	mg/kg	0.040		112	65-125	20.9	30	
Dibromochloromethane	0.0388	0.0050	mg/kg	0.040		97.0	75-125	11.1	30	
1,4-Dichlorobenzene	0.0407	0.0050	mg/kg	0.040		102	75-125	2.19	30	
1,1-Dichloroethane	0.0433	0.0050	mg/kg	0.040		108	70-125	16.9	30	
1,2-Dichloroethane (EDC)	0.0379	0.0050	mg/kg	0.040		94.8	75-125	7.27	30	
trans-1,2-Dichloroethylene	0.0468	0.0050	mg/kg	0.040		117	75-125	17.3	30	
cis-1,2-Dichloroethylene	0.0316	0.0050	mg/kg	0.040		79.0	75-125	1.47	30	
1,1-Dichloroethylene	0.0463	0.0050	mg/kg	0.040		116	70-130	18.1	30	
1,2-Dichloropropane	0.0387	0.0050	mg/kg	0.040		96.9	75-130	6.17	30	

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1404 - EPA 5035

LCS Dup (B5G1404-BSD1) Continued

Prepared: 07/14/15 Analyzed: 07/15/15

cis-1,3-Dichloropropylene	0.0339	0.0050	mg/kg	0.040		84.7	75-125	3.94	30	
Ethylbenzene	0.0425	0.0020	mg/kg	0.040		106	75-125	2.57	30	
Methyl-tert-Butyl Ether (MTBE)	0.0399	0.0050	mg/kg	0.040		99.8	75-125	8.95	30	
Methylene Chloride	0.0453	0.050	mg/kg	0.040		113	75-130	19.1	30	
1,1,2,2-Tetrachloroethane	0.0490	0.0050	mg/kg	0.040		122	70-135	4.00	30	
Tetrachloroethylene (PCE)	0.0411	0.0050	mg/kg	0.040		103	75-125	2.21	30	
Toluene	0.0408	0.0020	mg/kg	0.040		102	75-125	1.38	30	
1,1,2-Trichloroethane	0.0414	0.0050	mg/kg	0.040		104	75-125	1.96	30	
1,1,1-Trichloroethane	0.0415	0.0050	mg/kg	0.040		104	75-125	9.06	30	
Trichloroethylene (TCE)	0.0365	0.0050	mg/kg	0.040		91.2	75-125	4.54	30	
Vinyl chloride	0.0453	0.0050	mg/kg	0.040		113	75-125	22.1	30	
o-Xylene	0.0414	0.0020	mg/kg	0.040		103	75-125	0.530	30	

Surrogate: 4-Bromofluorobenzene 0.102

mg/kg 0.10 102 70-140

Surrogate: Dibromofluoromethane 0.0984

mg/kg 0.10 98.4 70-140

Surrogate: Toluene-d8 0.100

mg/kg 0.10 100 70-140

Carbon Chain by GC/FID - Quality Control

Batch B5G1608 - EPA 3550B

Blank (B5G1608-BLK1)

Prepared & Analyzed: 07/16/15

C13-C22	<10	10	mg/kg							
C23-C32	<10	10	mg/kg							
C33-C44	<10	10	mg/kg							

Surrogate: o-Terphenyl 10.8

mg/kg 10 108 50-150

LCS (B5G1608-BS1)

Prepared & Analyzed: 07/16/15

Diesel Range Organics as Diesel 184 10 mg/kg 200 92.2 70-130

Surrogate: o-Terphenyl 10.3

mg/kg 10 103 50-150

LCS Dup (B5G1608-BSD1)

Prepared & Analyzed: 07/16/15

Diesel Range Organics as Diesel 188 10 mg/kg 200 94.2 70-130 2.06 40

Surrogate: o-Terphenyl 9.77

mg/kg 10 97.7 50-150

Matrix Spike (B5G1608-MS1)

Source: 5G15020-10 Prepared: 07/16/15 Analyzed: 07/17/15

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Carbon Chain by GC/FID - Quality Control										
<i>Batch B5G1608 - EPA 3550B</i>										
Matrix Spike (B5G1608-MS1) Continued Source: 5G15020-10 Prepared: 07/16/15 Analyzed: 07/17/15										
Diesel Range Organics as Diesel	191	10	mg/kg	200		95.7	60-140			
Surrogate: o-Terphenyl	10.2		mg/kg	10		102	50-150			
Matrix Spike Dup (B5G1608-MSD1) Source: 5G15020-10 Prepared: 07/16/15 Analyzed: 07/17/15										
Diesel Range Organics as Diesel	193	10	mg/kg	200		96.7	60-140	1.04	40	
Surrogate: o-Terphenyl	10.8		mg/kg	10		108	50-150			

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-008
Project Name: DFSP Norwalk

AA Project No: A5331413
Date Received: 07/14/15
Date Reported: 07/30/15

Special Notes

Gasoline Range Organics (GRO) concentration represents the C4-C12 carbon range.

Viorel Vasile
Operations Manager



Quote No.:

 $X = 10$ Working hours

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.



9765 Eton Avenue
Chatsworth
California 91311
Tel: (818) 998-5547
Fax: (818) 998-7258

July 23, 2015

Neil Irish

The Source Group, Inc. (SH)

1962 Freeman Ave.

Signal Hill, CA 90755

Re : DFSP Norwalk / 04-NDLA-001

A5331415 / 5G15021

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 07/15/15 08:13 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report or require additional information please call me at American Analytics.

Sincerely,

Viorel Vasile

Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
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8260B/5035 +OXY+TPHG

GMW-69-15'	5G15021-01	Soil	5	07/14/15 09:47	07/15/15 08:13
GMW-69-31'	5G15021-02	Soil	5	07/14/15 11:15	07/15/15 08:13
GMW-69-38'	5G15021-03	Soil	5	07/14/15 12:55	07/15/15 08:13

Carbon Chain Custom

GMW-69-15'	5G15021-01	Soil	5	07/14/15 09:47	07/15/15 08:13
GMW-69-31'	5G15021-02	Soil	5	07/14/15 11:15	07/15/15 08:13
GMW-69-38'	5G15021-03	Soil	5	07/14/15 12:55	07/15/15 08:13

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/14/15	07/14/15	07/14/15
Date Prepared:	07/16/15	07/16/15	07/16/15
Date Analyzed:	07/16/15	07/16/15	07/16/15
AA ID No:	5G15021-01	5G15021-02	5G15021-03
Client ID No:	GMW-69-15'	GMW-69-31'	GMW-69-38'
Matrix:	Soil	Soil	Soil
Dilution Factor:	1	1000	1
			MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035)

Acetone	0.15	<50	<0.050	0.050
tert-Amyl Methyl Ether (TAME)	<0.0050	<5.0	<0.0050	0.0050
Benzene	<0.0020	<2.0	<0.0020	0.0020
Bromobenzene	<0.0050	<5.0	<0.0050	0.0050
Bromochloromethane	<0.0050	<5.0	<0.0050	0.0050
Bromodichloromethane	<0.0050	<5.0	<0.0050	0.0050
Bromoform	<0.0050	<5.0	<0.0050	0.0050
Bromomethane	<0.0050	<5.0	<0.0050	0.0050
2-Butanone (MEK)	<0.050	<50	<0.050	0.050
tert-Butyl alcohol (TBA)	<0.020	<20	<0.020	0.020
sec-Butylbenzene	<0.0050	<5.0	<0.0050	0.0050
tert-Butylbenzene	<0.0050	<5.0	<0.0050	0.0050
n-Butylbenzene	<0.0050	<5.0	<0.0050	0.0050
Carbon Disulfide	<0.0050	<5.0	<0.0050	0.0050
Carbon Tetrachloride	<0.0050	<5.0	<0.0050	0.0050
Chlorobenzene	<0.0050	<5.0	<0.0050	0.0050
Chloroethane	<0.0050	<5.0	<0.0050	0.0050
Chloroform	<0.0050	<5.0	<0.0050	0.0050
Chloromethane	<0.0050	<5.0	<0.0050	0.0050
2-Chlorotoluene	<0.0050	<5.0	<0.0050	0.0050
4-Chlorotoluene	<0.0050	<5.0	<0.0050	0.0050
1,2-Dibromo-3-chloropropane	<0.010	<10	<0.010	0.010
Dibromochloromethane	<0.0050	<5.0	<0.0050	0.0050
1,2-Dibromoethane (EDB)	<0.0050	<5.0	<0.0050	0.0050
Dibromomethane	<0.0050	<5.0	<0.0050	0.0050
1,4-Dichlorobenzene	<0.0050	<5.0	<0.0050	0.0050
1,3-Dichlorobenzene	<0.0050	<5.0	<0.0050	0.0050

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/14/15	07/14/15	07/14/15
Date Prepared:	07/16/15	07/16/15	07/16/15
Date Analyzed:	07/16/15	07/16/15	07/16/15
AA ID No:	5G15021-01	5G15021-02	5G15021-03
Client ID No:	GMW-69-15'	GMW-69-31'	GMW-69-38'
Matrix:	Soil	Soil	Soil
Dilution Factor:	1	1000	1
			MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035) (continued)

1,2-Dichlorobenzene	<0.0050	<5.0	<0.0050	0.0050
Dichlorodifluoromethane (R12)	<0.0050	<5.0	<0.0050	0.0050
1,1-Dichloroethane	<0.0050	<5.0	<0.0050	0.0050
1,2-Dichloroethane (EDC)	<0.0050	<5.0	<0.0050	0.0050
trans-1,2-Dichloroethylene	<0.0050	<5.0	<0.0050	0.0050
cis-1,2-Dichloroethylene	<0.0050	<5.0	<0.0050	0.0050
1,1-Dichloroethylene	<0.0050	<5.0	<0.0050	0.0050
2,2-Dichloropropane	<0.0050	<5.0	<0.0050	0.0050
1,3-Dichloropropane	<0.0050	<5.0	<0.0050	0.0050
1,2-Dichloropropane	<0.0050	<5.0	<0.0050	0.0050
trans-1,3-Dichloropropylene	<0.0050	<5.0	<0.0050	0.0050
1,1-Dichloropropylene	<0.0050	<5.0	<0.0050	0.0050
cis-1,3-Dichloropropylene	<0.0050	<5.0	<0.0050	0.0050
Diisopropyl ether (DIPE)	<0.0050	<5.0	<0.0050	0.0050
Ethylbenzene	<0.0020	16	<0.0020	0.0020
Ethyl-tert-Butyl Ether (ETBE)	<0.0050	<5.0	<0.0050	0.0050
Gasoline Range Organics (GRO)	<0.50	2100	<0.50	0.50
Hexachlorobutadiene	<0.010	<10	<0.010	0.010
2-Hexanone (MBK)	<0.050	<50	<0.050	0.050
Isopropylbenzene	<0.0050	<5.0	<0.0050	0.0050
4-Isopropyltoluene	<0.0050	<5.0	<0.0050	0.0050
Methyl-tert-Butyl Ether (MTBE)	<0.0050	<5.0	<0.0050	0.0050
Methylene Chloride	<0.050	<50	<0.050	0.050
4-Methyl-2-pentanone (MIBK)	<0.050	<50	<0.050	0.050
Naphthalene	<0.010	<10	<0.010	0.010
n-Propylbenzene	<0.0050	8.5	<0.0050	0.0050

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/14/15	07/14/15	07/14/15
Date Prepared:	07/16/15	07/16/15	07/16/15
Date Analyzed:	07/16/15	07/16/15	07/16/15
AA ID No:	5G15021-01	5G15021-02	5G15021-03
Client ID No:	GMW-69-15'	GMW-69-31'	GMW-69-38'
Matrix:	Soil	Soil	Soil
Dilution Factor:	1	1000	1
			MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035) (continued)

Styrene	<0.0050	<5.0	<0.0050	0.0050
1,1,1,2-Tetrachloroethane	<0.0050	<5.0	<0.0050	0.0050
1,1,2,2-Tetrachloroethane	<0.0050	<5.0	<0.0050	0.0050
Tetrachloroethylene (PCE)	<0.0050	<5.0	<0.0050	0.0050
Toluene	<0.0020	<2.0	<0.0020	0.0020
1,2,4-Trichlorobenzene	<0.0050	<5.0	<0.0050	0.0050
1,2,3-Trichlorobenzene	<0.0050	<5.0	<0.0050	0.0050
1,1,2-Trichloroethane	<0.0050	<5.0	<0.0050	0.0050
1,1,1-Trichloroethane	<0.0050	<5.0	<0.0050	0.0050
Trichloroethylene (TCE)	<0.0050	<5.0	<0.0050	0.0050
Trichlorofluoromethane (R11)	<0.0050	<5.0	<0.0050	0.0050
1,2,3-Trichloropropane	<0.0050	<5.0	<0.0050	0.0050
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.0050	<5.0	<0.0050	0.0050
1,3,5-Trimethylbenzene	<0.0050	18	<0.0050	0.0050
1,2,4-Trimethylbenzene	<0.0050	29	<0.0050	0.0050
Vinyl chloride	<0.0050	<5.0	<0.0050	0.0050
o-Xylene	<0.0020	19	<0.0020	0.0020
m,p-Xylenes	<0.0020	36	<0.0020	0.0020

Surrogates				%REC Limits
4-Bromofluorobenzene	98%	89%	105%	70-140
Dibromofluoromethane	108%	104%	112%	70-140
Toluene-d8	80%	97%	94%	70-140

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: Carbon Chain by GC/FID

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/14/15	07/14/15	07/14/15	
Date Prepared:	07/17/15	07/17/15	07/17/15	
Date Analyzed:	07/20/15	07/20/15	07/20/15	
AA ID No:	5G15021-01	5G15021-02	5G15021-03	
Client ID No:	GMW-69-15'	GMW-69-31'	GMW-69-38'	
Matrix:	Soil	Soil	Soil	
Dilution Factor:	1	1	1	MRL

Carbon Chain Custom (EPA 8015M)

C13-C22	<10	650	<10	10
C23-C32	<10	<10	<10	10
C33-C44	<10	<10	<10	10

Surrogates

o-Terphenyl	85%	86%	84%	<u>%REC Limits</u> 50-150
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Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1606 - EPA 5035

Blank (B5G1606-BLK1)

Prepared & Analyzed: 07/16/15

Acetone	<0.050	0.050	mg/kg
tert-Amyl Methyl Ether (TAME)	<0.0050	0.0050	mg/kg
Benzene	<0.0020	0.0020	mg/kg
Bromobenzene	<0.0050	0.0050	mg/kg
Bromochloromethane	<0.0050	0.0050	mg/kg
Bromodichloromethane	<0.0050	0.0050	mg/kg
Bromoform	<0.0050	0.0050	mg/kg
Bromomethane	<0.0050	0.0050	mg/kg
2-Butanone (MEK)	<0.050	0.050	mg/kg
tert-Butyl alcohol (TBA)	<0.020	0.020	mg/kg
sec-Butylbenzene	<0.0050	0.0050	mg/kg
tert-Butylbenzene	<0.0050	0.0050	mg/kg
n-Butylbenzene	<0.0050	0.0050	mg/kg
Carbon Disulfide	<0.0050	0.0050	mg/kg
Carbon Tetrachloride	<0.0050	0.0050	mg/kg
Chlorobenzene	<0.0050	0.0050	mg/kg
Chloroethane	<0.0050	0.0050	mg/kg
Chloroform	<0.0050	0.0050	mg/kg
Chloromethane	<0.0050	0.0050	mg/kg
2-Chlorotoluene	<0.0050	0.0050	mg/kg
4-Chlorotoluene	<0.0050	0.0050	mg/kg
1,2-Dibromo-3-chloropropane	<0.010	0.010	mg/kg
Dibromochloromethane	<0.0050	0.0050	mg/kg
1,2-Dibromoethane (EDB)	<0.0050	0.0050	mg/kg
Dibromomethane	<0.0050	0.0050	mg/kg
1,4-Dichlorobenzene	<0.0050	0.0050	mg/kg
1,3-Dichlorobenzene	<0.0050	0.0050	mg/kg
1,2-Dichlorobenzene	<0.0050	0.0050	mg/kg
Dichlorodifluoromethane (R12)	<0.0050	0.0050	mg/kg
1,1-Dichloroethane	<0.0050	0.0050	mg/kg
1,2-Dichloroethane (EDC)	<0.0050	0.0050	mg/kg

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1606 - EPA 5035

Blank (B5G1606-BLK1) Continued

Prepared & Analyzed: 07/16/15

trans-1,2-Dichloroethylene	<0.0050	0.0050	mg/kg
cis-1,2-Dichloroethylene	<0.0050	0.0050	mg/kg
1,1-Dichloroethylene	<0.0050	0.0050	mg/kg
2,2-Dichloropropane	<0.0050	0.0050	mg/kg
1,3-Dichloropropane	<0.0050	0.0050	mg/kg
1,2-Dichloropropane	<0.0050	0.0050	mg/kg
trans-1,3-Dichloropropylene	<0.0050	0.0050	mg/kg
1,1-Dichloropropylene	<0.0050	0.0050	mg/kg
cis-1,3-Dichloropropylene	<0.0050	0.0050	mg/kg
Diisopropyl ether (DIPE)	<0.0050	0.0050	mg/kg
Ethylbenzene	<0.0020	0.0020	mg/kg
Ethyl-tert-Butyl Ether (ETBE)	<0.0050	0.0050	mg/kg
Gasoline Range Organics (GRO)	<0.50	0.50	mg/kg
Hexachlorobutadiene	<0.010	0.010	mg/kg
2-Hexanone (MBK)	<0.050	0.050	mg/kg
Isopropylbenzene	<0.0050	0.0050	mg/kg
4-Isopropyltoluene	<0.0050	0.0050	mg/kg
Methyl-tert-Butyl Ether (MTBE)	<0.0050	0.0050	mg/kg
Methylene Chloride	<0.050	0.050	mg/kg
4-Methyl-2-pentanone (MIBK)	<0.050	0.050	mg/kg
Naphthalene	<0.010	0.010	mg/kg
n-Propylbenzene	<0.0050	0.0050	mg/kg
Styrene	<0.0050	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	<0.0050	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	<0.0050	0.0050	mg/kg
Tetrachloroethylene (PCE)	<0.0050	0.0050	mg/kg
Toluene	<0.0020	0.0020	mg/kg
1,2,4-Trichlorobenzene	<0.0050	0.0050	mg/kg
1,2,3-Trichlorobenzene	<0.0050	0.0050	mg/kg
1,1,2-Trichloroethane	<0.0050	0.0050	mg/kg
1,1,1-Trichloroethane	<0.0050	0.0050	mg/kg

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1606 - EPA 5035

Blank (B5G1606-BLK1) Continued

Prepared & Analyzed: 07/16/15

Trichloroethylene (TCE)	<0.0050	0.0050	mg/kg
Trichlorofluoromethane (R11)	<0.0050	0.0050	mg/kg
1,2,3-Trichloropropane	<0.0050	0.0050	mg/kg
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.0050	0.0050	mg/kg
1,3,5-Trimethylbenzene	<0.0050	0.0050	mg/kg
1,2,4-Trimethylbenzene	<0.0050	0.0050	mg/kg
Vinyl chloride	<0.0050	0.0050	mg/kg
o-Xylene	<0.0020	0.0020	mg/kg
m,p-Xylenes	<0.0020	0.0020	mg/kg

Surrogate: 4-Bromofluorobenzene	0.101		mg/kg	0.10	101	70-140
Surrogate: Dibromofluoromethane	0.106		mg/kg	0.10	106	70-140
Surrogate: Toluene-d8	0.0968		mg/kg	0.10	96.8	70-140

LCS (B5G1606-BS1)

Prepared & Analyzed: 07/16/15

Benzene	0.0380	0.0020	mg/kg	0.040	95.0	75-125
Bromodichloromethane	0.0400	0.0050	mg/kg	0.040	100	75-125
Bromoform	0.0407	0.0050	mg/kg	0.040	102	75-125
Carbon Tetrachloride	0.0361	0.0050	mg/kg	0.040	90.2	75-125
Chlorobenzene	0.0387	0.0050	mg/kg	0.040	96.8	75-125
Chloroethane	0.0306	0.0050	mg/kg	0.040	76.6	75-125
Chloroform	0.0376	0.0050	mg/kg	0.040	94.0	75-125
Chloromethane	0.0239	0.0050	mg/kg	0.040	59.8	65-125
Dibromochloromethane	0.0373	0.0050	mg/kg	0.040	93.2	75-125
1,4-Dichlorobenzene	0.0367	0.0050	mg/kg	0.040	91.8	75-125
1,1-Dichloroethane	0.0364	0.0050	mg/kg	0.040	90.9	70-125
1,2-Dichloroethane (EDC)	0.0399	0.0050	mg/kg	0.040	99.8	75-125
trans-1,2-Dichloroethylene	0.0397	0.0050	mg/kg	0.040	99.2	75-125
cis-1,2-Dichloroethylene	0.0361	0.0050	mg/kg	0.040	90.3	75-125
1,1-Dichloroethylene	0.0349	0.0050	mg/kg	0.040	87.2	70-130
1,2-Dichloropropane	0.0386	0.0050	mg/kg	0.040	96.6	75-130
cis-1,3-Dichloropropylene	0.0386	0.0050	mg/kg	0.040	96.4	75-125

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1606 - EPA 5035

LCS (B5G1606-BS1) Continued

Prepared & Analyzed: 07/16/15

Ethylbenzene	0.0352	0.0020	mg/kg	0.040		88.0	75-125			
Methyl-tert-Butyl Ether (MTBE)	0.0392	0.0050	mg/kg	0.040		98.0	75-125			
Methylene Chloride	0.0405	0.050	mg/kg	0.040		101	75-130			
1,1,2,2-Tetrachloroethane	0.0367	0.0050	mg/kg	0.040		91.7	70-135			
Tetrachloroethylene (PCE)	0.0408	0.0050	mg/kg	0.040		102	75-125			
Toluene	0.0360	0.0020	mg/kg	0.040		90.0	75-125			
1,1,2-Trichloroethane	0.0376	0.0050	mg/kg	0.040		94.0	75-125			
1,1,1-Trichloroethane	0.0367	0.0050	mg/kg	0.040		91.8	75-125			
Trichloroethylene (TCE)	0.0420	0.0050	mg/kg	0.040		105	75-125			
Vinyl chloride	0.0364	0.0050	mg/kg	0.040		91.0	75-125			
o-Xylene	0.0388	0.0020	mg/kg	0.040		97.1	75-125			

Surrogate: 4-Bromofluorobenzene	0.0974		mg/kg	0.10		97.4	70-140			
Surrogate: Dibromofluoromethane	0.105		mg/kg	0.10		105	70-140			
Surrogate: Toluene-d8	0.0994		mg/kg	0.10		99.4	70-140			

LCS Dup (B5G1606-BSD1)

Prepared: 07/16/15 Analyzed: 07/17/15

Benzene	0.0448	0.0020	mg/kg	0.040		112	75-125	16.5	30	
Bromodichloromethane	0.0429	0.0050	mg/kg	0.040		107	75-125	6.95	30	
Bromoform	0.0394	0.0050	mg/kg	0.040		98.4	75-125	3.25	30	
Carbon Tetrachloride	0.0439	0.0050	mg/kg	0.040		110	75-125	19.6	30	
Chlorobenzene	0.0375	0.0050	mg/kg	0.040		93.8	75-125	3.15	30	
Chloroethane	0.0327	0.0050	mg/kg	0.040		81.8	75-125	6.57	30	
Chloroform	0.0425	0.0050	mg/kg	0.040		106	75-125	12.3	30	
Chloromethane	0.0240	0.0050	mg/kg	0.040		60.0	65-125	0.417	30	***
Dibromochloromethane	0.0363	0.0050	mg/kg	0.040		90.7	75-125	2.72	30	
1,4-Dichlorobenzene	0.0367	0.0050	mg/kg	0.040		91.7	75-125	0.0545	30	
1,1-Dichloroethane	0.0419	0.0050	mg/kg	0.040		105	70-125	14.3	30	
1,2-Dichloroethane (EDC)	0.0443	0.0050	mg/kg	0.040		111	75-125	10.4	30	
trans-1,2-Dichloroethylene	0.0456	0.0050	mg/kg	0.040		114	75-125	14.0	30	
cis-1,2-Dichloroethylene	0.0441	0.0050	mg/kg	0.040		110	75-125	19.8	30	
1,1-Dichloroethylene	0.0490	0.0050	mg/kg	0.040		122	70-130	33.6	30	**
1,2-Dichloropropane	0.0427	0.0050	mg/kg	0.040		107	75-130	9.98	30	

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1606 - EPA 5035

LCS Dup (B5G1606-BSD1) Continued

Prepared: 07/16/15 Analyzed: 07/17/15

cis-1,3-Dichloropropylene	0.0416	0.0050	mg/kg	0.040		104	75-125	7.54	30	
Ethylbenzene	0.0370	0.0020	mg/kg	0.040		92.6	75-125	5.04	30	
Methyl-tert-Butyl Ether (MTBE)	0.0426	0.0050	mg/kg	0.040		106	75-125	8.31	30	
Methylene Chloride	0.0457	0.050	mg/kg	0.040		114	75-130	12.0	30	
1,1,2,2-Tetrachloroethane	0.0334	0.0050	mg/kg	0.040		83.6	70-135	9.30	30	
Tetrachloroethylene (PCE)	0.0399	0.0050	mg/kg	0.040		99.8	75-125	2.08	30	
Toluene	0.0361	0.0020	mg/kg	0.040		90.2	75-125	0.167	30	
1,1,2-Trichloroethane	0.0358	0.0050	mg/kg	0.040		89.5	75-125	4.90	30	
1,1,1-Trichloroethane	0.0438	0.0050	mg/kg	0.040		109	75-125	17.5	30	
Trichloroethylene (TCE)	0.0481	0.0050	mg/kg	0.040		120	75-125	13.5	30	
Vinyl chloride	0.0393	0.0050	mg/kg	0.040		98.2	75-125	7.72	30	
o-Xylene	0.0376	0.0020	mg/kg	0.040		93.9	75-125	3.35	30	

Surrogate: 4-Bromofluorobenzene 0.0966

mg/kg 0.10 96.6 70-140

Surrogate: Dibromofluoromethane 0.117

mg/kg 0.10 117 70-140

Surrogate: Toluene-d8 0.0950

mg/kg 0.10 95.0 70-140

Carbon Chain by GC/FID - Quality Control

Batch B5G1714 - EPA 3550B

Blank (B5G1714-BLK1)

Prepared: 07/17/15 Analyzed: 07/20/15

C13-C22	<10	10	mg/kg							
C23-C32	<10	10	mg/kg							
C33-C44	<10	10	mg/kg							

Surrogate: o-Terphenyl

10.4 mg/kg 10 104 50-150

LCS (B5G1714-BS1)

Prepared: 07/17/15 Analyzed: 07/20/15

Diesel Range Organics as Diesel 155 10 mg/kg 200 77.5 70-130

Surrogate: o-Terphenyl

8.76 mg/kg 10 87.6 50-150

LCS Dup (B5G1714-BSD1)

Prepared: 07/17/15 Analyzed: 07/20/15

Diesel Range Organics as Diesel 167 10 mg/kg 200 83.3 70-130 7.19 40

Surrogate: o-Terphenyl

7.91 mg/kg 10 79.1 50-150

Matrix Spike (B5G1714-MS1)

Source: 5G16003-07 Prepared: 07/17/15 Analyzed: 07/21/15

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Carbon Chain by GC/FID - Quality Control									
<i>Batch B5G1714 - EPA 3550B</i>									
Matrix Spike (B5G1714-MS1) Continued Source: 5G16003-07 Prepared: 07/17/15 Analyzed: 07/21/15									
Diesel Range Organics as Diesel	220	10	mg/kg	200		108 60-140			
Surrogate: o-Terphenyl	11.2		mg/kg	10		110 50-150			
Matrix Spike Dup (B5G1714-MSD1) Source: 5G16003-07 Prepared: 07/17/15 Analyzed: 07/21/15									
Diesel Range Organics as Diesel	218	10	mg/kg	200		108 60-140	0.932	40	
Surrogate: o-Terphenyl	10.8		mg/kg	10		107 50-150			

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331415
Date Received: 07/15/15
Date Reported: 07/23/15

Special Notes

[1] = ** : Exceeds RPD limit

[2] = *** : Exceeds lower control limit

Gasoline Range Organics (GRO) concentration represents the C4-C12 carbon range.

Viorel Vasile
Operations Manager



9765 ETON AVE., CHATSWORTH, CA 91311

Tel: 818-998-5547 FAX: 818-998-7258

Client: The Source Group, Inc.

Project Name / No.:	Norwalk	04-NDLA-008
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Project Manager: Paul Parmentier

Site Address: 15306 Norwalk Blvd.

Phone: (562) 597-1055

City: Norwalk

xx

State & Zip:

TAT Turnaround Codes **

① = Same Day Rush
④ = 72 Hour Rush

② = 24 Hour Rush
⑤ = 5 Day Rush

③ = 48 Hour Rush
X = 10 Working Days (Standard TAT)

[illegible]

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.



9765 Eton Avenue
Chatsworth
California 91311
Tel: (818) 998-5547
Fax: (818) 998-7258

July 23, 2015

Neil Irish

The Source Group, Inc. (SH)

1962 Freeman Ave.

Signal Hill, CA 90755

Re : DFSP Norwalk / 04-NDLA-001

A5331419 / 5G16002

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 07/16/15 07:54 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report or require additional information please call me at American Analytics.

Sincerely,

Viorel Vasile

Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
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8260B/5035 +OXY+TPHG

GMW-68-18.5'	5G16002-01	Soil	5	07/15/15 09:56	07/16/15 07:54
GMW-68-27'	5G16002-02	Soil	5	07/15/15 11:18	07/16/15 07:54
GMW-68-32'	5G16002-03	Soil	5	07/15/15 11:25	07/16/15 07:54
GMW-68-34.5'	5G16002-04	Soil	5	07/15/15 11:28	07/16/15 07:54
GMW-68-39.5'	5G16002-05	Soil	5	07/15/15 13:20	07/16/15 07:54
GMW-68-44'	5G16002-06	Soil	5	07/15/15 13:27	07/16/15 07:54

Carbon Chain Custom

GMW-68-18.5'	5G16002-01	Soil	5	07/15/15 09:56	07/16/15 07:54
GMW-68-27'	5G16002-02	Soil	5	07/15/15 11:18	07/16/15 07:54
GMW-68-32'	5G16002-03	Soil	5	07/15/15 11:25	07/16/15 07:54
GMW-68-34.5'	5G16002-04	Soil	5	07/15/15 11:28	07/16/15 07:54
GMW-68-39.5'	5G16002-05	Soil	5	07/15/15 13:20	07/16/15 07:54
GMW-68-44'	5G16002-06	Soil	5	07/15/15 13:27	07/16/15 07:54

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/15/15	07/15/15	07/15/15	07/15/15
Date Prepared:	07/16/15	07/16/15	07/17/15	07/17/15
Date Analyzed:	07/16/15	07/16/15	07/17/15	07/17/15
AA ID No:	5G16002-01	5G16002-02	5G16002-03	5G16002-04
Client ID No:	GMW-68-18.5'	GMW-68-27'	GMW-68-32'	GMW-68-34.5'
Matrix:	Soil	Soil	Soil	Soil
Dilution Factor:	1	1	100	100
				MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035)

Acetone	<0.050	<0.050	<5.0	<5.0	0.050
tert-Amyl Methyl Ether (TAME)	<0.0050	<0.0050	<0.50	<0.50	0.0050
Benzene	<0.0020	<0.0020	0.84	1.3	0.0020
Bromobenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
Bromochloromethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
Bromodichloromethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
Bromoform	<0.0050	<0.0050	<0.50	<0.50	0.0050
Bromomethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
2-Butanone (MEK)	<0.050	<0.050	<5.0	<5.0	0.050
tert-Butyl alcohol (TBA)	<0.020	<0.020	<2.0	<2.0	0.020
sec-Butylbenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
tert-Butylbenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
n-Butylbenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
Carbon Disulfide	<0.0050	<0.0050	<0.50	<0.50	0.0050
Carbon Tetrachloride	<0.0050	<0.0050	<0.50	<0.50	0.0050
Chlorobenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
Chloroethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
Chloroform	<0.0050	<0.0050	<0.50	<0.50	0.0050
Chloromethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
2-Chlorotoluene	<0.0050	<0.0050	<0.50	<0.50	0.0050
4-Chlorotoluene	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,2-Dibromo-3-chloropropane	<0.010	<0.010	<1.0	<1.0	0.010
Dibromochloromethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,2-Dibromoethane (EDB)	<0.0050	<0.0050	<0.50	<0.50	0.0050
Dibromomethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,4-Dichlorobenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,3-Dichlorobenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/15/15	07/15/15	07/15/15	07/15/15
Date Prepared:	07/16/15	07/16/15	07/17/15	07/17/15
Date Analyzed:	07/16/15	07/16/15	07/17/15	07/17/15
AA ID No:	5G16002-01	5G16002-02	5G16002-03	5G16002-04
Client ID No:	GMW-68-18.5'	GMW-68-27'	GMW-68-32'	GMW-68-34.5'
Matrix:	Soil	Soil	Soil	Soil
Dilution Factor:	1	1	100	100
				MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035) (continued)

1,2-Dichlorobenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
Dichlorodifluoromethane (R12)	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,1-Dichloroethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,2-Dichloroethane (EDC)	<0.0050	<0.0050	<0.50	<0.50	0.0050
trans-1,2-Dichloroethylene	<0.0050	<0.0050	<0.50	<0.50	0.0050
cis-1,2-Dichloroethylene	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,1-Dichloroethylene	<0.0050	<0.0050	<0.50	<0.50	0.0050
2,2-Dichloropropane	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,3-Dichloropropane	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,2-Dichloropropane	<0.0050	<0.0050	<0.50	<0.50	0.0050
trans-1,3-Dichloropropylene	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,1-Dichloropropylene	<0.0050	<0.0050	<0.50	<0.50	0.0050
cis-1,3-Dichloropropylene	<0.0050	<0.0050	<0.50	<0.50	0.0050
Diisopropyl ether (DIPE)	<0.0050	<0.0050	<0.50	<0.50	0.0050
Ethylbenzene	<0.0020	<0.0020	1.8	0.52	0.0020
Ethyl-tert-Butyl Ether (ETBE)	<0.0050	<0.0050	<0.50	<0.50	0.0050
Gasoline Range Organics (GRO)	<0.50	<0.50	180	<50	0.50
Hexachlorobutadiene	<0.010	<0.010	<1.0	<1.0	0.010
2-Hexanone (MBK)	<0.050	<0.050	<5.0	<5.0	0.050
Isopropylbenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
4-Isopropyltoluene	<0.0050	<0.0050	<0.50	<0.50	0.0050
Methyl-tert-Butyl Ether (MTBE)	<0.0050	<0.0050	<0.50	<0.50	0.0050
Methylene Chloride	<0.050	<0.050	<5.0	<5.0	0.050
4-Methyl-2-pentanone (MIBK)	<0.050	<0.050	<5.0	<5.0	0.050
Naphthalene	<0.010	<0.010	<1.0	<1.0	0.010
n-Propylbenzene	<0.0050	<0.0050	0.72	<0.50	0.0050

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/15/15	07/15/15	07/15/15	07/15/15	
Date Prepared:	07/16/15	07/16/15	07/17/15	07/17/15	
Date Analyzed:	07/16/15	07/16/15	07/17/15	07/17/15	
AA ID No:	5G16002-01	5G16002-02	5G16002-03	5G16002-04	
Client ID No:	GMW-68-18.5'	GMW-68-27'	GMW-68-32'	GMW-68-34.5'	
Matrix:	Soil	Soil	Soil	Soil	
Dilution Factor:	1	1	100	100	MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035) (continued)

Styrene	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,1,1,2-Tetrachloroethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,1,2,2-Tetrachloroethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
Tetrachloroethylene (PCE)	<0.0050	<0.0050	<0.50	<0.50	0.0050
Toluene	<0.0020	<0.0020	<0.20	2.6	0.0020
1,2,4-Trichlorobenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,2,3-Trichlorobenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,1,2-Trichloroethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,1,1-Trichloroethane	<0.0050	<0.0050	<0.50	<0.50	0.0050
Trichloroethylene (TCE)	<0.0050	<0.0050	<0.50	<0.50	0.0050
Trichlorofluoromethane (R11)	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,2,3-Trichloropropane	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,3,5-Trimethylbenzene	<0.0050	<0.0050	<0.50	<0.50	0.0050
1,2,4-Trimethylbenzene	<0.0050	<0.0050	2.9	<0.50	0.0050
Vinyl chloride	<0.0050	<0.0050	<0.50	<0.50	0.0050
o-Xylene	<0.0020	<0.0020	2.7	0.91	0.0020
m,p-Xylenes	<0.0020	<0.0020	2.6	2.4	0.0020

Surrogates

					%REC Limits
4-Bromofluorobenzene	103%	93%	87%	83%	70-140
Dibromofluoromethane	120%	127%	97%	102%	70-140
Toluene-d8	94%	94%	98%	96%	70-140

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/15/15	07/15/15	
Date Prepared:	07/17/15	07/16/15	
Date Analyzed:	07/17/15	07/16/15	
AA ID No:	5G16002-05	5G16002-06	
Client ID No:	GMW-68-39.5'	GMW-68-44'	
Matrix:	Soil	Soil	
Dilution Factor:	100	1	MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035)

Acetone	<5.0	<0.050	0.050
tert-Amyl Methyl Ether (TAME)	<0.50	<0.0050	0.0050
Benzene	0.27	<0.0020	0.0020
Bromobenzene	<0.50	<0.0050	0.0050
Bromochloromethane	<0.50	<0.0050	0.0050
Bromodichloromethane	<0.50	<0.0050	0.0050
Bromoform	<0.50	<0.0050	0.0050
Bromomethane	<0.50	<0.0050	0.0050
2-Butanone (MEK)	<5.0	<0.050	0.050
tert-Butyl alcohol (TBA)	<2.0	<0.020	0.020
sec-Butylbenzene	<0.50	<0.0050	0.0050
tert-Butylbenzene	<0.50	<0.0050	0.0050
n-Butylbenzene	<0.50	<0.0050	0.0050
Carbon Disulfide	<0.50	<0.0050	0.0050
Carbon Tetrachloride	<0.50	<0.0050	0.0050
Chlorobenzene	<0.50	<0.0050	0.0050
Chloroethane	<0.50	<0.0050	0.0050
Chloroform	<0.50	<0.0050	0.0050
Chloromethane	<0.50	<0.0050	0.0050
2-Chlorotoluene	<0.50	<0.0050	0.0050
4-Chlorotoluene	<0.50	<0.0050	0.0050
1,2-Dibromo-3-chloropropane	<1.0	<0.010	0.010
Dibromochloromethane	<0.50	<0.0050	0.0050
1,2-Dibromoethane (EDB)	<0.50	<0.0050	0.0050
Dibromomethane	<0.50	<0.0050	0.0050
1,4-Dichlorobenzene	<0.50	<0.0050	0.0050
1,3-Dichlorobenzene	<0.50	<0.0050	0.0050

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/15/15	07/15/15	
Date Prepared:	07/17/15	07/16/15	
Date Analyzed:	07/17/15	07/16/15	
AA ID No:	5G16002-05	5G16002-06	
Client ID No:	GMW-68-39.5'	GMW-68-44'	
Matrix:	Soil	Soil	
Dilution Factor:	100	1	MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035) (continued)

1,2-Dichlorobenzene	<0.50	<0.0050	0.0050
Dichlorodifluoromethane (R12)	<0.50	<0.0050	0.0050
1,1-Dichloroethane	<0.50	<0.0050	0.0050
1,2-Dichloroethane (EDC)	<0.50	<0.0050	0.0050
trans-1,2-Dichloroethylene	<0.50	<0.0050	0.0050
cis-1,2-Dichloroethylene	<0.50	<0.0050	0.0050
1,1-Dichloroethylene	<0.50	<0.0050	0.0050
2,2-Dichloropropane	<0.50	<0.0050	0.0050
1,3-Dichloropropane	<0.50	<0.0050	0.0050
1,2-Dichloropropane	<0.50	<0.0050	0.0050
trans-1,3-Dichloropropylene	<0.50	<0.0050	0.0050
1,1-Dichloropropylene	<0.50	<0.0050	0.0050
cis-1,3-Dichloropropylene	<0.50	<0.0050	0.0050
Diisopropyl ether (DIPE)	<0.50	<0.0050	0.0050
Ethylbenzene	<0.20	<0.0020	0.0020
Ethyl-tert-Butyl Ether (ETBE)	<0.50	<0.0050	0.0050
Gasoline Range Organics (GRO)	<50	<0.50	0.50
Hexachlorobutadiene	<1.0	<0.010	0.010
2-Hexanone (MBK)	<5.0	<0.050	0.050
Isopropylbenzene	<0.50	<0.0050	0.0050
4-Isopropyltoluene	<0.50	<0.0050	0.0050
Methyl-tert-Butyl Ether (MTBE)	<0.50	<0.0050	0.0050
Methylene Chloride	<5.0	<0.050	0.050
4-Methyl-2-pentanone (MIBK)	<5.0	<0.050	0.050
Naphthalene	<1.0	<0.010	0.010
n-Propylbenzene	<0.50	<0.0050	0.0050

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: VOCs, OXY & TPHG by GC/MS EPA 5035

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/15/15	07/15/15	
Date Prepared:	07/17/15	07/16/15	
Date Analyzed:	07/17/15	07/16/15	
AA ID No:	5G16002-05	5G16002-06	
Client ID No:	GMW-68-39.5'	GMW-68-44'	
Matrix:	Soil	Soil	
Dilution Factor:	100	1	MRL

8260B/5035 +OXY+TPHG (EPA 8260B/5035) (continued)

Styrene	<0.50	<0.0050	0.0050
1,1,1,2-Tetrachloroethane	<0.50	<0.0050	0.0050
1,1,2,2-Tetrachloroethane	<0.50	<0.0050	0.0050
Tetrachloroethylene (PCE)	<0.50	<0.0050	0.0050
Toluene	<0.20	<0.0020	0.0020
1,2,4-Trichlorobenzene	<0.50	<0.0050	0.0050
1,2,3-Trichlorobenzene	<0.50	<0.0050	0.0050
1,1,2-Trichloroethane	<0.50	<0.0050	0.0050
1,1,1-Trichloroethane	<0.50	<0.0050	0.0050
Trichloroethylene (TCE)	<0.50	<0.0050	0.0050
Trichlorofluoromethane (R11)	<0.50	<0.0050	0.0050
1,2,3-Trichloropropane	<0.50	<0.0050	0.0050
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.50	<0.0050	0.0050
1,3,5-Trimethylbenzene	<0.50	<0.0050	0.0050
1,2,4-Trimethylbenzene	<0.50	<0.0050	0.0050
Vinyl chloride	<0.50	<0.0050	0.0050
o-Xylene	0.31	<0.0020	0.0020
m,p-Xylenes	0.82	<0.0020	0.0020

Surrogates

			<u>%REC Limits</u>
4-Bromofluorobenzene	89%	102%	70-140
Dibromofluoromethane	107%	117%	70-140
Toluene-d8	97%	96%	70-140

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: Carbon Chain by GC/FID

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/15/15	07/15/15	07/15/15	07/15/15
Date Prepared:	07/17/15	07/17/15	07/17/15	07/17/15
Date Analyzed:	07/20/15	07/20/15	07/20/15	07/20/15
AA ID No:	5G16002-01	5G16002-02	5G16002-03	5G16002-04
Client ID No:	GMW-68-18.5'	GMW-68-27'	GMW-68-32'	GMW-68-34.5'
Matrix:	Soil	Soil	Soil	Soil
Dilution Factor:	1	1	1	1

MRL

Carbon Chain Custom (EPA 8015M)

C13-C22	<10	<10	42	<10	10
C23-C32	<10	<10	<10	<10	10
C33-C44	<10	<10	<10	<10	10

Surrogates

o-Terphenyl	87%	86%	86%	86%	<u>%REC Limits</u> 50-150
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Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk
Method: Carbon Chain by GC/FID

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15
Units: mg/kg

Date Sampled:	07/15/15	07/15/15	
Date Prepared:	07/17/15	07/17/15	
Date Analyzed:	07/20/15	07/20/15	
AA ID No:	5G16002-05	5G16002-06	
Client ID No:	GMW-68-39.5'	GMW-68-44'	
Matrix:	Soil	Soil	
Dilution Factor:	1	1	MRL

Carbon Chain Custom (EPA 8015M)

C13-C22	<10	<10	10
C23-C32	<10	<10	10
C33-C44	<10	<10	10

<u>Surrogates</u>			<u>%REC Limits</u>
o-Terphenyl	86%	89%	50-150

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1606 - EPA 5035

Blank (B5G1606-BLK1)

Prepared & Analyzed: 07/16/15

Acetone	<0.050	0.050	mg/kg
tert-Amyl Methyl Ether (TAME)	<0.0050	0.0050	mg/kg
Benzene	<0.0020	0.0020	mg/kg
Bromobenzene	<0.0050	0.0050	mg/kg
Bromochloromethane	<0.0050	0.0050	mg/kg
Bromodichloromethane	<0.0050	0.0050	mg/kg
Bromoform	<0.0050	0.0050	mg/kg
Bromomethane	<0.0050	0.0050	mg/kg
2-Butanone (MEK)	<0.050	0.050	mg/kg
tert-Butyl alcohol (TBA)	<0.020	0.020	mg/kg
sec-Butylbenzene	<0.0050	0.0050	mg/kg
tert-Butylbenzene	<0.0050	0.0050	mg/kg
n-Butylbenzene	<0.0050	0.0050	mg/kg
Carbon Disulfide	<0.0050	0.0050	mg/kg
Carbon Tetrachloride	<0.0050	0.0050	mg/kg
Chlorobenzene	<0.0050	0.0050	mg/kg
Chloroethane	<0.0050	0.0050	mg/kg
Chloroform	<0.0050	0.0050	mg/kg
Chloromethane	<0.0050	0.0050	mg/kg
2-Chlorotoluene	<0.0050	0.0050	mg/kg
4-Chlorotoluene	<0.0050	0.0050	mg/kg
1,2-Dibromo-3-chloropropane	<0.010	0.010	mg/kg
Dibromochloromethane	<0.0050	0.0050	mg/kg
1,2-Dibromoethane (EDB)	<0.0050	0.0050	mg/kg
Dibromomethane	<0.0050	0.0050	mg/kg
1,4-Dichlorobenzene	<0.0050	0.0050	mg/kg
1,3-Dichlorobenzene	<0.0050	0.0050	mg/kg
1,2-Dichlorobenzene	<0.0050	0.0050	mg/kg
Dichlorodifluoromethane (R12)	<0.0050	0.0050	mg/kg
1,1-Dichloroethane	<0.0050	0.0050	mg/kg
1,2-Dichloroethane (EDC)	<0.0050	0.0050	mg/kg

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1606 - EPA 5035

Blank (B5G1606-BLK1) Continued

Prepared & Analyzed: 07/16/15

trans-1,2-Dichloroethylene	<0.0050	0.0050	mg/kg
cis-1,2-Dichloroethylene	<0.0050	0.0050	mg/kg
1,1-Dichloroethylene	<0.0050	0.0050	mg/kg
2,2-Dichloropropane	<0.0050	0.0050	mg/kg
1,3-Dichloropropane	<0.0050	0.0050	mg/kg
1,2-Dichloropropane	<0.0050	0.0050	mg/kg
trans-1,3-Dichloropropylene	<0.0050	0.0050	mg/kg
1,1-Dichloropropylene	<0.0050	0.0050	mg/kg
cis-1,3-Dichloropropylene	<0.0050	0.0050	mg/kg
Diisopropyl ether (DIPE)	<0.0050	0.0050	mg/kg
Ethylbenzene	<0.0020	0.0020	mg/kg
Ethyl-tert-Butyl Ether (ETBE)	<0.0050	0.0050	mg/kg
Gasoline Range Organics (GRO)	<0.50	0.50	mg/kg
Hexachlorobutadiene	<0.010	0.010	mg/kg
2-Hexanone (MBK)	<0.050	0.050	mg/kg
Isopropylbenzene	<0.0050	0.0050	mg/kg
4-Isopropyltoluene	<0.0050	0.0050	mg/kg
Methyl-tert-Butyl Ether (MTBE)	<0.0050	0.0050	mg/kg
Methylene Chloride	<0.050	0.050	mg/kg
4-Methyl-2-pentanone (MIBK)	<0.050	0.050	mg/kg
Naphthalene	<0.010	0.010	mg/kg
n-Propylbenzene	<0.0050	0.0050	mg/kg
Styrene	<0.0050	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	<0.0050	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	<0.0050	0.0050	mg/kg
Tetrachloroethylene (PCE)	<0.0050	0.0050	mg/kg
Toluene	<0.0020	0.0020	mg/kg
1,2,4-Trichlorobenzene	<0.0050	0.0050	mg/kg
1,2,3-Trichlorobenzene	<0.0050	0.0050	mg/kg
1,1,2-Trichloroethane	<0.0050	0.0050	mg/kg
1,1,1-Trichloroethane	<0.0050	0.0050	mg/kg

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1606 - EPA 5035

Blank (B5G1606-BLK1) Continued

Prepared & Analyzed: 07/16/15

Trichloroethylene (TCE)	<0.0050	0.0050	mg/kg
Trichlorofluoromethane (R11)	<0.0050	0.0050	mg/kg
1,2,3-Trichloropropane	<0.0050	0.0050	mg/kg
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.0050	0.0050	mg/kg
1,3,5-Trimethylbenzene	<0.0050	0.0050	mg/kg
1,2,4-Trimethylbenzene	<0.0050	0.0050	mg/kg
Vinyl chloride	<0.0050	0.0050	mg/kg
o-Xylene	<0.0020	0.0020	mg/kg
m,p-Xylenes	<0.0020	0.0020	mg/kg

Surrogate: 4-Bromofluorobenzene	0.101		mg/kg	0.10	101	70-140
Surrogate: Dibromofluoromethane	0.106		mg/kg	0.10	106	70-140
Surrogate: Toluene-d8	0.0968		mg/kg	0.10	96.8	70-140

LCS (B5G1606-BS1)

Prepared & Analyzed: 07/16/15

Benzene	0.0380	0.0020	mg/kg	0.040	95.0	75-125
Bromodichloromethane	0.0400	0.0050	mg/kg	0.040	100	75-125
Bromoform	0.0407	0.0050	mg/kg	0.040	102	75-125
Carbon Tetrachloride	0.0361	0.0050	mg/kg	0.040	90.2	75-125
Chlorobenzene	0.0387	0.0050	mg/kg	0.040	96.8	75-125
Chloroethane	0.0306	0.0050	mg/kg	0.040	76.6	75-125
Chloroform	0.0376	0.0050	mg/kg	0.040	94.0	75-125
Chloromethane	0.0239	0.0050	mg/kg	0.040	59.8	65-125
Dibromochloromethane	0.0373	0.0050	mg/kg	0.040	93.2	75-125
1,4-Dichlorobenzene	0.0367	0.0050	mg/kg	0.040	91.8	75-125
1,1-Dichloroethane	0.0364	0.0050	mg/kg	0.040	90.9	70-125
1,2-Dichloroethane (EDC)	0.0399	0.0050	mg/kg	0.040	99.8	75-125
trans-1,2-Dichloroethylene	0.0397	0.0050	mg/kg	0.040	99.2	75-125
cis-1,2-Dichloroethylene	0.0361	0.0050	mg/kg	0.040	90.3	75-125
1,1-Dichloroethylene	0.0349	0.0050	mg/kg	0.040	87.2	70-130
1,2-Dichloropropane	0.0386	0.0050	mg/kg	0.040	96.6	75-130
cis-1,3-Dichloropropylene	0.0386	0.0050	mg/kg	0.040	96.4	75-125

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Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1606 - EPA 5035

LCS (B5G1606-BS1) Continued

Prepared & Analyzed: 07/16/15

Ethylbenzene	0.0352	0.0020	mg/kg	0.040		88.0	75-125			
Methyl-tert-Butyl Ether (MTBE)	0.0392	0.0050	mg/kg	0.040		98.0	75-125			
Methylene Chloride	0.0405	0.050	mg/kg	0.040		101	75-130			
1,1,2,2-Tetrachloroethane	0.0367	0.0050	mg/kg	0.040		91.7	70-135			
Tetrachloroethylene (PCE)	0.0408	0.0050	mg/kg	0.040		102	75-125			
Toluene	0.0360	0.0020	mg/kg	0.040		90.0	75-125			
1,1,2-Trichloroethane	0.0376	0.0050	mg/kg	0.040		94.0	75-125			
1,1,1-Trichloroethane	0.0367	0.0050	mg/kg	0.040		91.8	75-125			
Trichloroethylene (TCE)	0.0420	0.0050	mg/kg	0.040		105	75-125			
Vinyl chloride	0.0364	0.0050	mg/kg	0.040		91.0	75-125			
o-Xylene	0.0388	0.0020	mg/kg	0.040		97.1	75-125			

Surrogate: 4-Bromofluorobenzene 0.0974

mg/kg 0.10 97.4 70-140

Surrogate: Dibromofluoromethane 0.105

mg/kg 0.10 105 70-140

Surrogate: Toluene-d8 0.0994

mg/kg 0.10 99.4 70-140

LCS Dup (B5G1606-BSD1)

Prepared: 07/16/15 Analyzed: 07/17/15

Benzene	0.0448	0.0020	mg/kg	0.040		112	75-125	16.5	30	
Bromodichloromethane	0.0429	0.0050	mg/kg	0.040		107	75-125	6.95	30	
Bromoform	0.0394	0.0050	mg/kg	0.040		98.4	75-125	3.25	30	
Carbon Tetrachloride	0.0439	0.0050	mg/kg	0.040		110	75-125	19.6	30	
Chlorobenzene	0.0375	0.0050	mg/kg	0.040		93.8	75-125	3.15	30	
Chloroethane	0.0327	0.0050	mg/kg	0.040		81.8	75-125	6.57	30	
Chloroform	0.0425	0.0050	mg/kg	0.040		106	75-125	12.3	30	
Chloromethane	0.0240	0.0050	mg/kg	0.040		60.0	65-125	0.417	30	***a
Dibromochloromethane	0.0363	0.0050	mg/kg	0.040		90.7	75-125	2.72	30	
1,4-Dichlorobenzene	0.0367	0.0050	mg/kg	0.040		91.7	75-125	0.0545	30	
1,1-Dichloroethane	0.0419	0.0050	mg/kg	0.040		105	70-125	14.3	30	
1,2-Dichloroethane (EDC)	0.0443	0.0050	mg/kg	0.040		111	75-125	10.4	30	
trans-1,2-Dichloroethylene	0.0456	0.0050	mg/kg	0.040		114	75-125	14.0	30	
cis-1,2-Dichloroethylene	0.0441	0.0050	mg/kg	0.040		110	75-125	19.8	30	
1,1-Dichloroethylene	0.0490	0.0050	mg/kg	0.040		122	70-130	33.6	30	**
1,2-Dichloropropane	0.0427	0.0050	mg/kg	0.040		107	75-130	9.98	30	

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1606 - EPA 5035

LCS Dup (B5G1606-BSD1) Continued

Prepared: 07/16/15 Analyzed: 07/17/15

cis-1,3-Dichloropropylene	0.0416	0.0050	mg/kg	0.040		104	75-125	7.54	30	
Ethylbenzene	0.0370	0.0020	mg/kg	0.040		92.6	75-125	5.04	30	
Methyl-tert-Butyl Ether (MTBE)	0.0426	0.0050	mg/kg	0.040		106	75-125	8.31	30	
Methylene Chloride	0.0457	0.050	mg/kg	0.040		114	75-130	12.0	30	
1,1,2,2-Tetrachloroethane	0.0334	0.0050	mg/kg	0.040		83.6	70-135	9.30	30	
Tetrachloroethylene (PCE)	0.0399	0.0050	mg/kg	0.040		99.8	75-125	2.08	30	
Toluene	0.0361	0.0020	mg/kg	0.040		90.2	75-125	0.167	30	
1,1,2-Trichloroethane	0.0358	0.0050	mg/kg	0.040		89.5	75-125	4.90	30	
1,1,1-Trichloroethane	0.0438	0.0050	mg/kg	0.040		109	75-125	17.5	30	
Trichloroethylene (TCE)	0.0481	0.0050	mg/kg	0.040		120	75-125	13.5	30	
Vinyl chloride	0.0393	0.0050	mg/kg	0.040		98.2	75-125	7.72	30	
o-Xylene	0.0376	0.0020	mg/kg	0.040		93.9	75-125	3.35	30	

Surrogate: 4-Bromofluorobenzene	0.0966		mg/kg	0.10		96.6	70-140			
Surrogate: Dibromofluoromethane	0.117		mg/kg	0.10		117	70-140			
Surrogate: Toluene-d8	0.0950		mg/kg	0.10		95.0	70-140			

Batch B5G1704 - EPA 5035

Blank (B5G1704-BLK1)

Prepared & Analyzed: 07/17/15

Acetone	<0.050	0.050	mg/kg							
tert-Amyl Methyl Ether (TAME)	<0.0050	0.0050	mg/kg							
Benzene	<0.0020	0.0020	mg/kg							
Bromobenzene	<0.0050	0.0050	mg/kg							
Bromochloromethane	<0.0050	0.0050	mg/kg							
Bromodichloromethane	<0.0050	0.0050	mg/kg							
Bromoform	<0.0050	0.0050	mg/kg							
Bromomethane	<0.0050	0.0050	mg/kg							
2-Butanone (MEK)	<0.050	0.050	mg/kg							
tert-Butyl alcohol (TBA)	<0.020	0.020	mg/kg							
sec-Butylbenzene	<0.0050	0.0050	mg/kg							
tert-Butylbenzene	<0.0050	0.0050	mg/kg							
n-Butylbenzene	<0.0050	0.0050	mg/kg							
Carbon Disulfide	<0.0050	0.0050	mg/kg							

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1704 - EPA 5035

Blank (B5G1704-BLK1) Continued

Prepared & Analyzed: 07/17/15

Carbon Tetrachloride	<0.0050	0.0050	mg/kg
Chlorobenzene	<0.0050	0.0050	mg/kg
Chloroethane	<0.0050	0.0050	mg/kg
Chloroform	<0.0050	0.0050	mg/kg
Chloromethane	<0.0050	0.0050	mg/kg
2-Chlorotoluene	<0.0050	0.0050	mg/kg
4-Chlorotoluene	<0.0050	0.0050	mg/kg
1,2-Dibromo-3-chloropropane	<0.010	0.010	mg/kg
Dibromochloromethane	<0.0050	0.0050	mg/kg
1,2-Dibromoethane (EDB)	<0.0050	0.0050	mg/kg
Dibromomethane	<0.0050	0.0050	mg/kg
1,4-Dichlorobenzene	<0.0050	0.0050	mg/kg
1,3-Dichlorobenzene	<0.0050	0.0050	mg/kg
1,2-Dichlorobenzene	<0.0050	0.0050	mg/kg
Dichlorodifluoromethane (R12)	<0.0050	0.0050	mg/kg
1,1-Dichloroethane	<0.0050	0.0050	mg/kg
1,2-Dichloroethane (EDC)	<0.0050	0.0050	mg/kg
trans-1,2-Dichloroethylene	<0.0050	0.0050	mg/kg
cis-1,2-Dichloroethylene	<0.0050	0.0050	mg/kg
1,1-Dichloroethylene	<0.0050	0.0050	mg/kg
2,2-Dichloropropane	<0.0050	0.0050	mg/kg
1,3-Dichloropropane	<0.0050	0.0050	mg/kg
1,2-Dichloropropane	<0.0050	0.0050	mg/kg
trans-1,3-Dichloropropylene	<0.0050	0.0050	mg/kg
1,1-Dichloropropylene	<0.0050	0.0050	mg/kg
cis-1,3-Dichloropropylene	<0.0050	0.0050	mg/kg
Diisopropyl ether (DIPE)	<0.0050	0.0050	mg/kg
Ethylbenzene	<0.0020	0.0020	mg/kg
Ethyl-tert-Butyl Ether (ETBE)	<0.0050	0.0050	mg/kg
Gasoline Range Organics (GRO)	<0.50	0.50	mg/kg
Hexachlorobutadiene	<0.010	0.010	mg/kg

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control

Batch B5G1704 - EPA 5035

Blank (B5G1704-BLK1) Continued

Prepared & Analyzed: 07/17/15

2-Hexanone (MBK)	<0.050	0.050	mg/kg
Isopropylbenzene	<0.0050	0.0050	mg/kg
4-Isopropyltoluene	<0.0050	0.0050	mg/kg
Methyl-tert-Butyl Ether (MTBE)	<0.0050	0.0050	mg/kg
Methylene Chloride	<0.050	0.050	mg/kg
4-Methyl-2-pentanone (MIBK)	<0.050	0.050	mg/kg
Naphthalene	<0.010	0.010	mg/kg
n-Propylbenzene	<0.0050	0.0050	mg/kg
Styrene	<0.0050	0.0050	mg/kg
1,1,1,2-Tetrachloroethane	<0.0050	0.0050	mg/kg
1,1,2,2-Tetrachloroethane	<0.0050	0.0050	mg/kg
Tetrachloroethylene (PCE)	<0.0050	0.0050	mg/kg
Toluene	<0.0020	0.0020	mg/kg
1,2,4-Trichlorobenzene	<0.0050	0.0050	mg/kg
1,2,3-Trichlorobenzene	<0.0050	0.0050	mg/kg
1,1,2-Trichloroethane	<0.0050	0.0050	mg/kg
1,1,1-Trichloroethane	<0.0050	0.0050	mg/kg
Trichloroethylene (TCE)	<0.0050	0.0050	mg/kg
Trichlorofluoromethane (R11)	<0.0050	0.0050	mg/kg
1,2,3-Trichloropropane	<0.0050	0.0050	mg/kg
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.0050	0.0050	mg/kg
1,3,5-Trimethylbenzene	<0.0050	0.0050	mg/kg
1,2,4-Trimethylbenzene	<0.0050	0.0050	mg/kg
Vinyl chloride	<0.0050	0.0050	mg/kg
o-Xylene	<0.0020	0.0020	mg/kg
m,p-Xylenes	<0.0020	0.0020	mg/kg

Surrogate: 4-Bromofluorobenzene	0.0976	mg/kg	0.10	97.6	70-140
Surrogate: Dibromofluoromethane	0.120	mg/kg	0.10	120	70-140
Surrogate: Toluene-d8	0.0955	mg/kg	0.10	95.5	70-140

LCS (B5G1704-BS1)

Prepared & Analyzed: 07/17/15

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control*Batch B5G1704 - EPA 5035***LCS (B5G1704-BS1) Continued**

Prepared & Analyzed: 07/17/15

Benzene	0.0443	0.0020	mg/kg	0.040		111	75-125			
Bromodichloromethane	0.0462	0.0050	mg/kg	0.040		116	75-125			
Bromoform	0.0462	0.0050	mg/kg	0.040		115	75-125			
Carbon Tetrachloride	0.0425	0.0050	mg/kg	0.040		106	75-125			
Chlorobenzene	0.0425	0.0050	mg/kg	0.040		106	75-125			
Chloroethane	0.0306	0.0050	mg/kg	0.040		76.4	75-125			
Chloroform	0.0428	0.0050	mg/kg	0.040		107	75-125			
Chloromethane	0.0220	0.0050	mg/kg	0.040		55.0	65-125			***a
Dibromochloromethane	0.0435	0.0050	mg/kg	0.040		109	75-125			
1,4-Dichlorobenzene	0.0418	0.0050	mg/kg	0.040		105	75-125			
1,1-Dichloroethane	0.0407	0.0050	mg/kg	0.040		102	70-125			
1,2-Dichloroethane (EDC)	0.0453	0.0050	mg/kg	0.040		113	75-125			
trans-1,2-Dichloroethylene	0.0444	0.0050	mg/kg	0.040		111	75-125			
cis-1,2-Dichloroethylene	0.0409	0.0050	mg/kg	0.040		102	75-125			
1,1-Dichloroethylene	0.0380	0.0050	mg/kg	0.040		94.9	70-130			
1,2-Dichloropropane	0.0428	0.0050	mg/kg	0.040		107	75-130			
cis-1,3-Dichloropropylene	0.0434	0.0050	mg/kg	0.040		108	75-125			
Ethylbenzene	0.0401	0.0020	mg/kg	0.040		100	75-125			
Methyl-tert-Butyl Ether (MTBE)	0.0415	0.0050	mg/kg	0.040		104	75-125			
Methylene Chloride	0.0431	0.050	mg/kg	0.040		108	75-130			
1,1,2,2-Tetrachloroethane	0.0397	0.0050	mg/kg	0.040		99.3	70-135			
Tetrachloroethylene (PCE)	0.0455	0.0050	mg/kg	0.040		114	75-125			
Toluene	0.0404	0.0020	mg/kg	0.040		101	75-125			
1,1,2-Trichloroethane	0.0418	0.0050	mg/kg	0.040		104	75-125			
1,1,1-Trichloroethane	0.0419	0.0050	mg/kg	0.040		105	75-125			
Trichloroethylene (TCE)	0.0440	0.0050	mg/kg	0.040		110	75-125			
Vinyl chloride	0.0353	0.0050	mg/kg	0.040		88.3	75-125			
o-Xylene	0.0423	0.0020	mg/kg	0.040		106	75-125			
Surrogate: 4-Bromofluorobenzene	0.0975		mg/kg	0.10		97.5	70-140			
Surrogate: Dibromofluoromethane	0.107		mg/kg	0.10		107	70-140			
Surrogate: Toluene-d8	0.0972		mg/kg	0.10		97.2	70-140			

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPHG by GC/MS EPA 5035 - Quality Control									
Batch B5G1704 - EPA 5035									
LCS Dup (B5G1704-BSD1)									
Prepared: 07/17/15 Analyzed: 07/18/15									
Benzene	0.0387	0.0020	mg/kg	0.040		96.6 75-125	13.5	30	
Bromodichloromethane	0.0412	0.0050	mg/kg	0.040		103 75-125	11.3	30	
Bromoform	0.0434	0.0050	mg/kg	0.040		109 75-125	6.07	30	
Carbon Tetrachloride	0.0388	0.0050	mg/kg	0.040		97.0 75-125	9.06	30	
Chlorobenzene	0.0390	0.0050	mg/kg	0.040		97.5 75-125	8.54	30	
Chloroethane	0.0295	0.0050	mg/kg	0.040		73.8 75-125	3.39	30	***
Chloroform	0.0394	0.0050	mg/kg	0.040		98.6 75-125	8.26	30	
Chloromethane	0.0213	0.0050	mg/kg	0.040		53.3 65-125	3.14	30	***
Dibromochloromethane	0.0396	0.0050	mg/kg	0.040		98.9 75-125	9.40	30	
1,4-Dichlorobenzene	0.0376	0.0050	mg/kg	0.040		94.1 75-125	10.6	30	
1,1-Dichloroethane	0.0362	0.0050	mg/kg	0.040		90.4 70-125	11.9	30	
1,2-Dichloroethane (EDC)	0.0402	0.0050	mg/kg	0.040		100 75-125	12.1	30	
trans-1,2-Dichloroethylene	0.0390	0.0050	mg/kg	0.040		97.4 75-125	13.1	30	
cis-1,2-Dichloroethylene	0.0380	0.0050	mg/kg	0.040		95.1 75-125	7.25	30	
1,1-Dichloroethylene	0.0348	0.0050	mg/kg	0.040		86.9 70-130	8.80	30	
1,2-Dichloropropane	0.0388	0.0050	mg/kg	0.040		96.9 75-130	10.0	30	
cis-1,3-Dichloropropylene	0.0361	0.0050	mg/kg	0.040		90.3 75-125	18.3	30	
Ethylbenzene	0.0342	0.0020	mg/kg	0.040		85.5 75-125	16.0	30	
Methyl-tert-Butyl Ether (MTBE)	0.0398	0.0050	mg/kg	0.040		99.5 75-125	4.18	30	
Methylene Chloride	0.0405	0.050	mg/kg	0.040		101 75-130	6.27	30	
1,1,2,2-Tetrachloroethane	0.0371	0.0050	mg/kg	0.040		92.8 70-135	6.77	30	
Tetrachloroethylene (PCE)	0.0412	0.0050	mg/kg	0.040		103 75-125	9.87	30	
Toluene	0.0366	0.0020	mg/kg	0.040		91.4 75-125	9.88	30	
1,1,2-Trichloroethane	0.0386	0.0050	mg/kg	0.040		96.6 75-125	7.76	30	
1,1,1-Trichloroethane	0.0383	0.0050	mg/kg	0.040		95.8 75-125	8.93	30	
Trichloroethylene (TCE)	0.0438	0.0050	mg/kg	0.040		110 75-125	0.364	30	
Vinyl chloride	0.0347	0.0050	mg/kg	0.040		86.7 75-125	1.77	30	
o-Xylene	0.0382	0.0020	mg/kg	0.040		95.5 75-125	10.1	30	
Surrogate: 4-Bromofluorobenzene	0.101		mg/kg	0.10		101 70-140			
Surrogate: Dibromofluoromethane	0.109		mg/kg	0.10		109 70-140			
Surrogate: Toluene-d8	0.0988		mg/kg	0.10		98.8 70-140			

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Carbon Chain by GC/FID - Quality Control										
<i>Batch B5G1714 - EPA 3550B</i>										
Blank (B5G1714-BLK1)				Prepared: 07/17/15 Analyzed: 07/20/15						
C13-C22	<10	10	mg/kg							
C23-C32	<10	10	mg/kg							
C33-C44	<10	10	mg/kg							
Surrogate: o-Terphenyl	10.4		mg/kg	10		104	50-150			
LCS (B5G1714-BS1)				Prepared: 07/17/15 Analyzed: 07/20/15						
Diesel Range Organics as Diesel	155	10	mg/kg	200		77.5	70-130			
Surrogate: o-Terphenyl	8.76		mg/kg	10		87.6	50-150			
LCS Dup (B5G1714-BSD1)				Prepared: 07/17/15 Analyzed: 07/20/15						
Diesel Range Organics as Diesel	167	10	mg/kg	200		83.3	70-130	7.19	40	
Surrogate: o-Terphenyl	7.91		mg/kg	10		79.1	50-150			
Matrix Spike (B5G1714-MS1)				Source: 5G16003-07 Prepared: 07/17/15 Analyzed: 07/21/15						
Diesel Range Organics as Diesel	220	10	mg/kg	200		108	60-140			
Surrogate: o-Terphenyl	11.2		mg/kg	10		110	50-150			
Matrix Spike Dup (B5G1714-MSD1)				Source: 5G16003-07 Prepared: 07/17/15 Analyzed: 07/21/15						
Diesel Range Organics as Diesel	218	10	mg/kg	200		108	60-140	0.932	40	
Surrogate: o-Terphenyl	10.8		mg/kg	10		107	50-150			

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk

AA Project No: A5331419
Date Received: 07/16/15
Date Reported: 07/23/15

Special Notes

[1] = ** : Exceeds RPD limit
[2] = *** : Exceeds lower control
[3] = ***a : Exceeds lower control limit

Gasoline Range Organics (GRO) concentration represents the C4-C12 carbon range.

Viorel Vasile
Operations Manager



ANALYSIS REQUESTED (Test Name)

For Laboratory Use

REVISED

DATE 7/6/15 Time 08:15

TAT N Days Sign: _____

A.A. Project No.: AS331419 / SG11202

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.



9765 Eton Avenue
Chatsworth
California 91311
Tel: (818) 998-5547
Fax: (818) 998-7258

August 06, 2015

Neil Irish

The Source Group, Inc. (SH)

1962 Freeman Ave.

Signal Hill, CA 90755

Re : DFSP Norwalk GW Sampling / 04-NDLA-001

A5331426 / 5G22014

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 07/22/15 14:09 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report or require additional information please call me at American Analytics.

Sincerely,

Viorel Vasile

Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
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8260B+OXY+TPHG

QCTB-1	5G22014-01	Water	5	07/21/15 06:00	07/22/15 14:09
GMW-69	5G22014-02	Water	5	07/21/15 10:20	07/22/15 14:09
GMW-67	5G22014-03	Water	5	07/21/15 13:20	07/22/15 14:09
GMW-68	5G22014-04	Water	5	07/22/15 10:15	07/22/15 14:09

Carbon Chain Custom

GMW-69	5G22014-02	Water	5	07/21/15 10:20	07/22/15 14:09
GMW-67	5G22014-03	Water	5	07/21/15 13:20	07/22/15 14:09
GMW-68	5G22014-04	Water	5	07/22/15 10:15	07/22/15 14:09

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling
Method: VOCs, OXY & TPH Gasoline by GC/MS

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15
Units: ug/L

Date Sampled:	07/21/15	07/21/15	07/21/15	07/22/15	
Date Prepared:	07/28/15	07/28/15	07/28/15	07/28/15	
Date Analyzed:	07/28/15	07/28/15	07/28/15	07/28/15	
AA ID No:	5G22014-01	5G22014-02	5G22014-03	5G22014-04	
Client ID No:	QCTB-1	GMW-69	GMW-67	GMW-68	
Matrix:	Water	Water	Water	Water	
Dilution Factor:	1	10	1	20	MRL

8260B+OXY+TPHG (EPA 8260B)

Acetone	<10	<100	<10	<200	10
tert-Amyl Methyl Ether (TAME)	<2.0	<20	<2.0	<40	2.0
Benzene	<0.50	500	21	2400	0.50
Bromobenzene	<0.50	<5.0	<0.50	<10	0.50
Bromochloromethane	<0.50	<5.0	<0.50	<10	0.50
Bromodichloromethane	<0.50	<5.0	<0.50	<10	0.50
Bromoform	<0.50	<5.0	<0.50	<10	0.50
Bromomethane	<0.50	<5.0	<0.50	<10	0.50
2-Butanone (MEK)	<10	<100	<10	<200	10
tert-Butyl alcohol (TBA)	<10	<100	<10	<200	10
sec-Butylbenzene	<0.50	<5.0	<0.50	<10	0.50
tert-Butylbenzene	<0.50	<5.0	<0.50	<10	0.50
n-Butylbenzene	<0.50	7.1	<0.50	11	0.50
Carbon Disulfide	<0.50	<5.0	<0.50	<10	0.50
Carbon Tetrachloride	<0.50	<5.0	<0.50	<10	0.50
Chlorobenzene	<0.50	<5.0	<0.50	<10	0.50
Chloroethane	<0.50	<5.0	<0.50	<10	0.50
Chloroform	<0.50	<5.0	<0.50	<10	0.50
Chloromethane	<0.50	<5.0	<0.50	<10	0.50
2-Chlorotoluene	<0.50	<5.0	<0.50	<10	0.50
4-Chlorotoluene	<0.50	<5.0	<0.50	<10	0.50
1,2-Dibromo-3-chloropropane	<1.0	<10	<1.0	<20	1.0
Dibromochloromethane	<0.50	<5.0	<0.50	<10	0.50
1,2-Dibromoethane (EDB)	<0.50	<5.0	<0.50	<10	0.50
Dibromomethane	<0.50	<5.0	<0.50	<10	0.50
1,3-Dichlorobenzene	<0.50	<5.0	<0.50	<10	0.50
1,2-Dichlorobenzene	<0.50	<5.0	<0.50	<10	0.50

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling
Method: VOCs, OXY & TPH Gasoline by GC/MS

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15
Units: ug/L

Date Sampled:	07/21/15	07/21/15	07/21/15	07/22/15
Date Prepared:	07/28/15	07/28/15	07/28/15	07/28/15
Date Analyzed:	07/28/15	07/28/15	07/28/15	07/28/15
AA ID No:	5G22014-01	5G22014-02	5G22014-03	5G22014-04
Client ID No:	QCTB-1	GMW-69	GMW-67	GMW-68
Matrix:	Water	Water	Water	Water
Dilution Factor:	1	10	1	20
				MRL

8260B+OXY+TPHG (EPA 8260B) (continued)

1,4-Dichlorobenzene	<0.50	<5.0	<0.50	<10	0.50
Dichlorodifluoromethane (R12)	<0.50	<5.0	<0.50	<10	0.50
1,1-Dichloroethane	<0.50	<5.0	<0.50	<10	0.50
1,2-Dichloroethane (EDC)	<0.50	<5.0	<0.50	<10	0.50
1,1-Dichloroethylene	<0.50	<5.0	<0.50	<10	0.50
trans-1,2-Dichloroethylene	<0.50	<5.0	<0.50	<10	0.50
cis-1,2-Dichloroethylene	<0.50	<5.0	<0.50	<10	0.50
1,2-Dichloropropane	<0.50	<5.0	<0.50	<10	0.50
2,2-Dichloropropane	<0.50	<5.0	<0.50	<10	0.50
1,3-Dichloropropane	<0.50	<5.0	<0.50	<10	0.50
cis-1,3-Dichloropropylene	<0.50	<5.0	<0.50	<10	0.50
trans-1,3-Dichloropropylene	<0.50	<5.0	<0.50	<10	0.50
1,1-Dichloropropylene	<0.50	<5.0	<0.50	<10	0.50
Diisopropyl ether (DIPE)	<2.0	<20	<2.0	<40	2.0
Ethylbenzene	<0.50	550	34	990	0.50
Ethyl-tert-Butyl Ether (ETBE)	<2.0	<20	<2.0	<40	2.0
Gasoline Range Organics (GRO)	<100	10000	550	27000	100
Hexachlorobutadiene	<1.0	<10	<1.0	<20	1.0
2-Hexanone (MBK)	<10	<100	<10	<200	10
Isopropylbenzene	<0.50	78	4.1	100	0.50
4-Isopropyltoluene	<1.0	12	<1.0	25	1.0
Methyl-tert-Butyl Ether (MTBE)	<2.0	<20	<2.0	<40	2.0
Methylene Chloride	<5.0	<50	<5.0	<100	5.0
4-Methyl-2-pentanone (MIBK)	<10	<100	<10	<200	10
Naphthalene	<2.0	170	7.0	240	2.0
n-Propylbenzene	<0.50	89	4.2	120	0.50

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling
Method: VOCs, OXY & TPH Gasoline by GC/MS

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15
Units: ug/L

Date Sampled:	07/21/15	07/21/15	07/21/15	07/22/15
Date Prepared:	07/28/15	07/28/15	07/28/15	07/28/15
Date Analyzed:	07/28/15	07/28/15	07/28/15	07/28/15
AA ID No:	5G22014-01	5G22014-02	5G22014-03	5G22014-04
Client ID No:	QCTB-1	GMW-69	GMW-67	GMW-68
Matrix:	Water	Water	Water	Water
Dilution Factor:	1	10	1	20
				MRL

8260B+OXY+TPHG (EPA 8260B) (continued)

Styrene	<0.50	<5.0	<0.50	<10	0.50
1,1,1,2-Tetrachloroethane	<0.50	<5.0	<0.50	<10	0.50
1,1,2,2-Tetrachloroethane	<0.50	<5.0	<0.50	<10	0.50
Tetrachloroethylene (PCE)	<0.50	<5.0	<0.50	<10	0.50
Toluene	<0.50	14	<0.50	56	0.50
1,2,3-Trichlorobenzene	<0.50	<5.0	<0.50	<10	0.50
1,2,4-Trichlorobenzene	<0.50	<5.0	<0.50	<10	0.50
1,1,1-Trichloroethane	<0.50	<5.0	<0.50	<10	0.50
1,1,2-Trichloroethane	<0.50	<5.0	<0.50	<10	0.50
Trichloroethylene (TCE)	<0.50	<5.0	<0.50	<10	0.50
Trichlorofluoromethane (R11)	<0.50	<5.0	<0.50	<10	0.50
1,2,3-Trichloropropane	<0.50	<5.0	<0.50	<10	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.50	<5.0	<0.50	<10	0.50
1,3,5-Trimethylbenzene	<0.50	68	4.0	220	0.50
1,2,4-Trimethylbenzene	<0.50	280	17	530	0.50
Vinyl chloride	<0.50	<5.0	<0.50	<10	0.50
o-Xylene	<0.50	680	17	1800	0.50
m,p-Xylenes	<1.0	890	57	3400	1.0

Surrogates

					%REC Limits
4-Bromofluorobenzene	98%	97%	99%	97%	70-140
Dibromofluoromethane	106%	108%	111%	112%	70-140
Toluene-d8	92%	92%	91%	91%	70-140

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling
Method: Carbon Chain by GC/FID

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15
Units: mg/L

Date Sampled:	07/21/15	07/21/15	07/22/15	
Date Prepared:	07/27/15	07/27/15	07/27/15	
Date Analyzed:	07/29/15	07/29/15	07/29/15	
AA ID No:	5G22014-02	5G22014-03	5G22014-04	
Client ID No:	GMW-69	GMW-67	GMW-68	
Matrix:	Water	Water	Water	
Dilution Factor:	1	1	1	MRL

Carbon Chain Custom (EPA 8015M)

C13-C22	<0.10	<0.10	0.10	0.10
C23-C32	<0.10	<0.10	<0.10	0.10
C33-C44	<0.10	<0.10	<0.10	0.10

Surrogates

o-Terphenyl	103%	118%	93%	<u>%REC Limits</u> 50-150
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Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPH Gasoline by GC/MS - Quality Control

Batch B5G2804 - EPA 5030B

Blank (B5G2804-BLK1)

Prepared & Analyzed: 07/28/15

Acetone	<10	10	ug/L
tert-Amyl Methyl Ether (TAME)	<2.0	2.0	ug/L
Benzene	<0.50	0.50	ug/L
Bromobenzene	<0.50	0.50	ug/L
Bromochloromethane	<0.50	0.50	ug/L
Bromodichloromethane	<0.50	0.50	ug/L
Bromoform	<0.50	0.50	ug/L
Bromomethane	<0.50	0.50	ug/L
2-Butanone (MEK)	<10	10	ug/L
tert-Butyl alcohol (TBA)	<10	10	ug/L
sec-Butylbenzene	<0.50	0.50	ug/L
tert-Butylbenzene	<0.50	0.50	ug/L
n-Butylbenzene	<0.50	0.50	ug/L
Carbon Disulfide	<0.50	0.50	ug/L
Carbon Tetrachloride	<0.50	0.50	ug/L
Chlorobenzene	<0.50	0.50	ug/L
Chloroethane	<0.50	0.50	ug/L
Chloroform	<0.50	0.50	ug/L
Chloromethane	<0.50	0.50	ug/L
2-Chlorotoluene	<0.50	0.50	ug/L
4-Chlorotoluene	<0.50	0.50	ug/L
1,2-Dibromo-3-chloropropane	<1.0	1.0	ug/L
Dibromochloromethane	<0.50	0.50	ug/L
1,2-Dibromoethane (EDB)	<0.50	0.50	ug/L
Dibromomethane	<0.50	0.50	ug/L
1,3-Dichlorobenzene	<0.50	0.50	ug/L
1,2-Dichlorobenzene	<0.50	0.50	ug/L
1,4-Dichlorobenzene	<0.50	0.50	ug/L
Dichlorodifluoromethane (R12)	<0.50	0.50	ug/L
1,1-Dichloroethane	<0.50	0.50	ug/L
1,2-Dichloroethane (EDC)	<0.50	0.50	ug/L

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPH Gasoline by GC/MS - Quality Control

Batch B5G2804 - EPA 5030B

Blank (B5G2804-BLK1) Continued

Prepared & Analyzed: 07/28/15

1,1-Dichloroethylene	<0.50	0.50	ug/L
trans-1,2-Dichloroethylene	<0.50	0.50	ug/L
cis-1,2-Dichloroethylene	<0.50	0.50	ug/L
1,2-Dichloropropane	<0.50	0.50	ug/L
2,2-Dichloropropane	<0.50	0.50	ug/L
1,3-Dichloropropane	<0.50	0.50	ug/L
cis-1,3-Dichloropropylene	<0.50	0.50	ug/L
trans-1,3-Dichloropropylene	<0.50	0.50	ug/L
1,1-Dichloropropylene	<0.50	0.50	ug/L
Diisopropyl ether (DIPE)	<2.0	2.0	ug/L
Ethylbenzene	<0.50	0.50	ug/L
Ethyl-tert-Butyl Ether (ETBE)	<2.0	2.0	ug/L
Gasoline Range Organics (GRO)	<100	100	ug/L
Hexachlorobutadiene	<1.0	1.0	ug/L
2-Hexanone (MBK)	<10	10	ug/L
Isopropylbenzene	<0.50	0.50	ug/L
4-Isopropyltoluene	<1.0	1.0	ug/L
Methyl-tert-Butyl Ether (MTBE)	<2.0	2.0	ug/L
Methylene Chloride	<5.0	5.0	ug/L
4-Methyl-2-pentanone (MIBK)	<10	10	ug/L
Naphthalene	<2.0	2.0	ug/L
n-Propylbenzene	<0.50	0.50	ug/L
Styrene	<0.50	0.50	ug/L
1,1,1,2-Tetrachloroethane	<0.50	0.50	ug/L
1,1,2,2-Tetrachloroethane	<0.50	0.50	ug/L
Tetrachloroethylene (PCE)	<0.50	0.50	ug/L
Toluene	<0.50	0.50	ug/L
1,2,3-Trichlorobenzene	<0.50	0.50	ug/L
1,2,4-Trichlorobenzene	<0.50	0.50	ug/L
1,1,1-Trichloroethane	<0.50	0.50	ug/L
1,1,2-Trichloroethane	<0.50	0.50	ug/L

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPH Gasoline by GC/MS - Quality Control

Batch B5G2804 - EPA 5030B

Blank (B5G2804-BLK1) Continued

Prepared & Analyzed: 07/28/15

Trichloroethylene (TCE)	<0.50	0.50	ug/L
Trichlorofluoromethane (R11)	<0.50	0.50	ug/L
1,2,3-Trichloropropane	<0.50	0.50	ug/L
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.50	0.50	ug/L
1,3,5-Trimethylbenzene	<0.50	0.50	ug/L
1,2,4-Trimethylbenzene	<0.50	0.50	ug/L
Vinyl chloride	<0.50	0.50	ug/L
o-Xylene	<0.50	0.50	ug/L
m,p-Xylenes	<1.0	1.0	ug/L

Surrogate: 4-Bromofluorobenzene	50.6		ug/L	50	101	70-140
Surrogate: Dibromofluoromethane	54.9		ug/L	50	110	70-140
Surrogate: Toluene-d8	49.7		ug/L	50	99.4	70-140

LCS (B5G2804-BS1)

Prepared & Analyzed: 07/28/15

Benzene	23.2	0.50	ug/L	20	116	75-125
Bromodichloromethane	18.1	0.50	ug/L	20	90.7	75-125
Bromoform	17.8	0.50	ug/L	20	89.0	75-125
Carbon Tetrachloride	19.2	0.50	ug/L	20	96.2	75-125
Chlorobenzene	22.7	0.50	ug/L	20	114	75-125
Chloroethane	22.7	0.50	ug/L	20	113	75-125
Chloroform	19.7	0.50	ug/L	20	98.7	75-125
Chloromethane	17.5	0.50	ug/L	20	87.4	65-125
Dibromochloromethane	19.2	0.50	ug/L	20	96.2	75-125
1,4-Dichlorobenzene	22.1	0.50	ug/L	20	110	75-125
1,1-Dichloroethane	20.7	0.50	ug/L	20	103	70-125
1,2-Dichloroethane (EDC)	16.0	0.50	ug/L	20	80.2	75-125
1,1-Dichloroethylene	18.5	0.50	ug/L	20	92.4	70-130
trans-1,2-Dichloroethylene	23.0	0.50	ug/L	20	115	75-125
cis-1,2-Dichloroethylene	22.4	0.50	ug/L	20	112	75-125
1,2-Dichloropropane	20.0	0.50	ug/L	20	100	75-130
cis-1,3-Dichloropropylene	20.1	0.50	ug/L	20	100	75-125

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPH Gasoline by GC/MS - Quality Control

Batch B5G2804 - EPA 5030B

LCS (B5G2804-BS1) Continued

Prepared & Analyzed: 07/28/15

Ethylbenzene	21.3	0.50	ug/L	20	107	75-125				
Methyl-tert-Butyl Ether (MTBE)	34.4	2.0	ug/L	40	86.0	75-125				
Methylene Chloride	14.7	5.0	ug/L	20	73.5	75-130				**
1,1,2,2-Tetrachloroethane	18.8	0.50	ug/L	20	93.8	70-135				
Tetrachloroethylene (PCE)	23.7	0.50	ug/L	20	119	75-125				
Toluene	23.2	0.50	ug/L	20	116	75-125				
1,1,1-Trichloroethane	19.3	0.50	ug/L	20	96.6	75-125				
1,1,2-Trichloroethane	20.4	0.50	ug/L	20	102	75-125				
Trichloroethylene (TCE)	21.1	0.50	ug/L	20	105	75-125				
Vinyl chloride	17.2	0.50	ug/L	20	86.0	75-125				
o-Xylene	22.6	0.50	ug/L	20	113	75-125				

Surrogate: 4-Bromofluorobenzene

48.3 ug/L 50 96.5 70-140

Surrogate: Dibromofluoromethane

48.8 ug/L 50 97.5 70-140

Surrogate: Toluene-d8

46.9 ug/L 50 93.8 70-140

LCS Dup (B5G2804-BSD1)

Prepared & Analyzed: 07/28/15

Benzene	22.8	0.50	ug/L	20	114	75-125	2.04	30	
Bromodichloromethane	20.2	0.50	ug/L	20	101	75-125	10.5	30	
Bromoform	20.4	0.50	ug/L	20	102	75-125	13.4	30	
Carbon Tetrachloride	19.3	0.50	ug/L	20	96.7	75-125	0.570	30	
Chlorobenzene	23.1	0.50	ug/L	20	115	75-125	1.44	30	
Chloroethane	20.8	0.50	ug/L	20	104	75-125	8.51	30	
Chloroform	19.4	0.50	ug/L	20	97.2	75-125	1.58	30	
Chloromethane	16.8	0.50	ug/L	20	83.8	65-125	4.09	30	
Dibromochloromethane	21.5	0.50	ug/L	20	108	75-125	11.1	30	
1,4-Dichlorobenzene	22.0	0.50	ug/L	20	110	75-125	0.136	30	
1,1-Dichloroethane	19.4	0.50	ug/L	20	96.8	70-125	6.45	30	
1,2-Dichloroethane (EDC)	16.6	0.50	ug/L	20	83.1	75-125	3.55	30	
1,1-Dichloroethylene	16.9	0.50	ug/L	20	84.4	70-130	9.05	30	
trans-1,2-Dichloroethylene	22.6	0.50	ug/L	20	113	75-125	1.93	30	
cis-1,2-Dichloroethylene	22.2	0.50	ug/L	20	111	75-125	0.717	30	
1,2-Dichloropropane	21.8	0.50	ug/L	20	109	75-130	8.60	30	

Viorel Vasile
Operations Manager

**LABORATORY ANALYSIS RESULTS**

Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Notes
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VOCs, OXY & TPH Gasoline by GC/MS - Quality Control

Batch B5G2804 - EPA 5030B

LCS Dup (B5G2804-BSD1) Continued

Prepared & Analyzed: 07/28/15

cis-1,3-Dichloropropylene	21.3	0.50	ug/L	20	106	75-125	6.00	30	
Ethylbenzene	21.1	0.50	ug/L	20	105	75-125	1.32	30	
Methyl-tert-Butyl Ether (MTBE)	36.8	2.0	ug/L	40	92.0	75-125	6.74	30	
Methylene Chloride	17.3	5.0	ug/L	20	86.6	75-130	16.4	30	
1,1,2,2-Tetrachloroethane	21.7	0.50	ug/L	20	108	70-135	14.4	30	
Tetrachloroethylene (PCE)	22.5	0.50	ug/L	20	112	75-125	5.28	30	
Toluene	23.1	0.50	ug/L	20	116	75-125	0.0432	30	
1,1,1-Trichloroethane	19.8	0.50	ug/L	20	98.9	75-125	2.40	30	
1,1,2-Trichloroethane	23.1	0.50	ug/L	20	115	75-125	12.1	30	
Trichloroethylene (TCE)	21.4	0.50	ug/L	20	107	75-125	1.32	30	
Vinyl chloride	17.2	0.50	ug/L	20	85.8	75-125	0.175	30	
o-Xylene	22.6	0.50	ug/L	20	113	75-125	0.221	30	
Surrogate: 4-Bromofluorobenzene	48.6		ug/L	50	97.2	70-140			
Surrogate: Dibromofluoromethane	48.6		ug/L	50	97.1	70-140			
Surrogate: Toluene-d8	46.4		ug/L	50	92.9	70-140			

Carbon Chain by GC/FID - Quality Control

Batch B5G2704 - EPA 3510C

Blank (B5G2704-BLK1)

Prepared: 07/27/15 Analyzed: 07/29/15

C13-C22	<0.10	0.10	mg/L
C23-C32	<0.10	0.10	mg/L
C33-C44	<0.10	0.10	mg/L

Surrogate: o-Terphenyl 0.0442 mg/L 0.040 110 50-150

LCS (B5G2704-BS1)

Prepared: 07/27/15 Analyzed: 07/29/15

Diesel Range Organics as Diesel 0.715 0.10 mg/L 0.80 89.4 75-125

Surrogate: o-Terphenyl 0.0511 mg/L 0.040 128 50-150

LCS Dup (B5G2704-BSD1)

Prepared: 07/27/15 Analyzed: 07/29/15

Diesel Range Organics as Diesel 0.757 0.10 mg/L 0.80 94.6 75-125 5.67 30

Surrogate: o-Terphenyl 0.0549 mg/L 0.040 137 50-150

Viorel Vasile
Operations Manager



LABORATORY ANALYSIS RESULTS

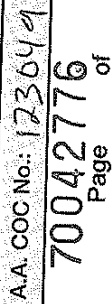
Client: The Source Group, Inc. (SH)
Project No: 04-NDLA-001
Project Name: DFSP Norwalk GW Sampling

AA Project No: A5331426
Date Received: 07/22/15
Date Reported: 08/06/15

Special Notes

[1] = ** : Exceeds lower control limit. QC batch is accepted based on passing LCSD recovery and RPD for this analyte.

Viorel Vasile
Operations Manager



P.O. No.:

07-19-2019				Received by
Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project.				
Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.				

APPENDIX H

LABORATORY REPORT – SOIL PHYSICAL PROPERTIES



UV FLUORESCENCE

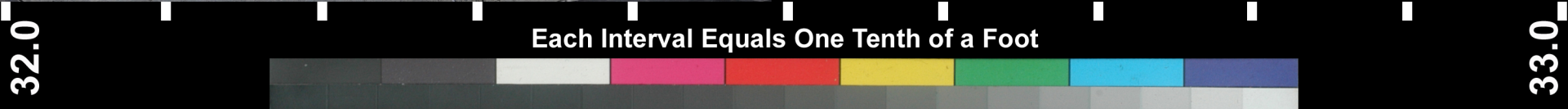
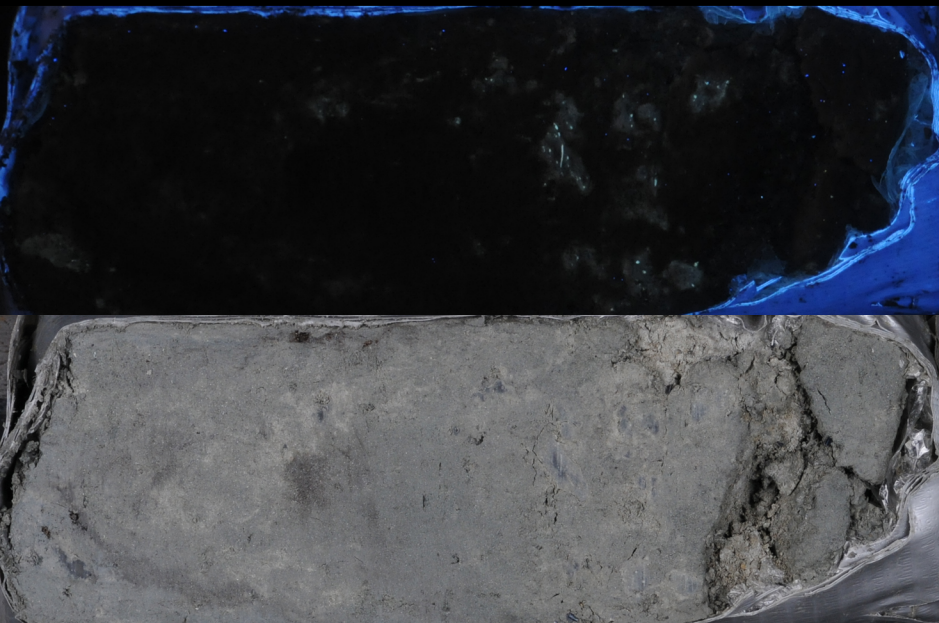
Ultraviolet light core photography is a very useful tool because it can highlight hydrocarbon-containing zones by causing most oils or refined products to fluoresce. Crude oil fluorescence ranges from brown through green for heavy oils, gold blue and bright yellow for high gravity oils; condensates can appear as a very light white to blue-white color. In most instances the heavier oils have darker fluorescence.

Refined products (LNAPLs) fluoresce under UV light but not quite as well as crude oils. In general the longer chained, less refined products fluoresce better than more refined shorter chain hydrocarbons. For example multi-ring aromatics (DNAPLs, PAH) fluoresce much stronger than single ring aromatics like BTEX. Typically the darker the fluorescence color, the heavier the NAPL; the order from heavy to light is generally brown, red, orange, green-gold, gold, blue-gold, bluish white. DNAPLs are the browns, reds, and oranges. Some of the heaviest DNAPLs display a dark brown fluorescence which is possible to capture with camera and long wave UV light.

In UV core photography images the non-hydrocarbon bearing zones appear as purple or black regions, although some minerals such as chalky-limestones also appear purple. Mineral fluorescence especially from shell fragments may be mistaken for hydrocarbons fluorescence. One way to tell the difference is by adding a few drops of solvent to the core. The mineral fluorescence will remain the same but the hydrocarbon fluorescence will appear to flow and diffuse in the solvent. The intensity range of UV fluorescence is characterized by the terms bright, dull, pale, and faint.

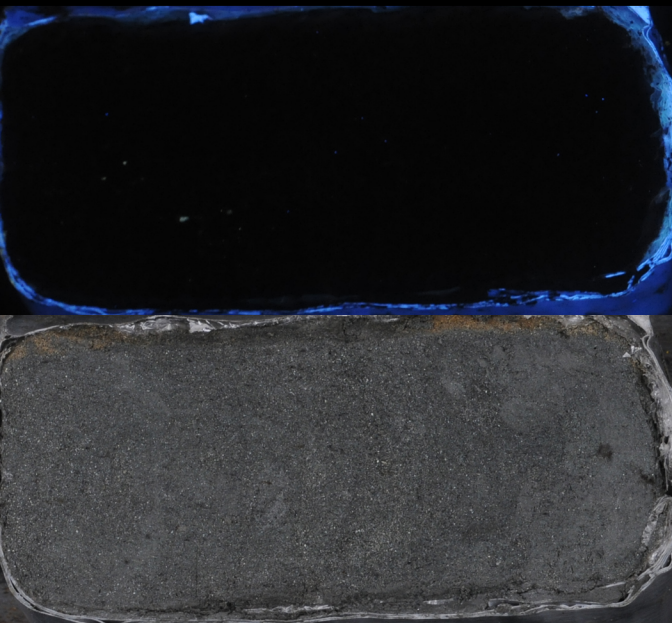
Core ultraviolet fluorescent response is a qualitative characteristic and can change from core to core or over time. Some of the things that may affect UV response are amount of NAPL (saturation - there is a threshold which must be overcome before some NAPLs will fluoresce), water content or washing, lithology, biodegradation, weathering, and NAPL type. Chlorinated solvents typically do not fluoresce as well as other refined products and may need a specific frequency to fluoresce (tunable laser or TARGOST types). PTS Laboratories uses a 365nm long wave tube for our core photography.

The bottom line is that if you have pore fluid saturation data and UV fluorescence data for a certain core interval at a site, you can infer that for the same type of lithology other locations having brighter UV fluorescence have higher NAPL saturation, other locations with similar UV fluorescence have similar NAPL saturation, and locations with less or no UV fluorescence have little or no NAPL saturation.



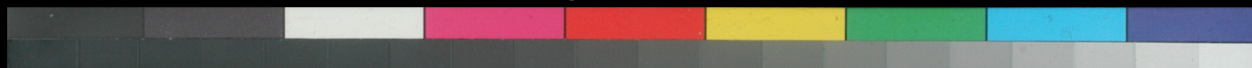
Project: DFSP Norwalk Boring ID: GMW-68

Project No.: 04-NDLA-008



34.0

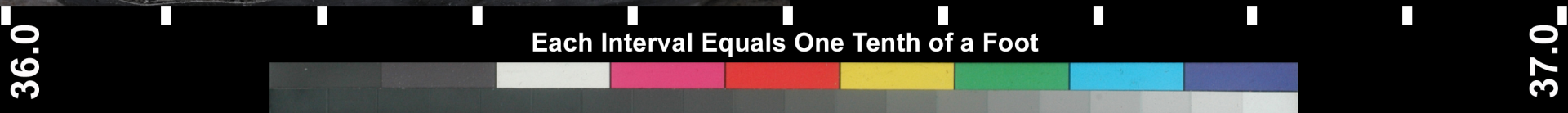
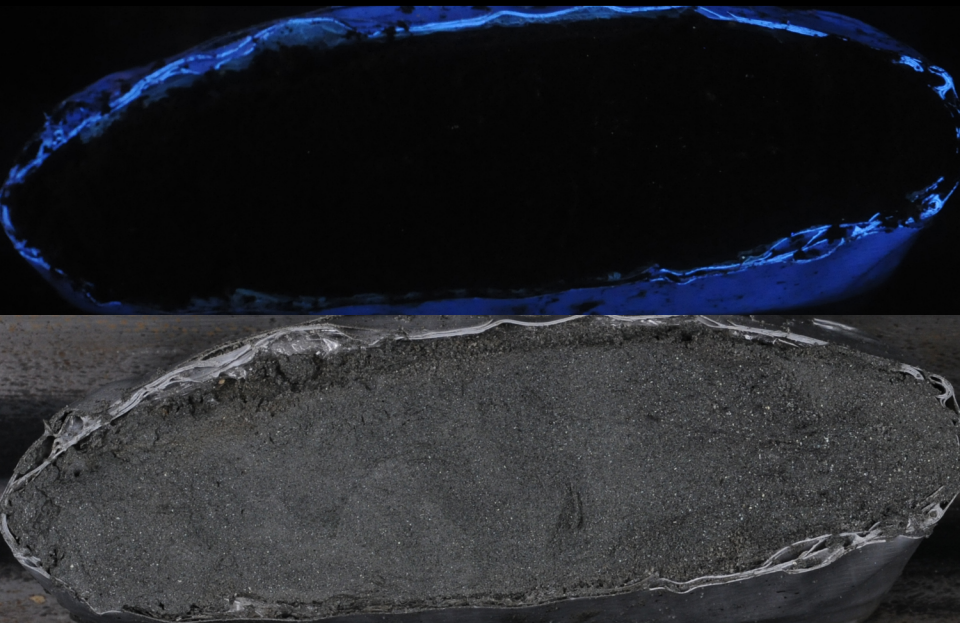
Each Interval Equals One Tenth of a Foot



35.0

Project: DFSP Norwalk Boring ID: GMW-68

Project No.: 04-NDLA-008



Project: DFSP Norwalk Boring ID: GMW-68

Project No.: 04-NDLA-008



8100 Secura Way • Santa Fe Springs, CA 90670
Telephone (562) 347-2500 • Fax (562) 907-3610

September 17, 2015

Daniel Swensson, PG
The Source Group, Inc.
1962 Freeman Avenue
Signal Hill, CA 90755

Re: PTS File No: 45426
Physical Properties Data
DFSP Norwalk; 04-NDLA-008

Dear Mr. Swensson:

Please find enclosed report for Physical Properties analyses conducted upon samples received from your DFSP Norwalk; 04-NDLA-008 project. All analyses were performed by applicable ASTM, EPA, or API methodologies. The cores remain in frozen storage and will be held indefinitely. Please note that core storage will be billed monthly beginning October 1, 2015.

PTS Laboratories Inc. appreciates the opportunity to be of service. If you have any questions or require additional information, please contact Morgan Richards at (562) 347-2509.

Sincerely,
PTS Laboratories, Inc.

for Michael Mark Brady, P.G.
Laboratory Director

Encl.

Project Name: DFSP Norwalk
Project Number: 04-NDLA-008

PTS File No: 45426
Client: The Source Group, Inc.

TEST PROGRAM - 20150807

CORE ID	Depth ft.	Core Recovery ft.	Slab and Core Photo	Pore Fluid Saturation Package	Free Product Mobility				Comments
		Plugs:	1/4:3/4	Vert. 1.5"	Vert. 1.5"				
Date Received: 20150717									
GMW-69-29.5'-30'	29.5-30	0.30							HOLD
GMW-69-30'7"-30'10"	30.6-30.8	0.35							HOLD
GMW-69-35'3"	35.25	0.40							HOLD
GMW-68-32'	32	0.40	*1	X	X				
GMW-68-34'	34	0.35	1						
GMW-68-36'	36	0.50	*1	X	X				
TOTALS:	6 Cores	2.30	3	2	2				6

Laboratory Test Program Notes

Contaminant identification:

Standard TAT for basic analysis is 10 business days.

Samples received cryogenically preserved will be stored frozen at standard core storage rates from sample date of receipt. Core storage charges will be billed monthly or quarterly depending upon project.

Pore Fluid Saturation Package: API RP40 Dean-Stark Method: Includes initial pore fluid saturations, total porosity, air-filled porosity, grain density, dry bulk density and moisture content.

Free Product Mobility Package: Applied centrifugal force demonstrates product mobility; includes residual saturations by Dean-Stark, total porosity, grain and dry bulk density.

*Photograph GMW-68-34' first to determine if integrity of sample will be compromised during slabbing. If cores will remain intact photograph GMW-68-32' & GMW-68-36' and then conduct Pore Fluid Saturation Package and Free Product Mobility Package per James Studer 7/23/15.

PTS File No: 45426
 Client: The Source Group, Inc.
 Report Date: 09/17/15

PHYSICAL PROPERTIES DATA - PORE FLUID SATURATIONS

Project Name: DFSP Norwalk
 Project No: 04-NDLA-008

SAMPLE ID.	DEPTH, ft.	METHODS: SAMPLE ORIENTATION (1)	API RP 40 / ASTM D2216 MOISTURE CONTENT, % weight	API RP 40		API RP 40		API RP 40	
				DENSITY		POROSITY, %Vb (2)		PORE FLUID	
				DRY BULK, g/cc	GRAIN, g/cc	TOTAL	AIR FILLED	SATURATIONS, % Pv (3)	
								WATER	NAPL
GMW-68-32'	32	V	29.7	1.33	2.72	51.1	11.3	74.6	3.3
GMW-68-36'	36	V	32.3	1.32	2.72	51.6	9.0	81.1	1.4

(1) Sample Orientation: H = horizontal; V = vertical; R = remold

(2) Total Porosity = all interconnected pore channels; Air Filled = pore channels not occupied by pore fluids.

(3) Fluid density used to calculate pore fluid saturations: Water = 0.9996 g/cc, NAPL = 0.8600 g/cc.

Vb = Bulk Volume, cc; Pv = Pore Volume, cc; ND = Not Detected

PTS File No: 45426
 Client: The Source Group, Inc.
 Report Date: 09/17/15

FREE PRODUCT MOBILITY: INITIAL AND RESIDUAL SATURATIONS

(Centrifugal method: samples spun under air)

Project Name: DFSP Norwalk
 Project No: 04-NDLA-008

METHODS:				API RP 40		API RP 40	ASTM D425M, DEAN-STARK			
SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENTATION (1)	ANALYSIS DATE	DENSITY		TOTAL POROSITY (2), %Vb	PORE FLUID SATURATIONS (3), % Pv			
				DRY BULK, g/cc	GRAIN, g/cc		Initial Fluid Saturations		After Centrifuge at 1000xG	
							WATER (Swi) SATURATION	NAPL (Soi) SATURATION	WATER (Srw) SATURATION	NAPL (Sor) SATURATION
GMW-68-32'	32	V	20150914	1.40	2.72	48.5	80.7	1.8	54.5	1.7
NOTE: Trace NAPL produced. Produced water clear.										
GMW-68-36'	36	V	20150914	1.32	2.76	52.1	81.2	0.7	15.7	0.7
NOTE: No visible NAPL produced. Produced water clear with faint hydrocarbon odor.										

(1) Sample Orientation: H = horizontal; V = vertical; R = remold

(2) Total Porosity = all interconnected pore channels.

(3) Fluid density used to calculate pore fluid saturations: Water = 0.9996 g/cc, NAPL = 0.8600 g/cc.

Swi = Initial Water Saturation as received prior to centrifuging at 1000xG, Soi = Initial NAPL Saturation as received prior to centrifuging at 1000xG.

Srw = Residual Water Saturation after centrifuging at 1000xG, Sor = Residual NAPL Saturation after centrifuging at 1000xG.

Vb = Bulk Volume, cc; Pv = Pore Volume, cc; ND = Not Detected

Page 5 of 5

APPENDIX I

FIELD GAUGING DATA

DFSP Norwalk 7-22-15
730-800

GAUGING DATA - HOLIFIELD PARK WELLS WELL DEVELOPMENT RECORD

Well ID:	Well Diameter (inches): 4-inch	Site ID: Defense Fuel Support Point Norwalk
Static Water Level (ft bgs):	Total Well Depth (ft bgs): 45 feet bgs	Address: 15306 Norwalk Blvd., Norwalk, CA 90650
Initial Well Depth (ft bgs):	Screen Length (feet): 20 feet	Project Number: 04-NDLA-008/Task 1.0
Final Well Depth (ft bgs):	Screen Depths (ft bgs): 25 - 45 feet bgs	Personnel:

Time	Date	DTW Time	DTP Surge/ Bail	Duration/ Volume	Temp. (°C)	Sp. Cond. (µS/cm)	pH (pH units)	Turbidity (NTU)	Other	Comments (e.g., water clarity, color, odors, silt content, etc.)
	Parameter Stability Guidance:				±0.5 °C	±3%	±0.2 units	±10% if >10		
7 ²⁵ AM	GMW-68	32.27								
7 ³⁵	GMW-69	31.97								
7 ³⁸	GMW-67	32.75								
7 ⁴²	GMW-65	33.31								
7 ⁴⁸	GMW-64	31.92								
7 ⁵⁵	GMW-63	33.32								
8 ⁰⁰	GMW-62	33.31	33.29	0.02 screen						CAGE suspended no well but no sock deployed

Notes: ft bgs = feet bgs °C = degrees Celsius Total Surge Time (minutes): _____
 Temp. = temperature µS/cm = microSiemens per centimeter Volume of Water Added During Development (gallons): _____
 Sp. Cond. = specific conductance NTU = nephelometric turbidity unit Volume of Groundwater Extracted (gallons): _____

APPENDIX J

LABORATORY REPORT – FORENSIC ANALYSIS



forensics

DFSP Norwalk

Report Prepared for:

The Source Group
1962 Freeman Avenue
Signal Hill, CA 90755

Report Prepared By:

Alan Jeffrey, PhD

ZymaX Forensics, 220 William Pitt Way, Pittsburgh, PA 15238

2 September 2015

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INTRODUCTION	3
METHODOLOGY	4
PETROLEUM PRODUCT CHARACTERIZATION	5
CONCLUSIONS	7

Introduction

Two product samples, labeled TF-18 and GW-15, and one groundwater sample, GMW-62, were received on July 29, 2015 for identification of petroleum products in the sample. The following analyses were performed:

1. C₃-C₃₆ whole oil analysis by ASTM D3328 (products)
2. C₈-C₄₀ GC/MS Full Scan by ASTM D5739 (water)

ASTM D3328 cannot be performed on water samples, so an alternative analysis, ASTM D5739, was substituted.

The complete laboratory data report is presented as an Appendix to this report.

Methodology

C₃-C₄₄ whole oil analysis of product samples by GC/FID (ASTM D3328)

Identifies up to 149 compounds in the range between gasoline and residual oil. Includes gasoline-range PIANO analysis. Assists in the identification of types of petroleum products or crude oils present.

Product samples are directly injected into a GC equipped with a 100 meter Petrolcol column to separate the hydrocarbon, which are detected with a flame ionization detector (FID) interfaced to the GC. Hydrocarbons in the range of C₃ to C₄₄ are identified and the peak areas measured. The relative area percent of hydrocarbons in the range of C₃ to C₁₀ are calculated and presented as a PIANO distribution (normalized amounts of paraffins, isoparaffins, aromatics, naphthenes, olefins).

GC/MS Full Scan analysis (ASTM D5739)

Water samples are extracted with methylene chloride solvent and the solvent extract concentrated. Extracts and product samples are directly injected into a GC equipped with a 60 meter DB1 column to separate the hydrocarbons, which are detected with a mass spectrometer (MS) in full scan mode, interfaced to the GC. Hydrocarbons in the range of C₁₀ to C₄₀ are identified. By scanning the ion fragments shown in the following table, chromatograms of a number of classes of hydrocarbons are generated. Aromatic hydrocarbons are identified by scanning over a large number of ion fragments, and the results are normalized in a bar diagram.

ION (M/Z)	COMPOUND CLASS
TIC	All Compounds
85	n-Alkanes
113	Iso-Alkanes and Isoprenoids
83	Alkylcyclohexanes
134	C ₄ -benzenes
123	Bicyclanes
191	Terpanes
217	Steranes
253	Monoaromatic Steranes
231	Triaromatic Steranes
Bar Diagram	Aromatic Hydrocarbon Distribution

Petroleum Product Characterization

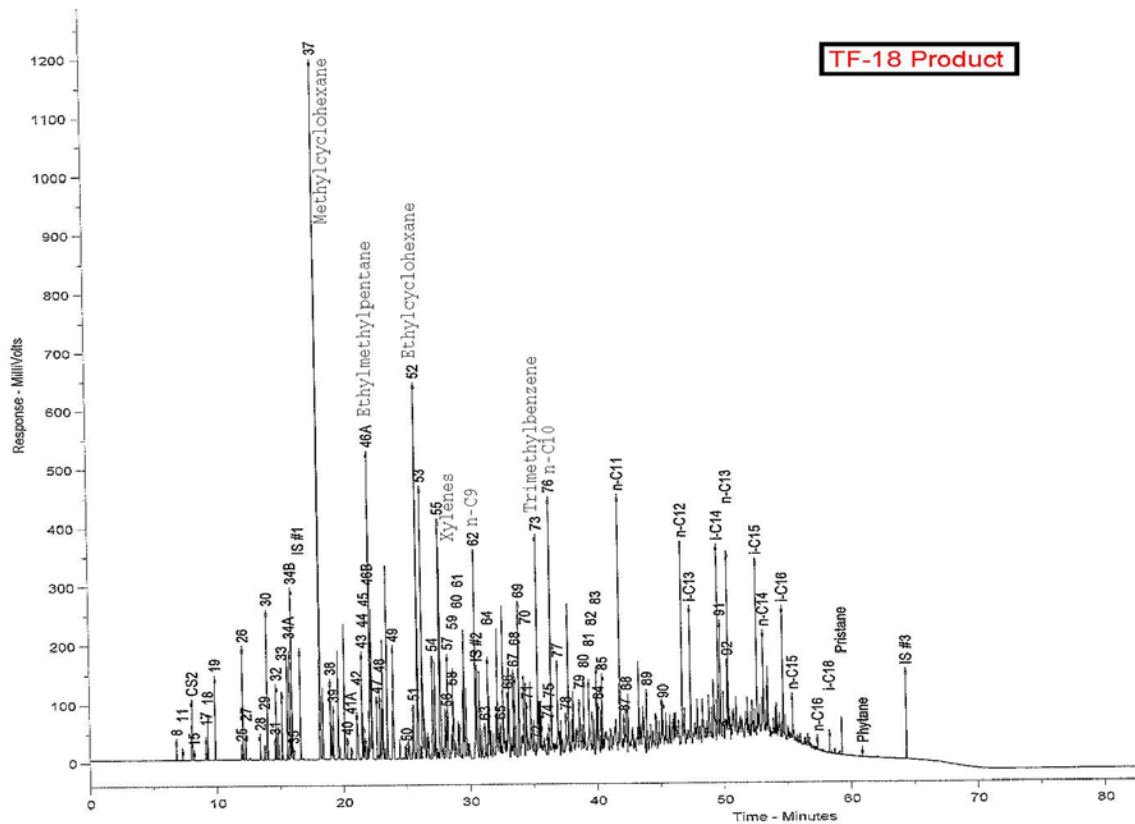
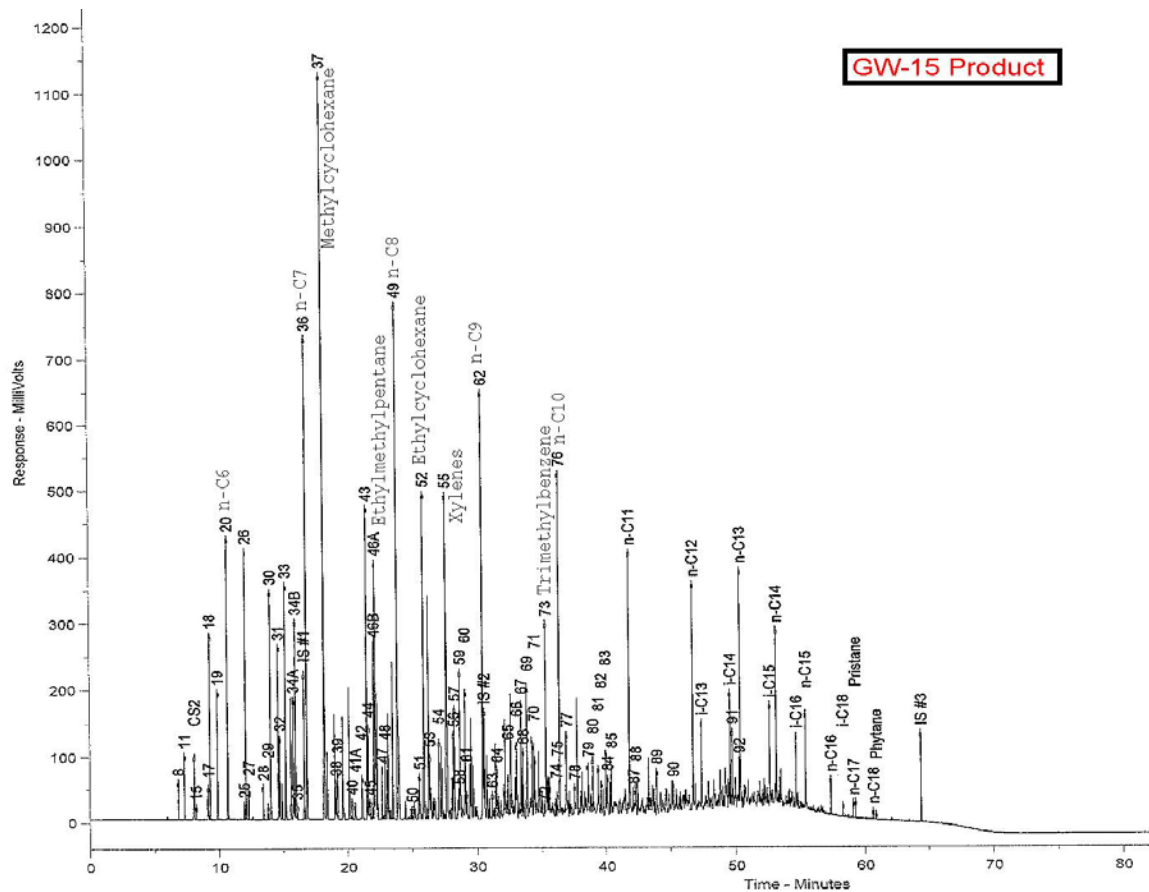
The C₃-C₃₆ GC/FID chromatograms of the product samples, on the following page, show hydrocarbons from 7 min to 60 min retention time in the carbon range C5 to C18. Complete peak identifications are provided in the data appendix.

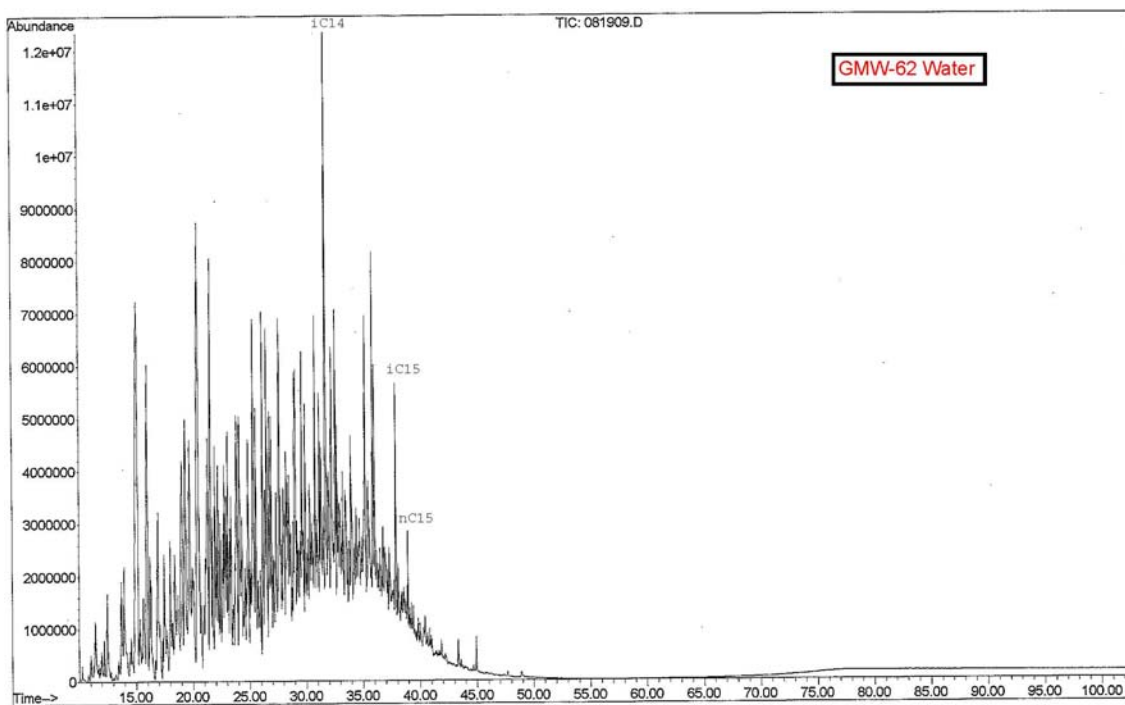
The compositions include volatile hydrocarbons from C5 to C10 in the gasoline range, and middle distillate hydrocarbons from C11 to C18. The distribution, especially in GW-15, shows a fairly uniform decrease of the hydrocarbons from C7 to C18. This suggests that GW-15 is not the result of mixing of two separate releases, which would be more likely to show two separate distributions corresponding to the two products. The uniform decrease in the hydrocarbon distribution is more consistent with a manufactured product containing a uniform mixture of a volatile product and a middle distillate product.

One of the few examples of this distribution is the military specification fuel JP-4, a 50/50 mixture of natural gasoline (naphtha) and kerosene. The volatile hydrocarbons in GW-15 are dominated by n-alkanes and cyclohexanes. BTEX compounds, which are dominant in most modern automobile gasolines, are secondary in GW-15. Trimethylpentanes, which are alkylate hydrocarbons that are blended into automobile gasoline to increase octane levels, are absent in GW-15. The volatile distribution in GW-15 is characteristic of natural gasoline or naphtha. The major middle distillate hydrocarbons in GW-15 are in the range C11 to C16, which is characteristic of kerosene. The hydrocarbon distribution in GW-15 matches a mildly weathered JP-4.

The hydrocarbon distribution in TF-18 is also in the carbon range C5 to C18, but the light n-alkanes are severely depleted and C10+ n-alkanes are reduced compared to GW-15. The n-alkanes are the most readily biodegraded hydrocarbons in petroleum products. Apart from the differences in the n-alkanes, and some others also caused by biodegradation, the distribution is similar to GW-15, suggesting that TF-18 is a degraded JP-4.

The C₈-C₄₀ GC/MS Total Ion Chromatogram (TIC) of GMW-62 groundwater on p.7 shows hydrocarbons in the range from below C9 to C16. This distribution is consistent with kerosene or kerosene based jet fuels, such as JP-5, JP-8, and Jet A. N-alkanes appear to be minor components in the TIC, indicating that the material is biodegraded. It is possible that there are volatile hydrocarbons in GMW-62, similar to those in the products, which are below the range that can be detected in the C₈-C₄₀ GC/MS analysis. C₃-C₁₀ GC/MS analysis would be necessary to detect these.





Conclusions

Product samples TF-18 and GW-15 contain JP-4 fuel. GW-15 is mildly weathered; TF-18 has been significantly biodegraded.

The C₈-C₄₀ analysis of groundwater sample GMW-62 identified kerosene or kerosene based jet fuel. It is possible that there are volatile hydrocarbons in GMW-62, similar to the JP-4 in the products. However, C₃-C₁₀ GC/MS analysis would be necessary to detect these.

August 27th, 2015



formerly ZymaX Forensics

Daniel Swensson
The Source Group
1962 Freeman Avenue
Signal Hill, CA 90755

RE: DFSP Norwalk
Project Number: 04-NDLA-008

Pace Analytical received 3 sample(s) received on July 29th, 2015 for analysis labeled TF-18, GW-15, and GMW-62. Per client request, the following analyses were performed:

1. C3-C40 Whole Oil (ASTM 3328)
2. Oxygenates (EPA 1624)
3. Simulated Distillation (ASTM 2887)
4. C8-C40 Full Scan (ASTM 5739)

Revised Report: Data for ASTM 5739, sample -03, was labeled incorrectly as GMW-02, instead of GMW-62 as listed on the COC.

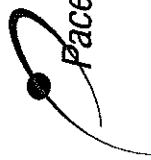
The sample was performed in house under laboratory number **16238**.

Please call the lab at 412-826-4481, or you may email any questions or concerns to taryn.mancine@pacelabs.com regarding any analytical data reports.

Respectfully submitted,

Taryn Mancine

Taryn Mancine
Project Manager/Scientist



ZymaX Forensics Division

220 William Pitt Way
Pittsburgh, PA 15238

Phone: 412-826-4481

Fax: 412-826-3433

**Samples will be disposed of after 30 days unless requested*

Chain of Custody

[illegible]

Cooler Receipt Form

Client Name: The Source Group Project: D FSP Norwalk Lab Work Order: 16238

A. Shipping/Container Information (circle appropriate response)

Courier: (FedEx) UPS USPS Client Other: _____ Air bill Present: (Yes) No

Tracking Number: 807129235313

Custody Seal on Cooler/Box Present: Yes (No) Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam (Other) _____

Type of Ice: (Wet) Blue None Ice Intact: Yes (Melted)

Cooler Temperature: 10°C Radiation Screened: Yes (No) Chain of Custody Present: (Yes) No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	<input checked="" type="checkbox"/>			
Chain of Custody relinquished	<input checked="" type="checkbox"/>			
Sampler Name & Signature on COC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> 9/3/15	
Containers intact	<input checked="" type="checkbox"/>			
Were samples in separate bags	<input checked="" type="checkbox"/>			
Sample container labels match CDC Sample name/date and time collected	<input checked="" type="checkbox"/>			
Sufficient volume provided	<input checked="" type="checkbox"/>			
PAES containers used			<input checked="" type="checkbox"/>	
Are containers properly preserved for the requested testing? (as labeled)			<input checked="" type="checkbox"/>	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			<input checked="" type="checkbox"/>	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			<input checked="" type="checkbox"/>	

Comments: _____

Cooler contents examined/received by: LY Date: 7-29-15

Project Manager Review: TM Date: 7-29-15

8/24/2015

ZymaX ID	16473-1
Sample ID	SP-5J-LNAPL

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00
---	------

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

8/24/2015

ZymaX ID
Sample ID

16473-1
SP-5J-LNAPL

		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

8/24/2015

ZymaX ID
Sample ID

16473-1
SP-5J-LNAPL

		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

8/24/2015

ZymaX ID
Sample ID

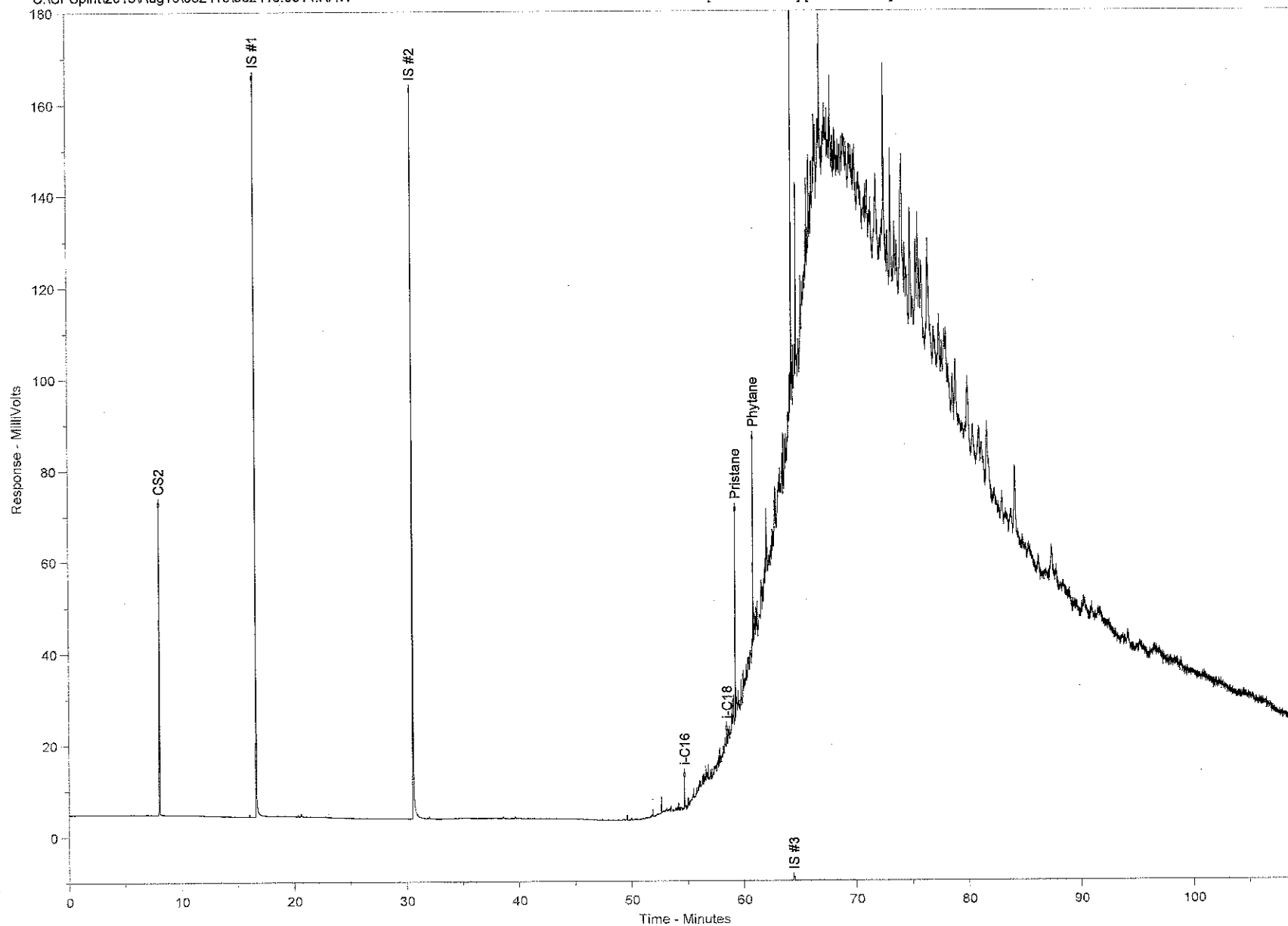
16473-1
SP-5J-LNAPL

		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report

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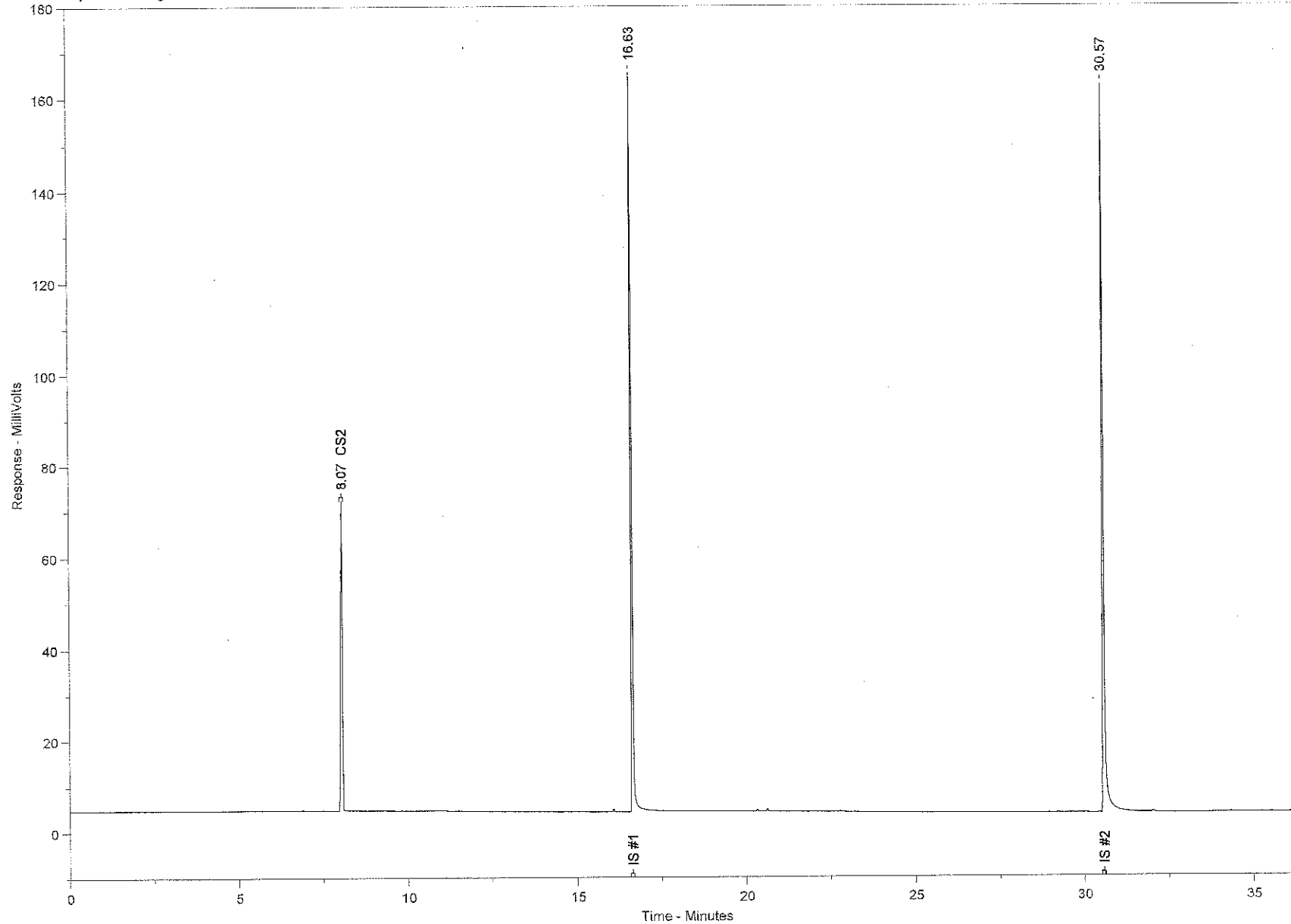
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Chrom Perfect Chromatogram Report

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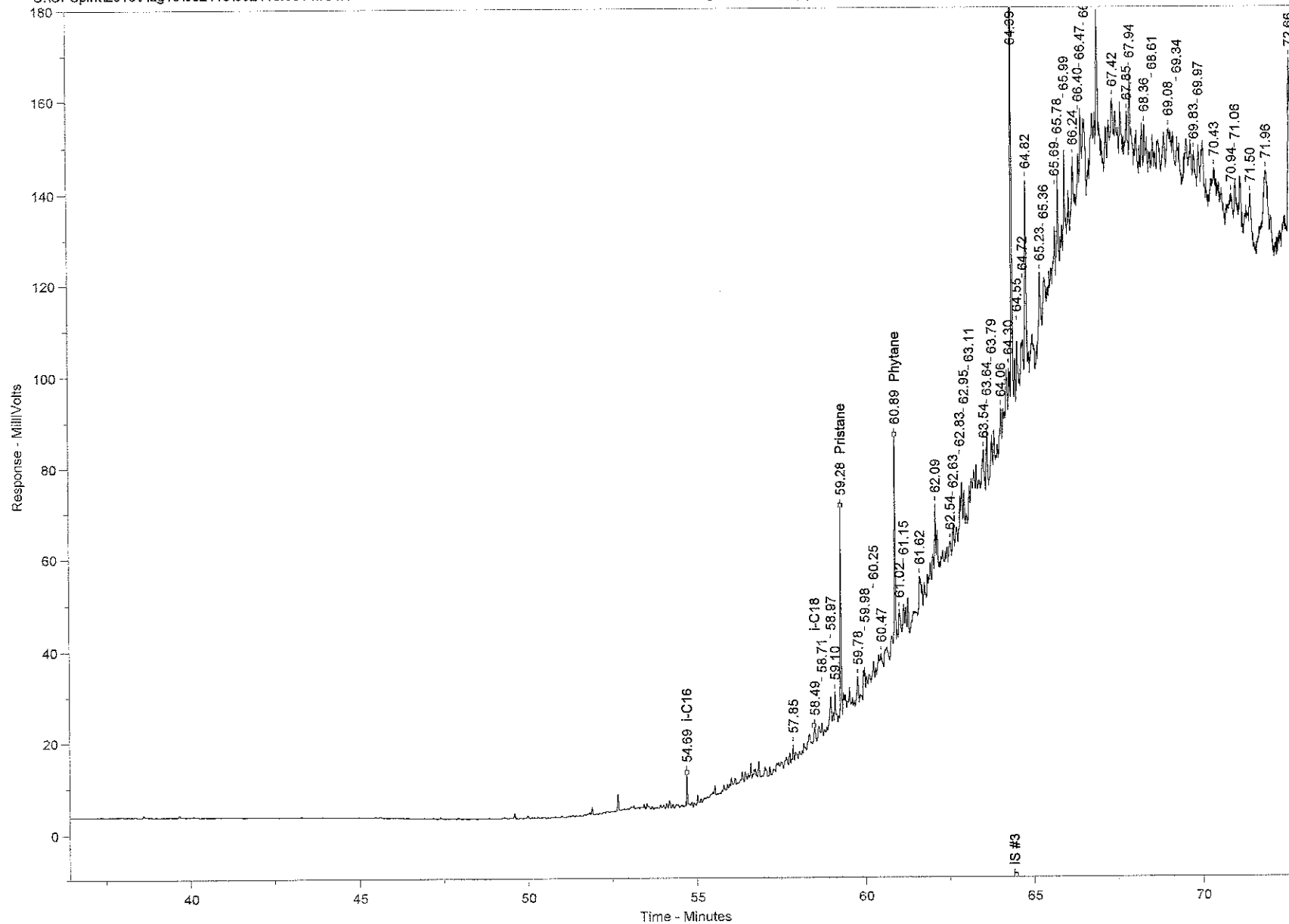
16473-1 [SP-5J-LNAPL] [400+600CS2] + IS F-022715-1



Chrom Perfect Chromatogram Report

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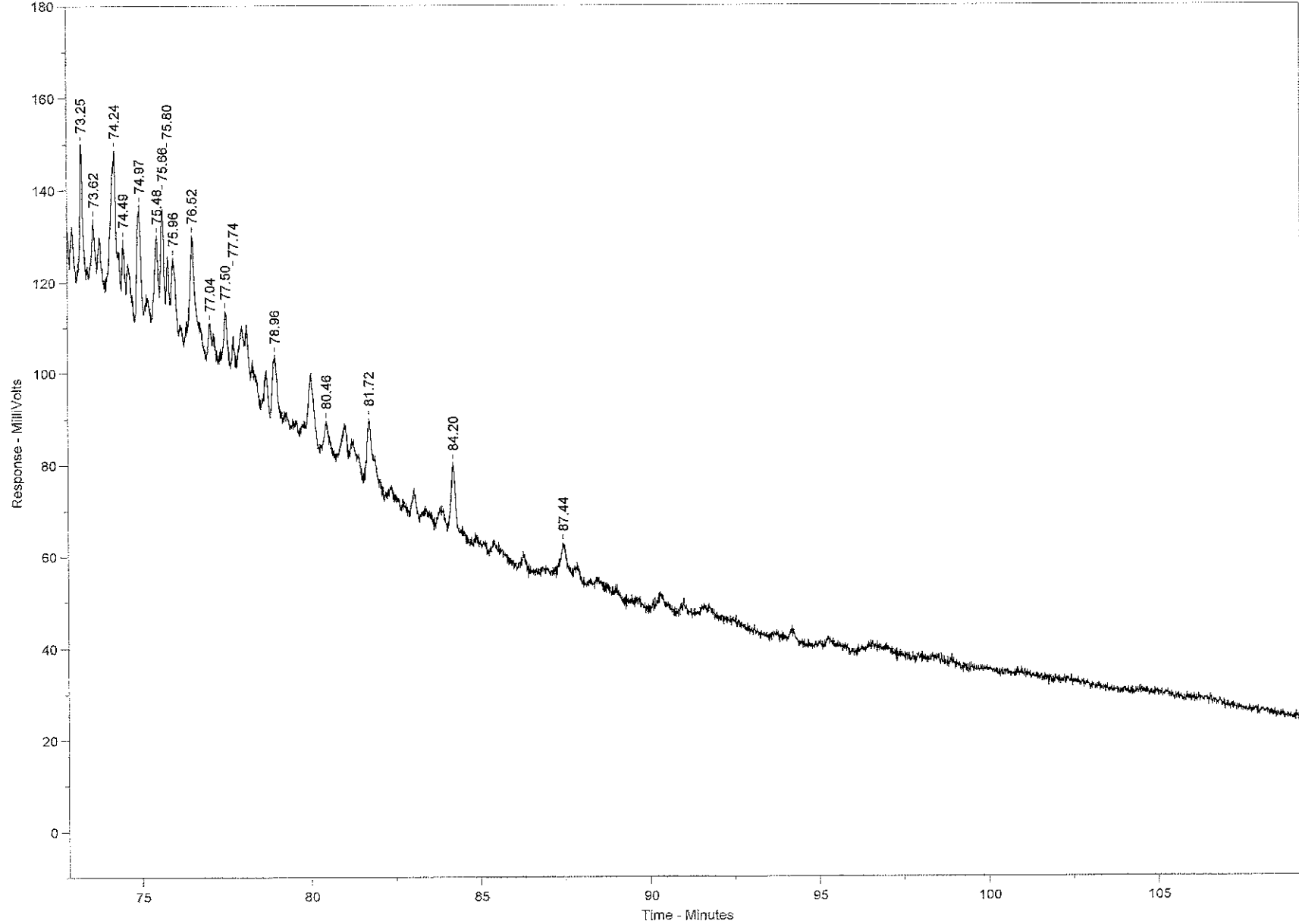
16473-1 [SP-5J-LNAPL] [400+600CS2] + IS F-022715-1



Chrom Perfect Chromatogram Report

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16473-1 [SP-5J-LNAPL] [400+600CS2] + IS F-022715-1



Chrom Perfect Chromatogram Report

Sample Name = 16473-1 [SP-5J-LNAPL] [400+600CS2] + IS F-022715-1

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

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Date Taken (end) = 8/25/2015 5:28:26 PM

Method File Name = C:\CPSpirit\C344.met

Method Version = 44

Calibration File Name = C:\CPSpirit\080515a.cal

Calibration Version = 2

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IS #1	16.63	5.6056	443513.00
IS #2	30.57	6.5268	516394.00
i-C16	54.69	0.1789	14150.46
	57.85	0.1966	15553.65
i-C18	58.49	0.1487	11765.97
	58.71	0.2472	19556.88
	58.97	0.3047	24110.99
	59.10	0.2519	19928.19
Pristane	59.28	1.1700	92572.07
	59.78	0.2285	18079.99
	59.98	0.2256	17851.04
	60.25	0.1358	10744.16
	60.47	0.3062	24229.46
Phytane	60.89	1.6244	128523.40
	61.02	0.3296	26076.10
	61.15	0.3437	27189.34
	61.62	0.8329	65895.96
	62.09	0.2973	23523.81
	62.54	0.1791	14173.64
	62.63	0.1865	14754.96
	62.83	0.2785	22034.11
	62.95	0.3582	28338.90
	63.11	0.1327	10495.95
	63.54	0.4586	36280.59
	63.64	0.3942	31191.97
	63.79	0.2784	22028.01
	64.06	0.3687	29173.57
	64.30	1.5846	125375.10
IS #3	64.39	4.3483	344029.00
	64.55	0.6636	52505.84
	64.72	0.7998	63278.82
	64.82	1.7276	136688.30
	65.23	0.7386	58438.66
	65.36	0.4552	36018.88
	65.69	0.4562	36097.39
	65.78	0.8912	70511.79
	65.99	1.9428	153713.80
	66.24	1.8320	144942.50
	66.40	1.1672	92349.48
	66.47	1.5650	123822.60
	66.59	3.8178	302060.00
	66.96	4.4132	349164.10
	67.42	3.5222	278673.20
	67.85	1.1181	88461.45
	67.94	1.9391	153417.20
	68.36	0.1863	14741.08
	68.61	0.8752	69242.30
	69.08	1.6221	128339.10
	69.34	0.6895	54550.98
	69.83	0.2476	19589.99
	69.97	0.3149	24914.91
	70.43	0.8725	69033.88
	70.94	0.6539	51734.59
	71.06	0.3545	28044.24

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
	71.50	0.5586	44197.70
	71.96	1.1999	94934.05
	72.66	2.3657	187174.70
	73.25	1.9576	154880.80
	73.62	0.7669	60675.62
	74.24	3.9250	310539.60
	74.49	0.5956	47127.06
	74.97	3.3782	267281.80
	75.48	2.2133	175117.00
	75.66	2.4815	196334.30
	75.80	1.3820	109341.30
	75.96	2.7010	213701.30
	76.52	4.1329	326989.60
	77.04	1.3080	103486.00
	77.50	1.1084	87692.15
	77.74	0.3780	29909.87
	78.96	1.7070	135055.90
	80.46	0.9376	74181.21
	81.72	0.9564	75666.52
	84.20	1.9548	154661.00
	87.44	0.6721	53178.46

Total Area = 7911894

Total Height = 1619128

Total Amount = 0

8/15/2015

ZymaX ID	16238-1
Sample ID	TF-18

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.27

Waterwashing

Benzene / Cyclohexane	0.13
Toluene / Methylcyclohexane	0.01
Aromatics / Total Paraffins (n+iso+cyc)	0.63
Aromatics / Naphthenes	1.57

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	150.33
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	6.17

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.01
---	------

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	8.50
% Isoparaffinic	28.08
% Aromatic	38.26
% Naphthenic	24.41
% Olefinic	0.74

8/15/2015

ZymaX ID
Sample ID

16238-1
TF-18

		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.10
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.04
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.03
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.15
18	2-Methylpentane	0.36
19	3-Methylpentane	0.78
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.10
26	Methylcyclopentane	1.22
27	2,4-Dimethylpentane	0.22
28	Benzene	0.23
29	5-Methyl-1-hexene	0.10
30	Cyclohexane	1.77
31	2-Methylhexane/TAME	0.19
32	2,3-Dimethylpentane	0.87
33	3-Methylhexane	0.78
34A	1-trans-3-Dimethylcyclopentane	1.30
34B	1-cis-3-Dimethylcyclopentane	2.12
35	2,2,4-Trimethylpentane	0.09
I.S. #1	à,à,à-Trifluorotoluene	0.00

8/15/2015

ZymaX ID
Sample ID

16238-1
TF-18

		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	11.06
38	2,5-Dimethylhexane	0.97
39	2,4-Dimethylhexane	0.67
40	2,3,4-Trimethylpentane	0.21
41	Toluene/2,3,3-Trimethylpentane	0.08
42	2,3-Dimethylhexane	1.32
43	2-Methylheptane	1.36
44	4-Methylheptane	0.36
45	3,4-Dimethylhexane	0.34
46A	3-Ethyl-3-methylpentane	5.81
46B	1,4-Dimethylcyclohexane	0.55
47	3-Methylheptane	0.77
48	2,2,5-Trimethylhexane	0.78
49	n-Octane	1.52
50	2,2-Dimethylheptane	0.11
51	2,4-Dimethylheptane	0.87
52	Ethylcyclohexane	6.38
53	2,6-Dimethylheptane	3.98
54	Ethylbenzene	2.57
55	m+p Xylenes	6.06
56	4-Methyloctane	0.72
57	2-Methyloctane	1.31
58	3-Ethylheptane	0.36
59	3-Methyloctane	1.64
60	o-Xylene	0.35
61	1-Nonene	0.54
62	n-Nonane	3.12
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.44
64	3,3,5-Trimethylheptane	1.47
65	2,4,5-Trimethylheptane	0.45
66	n-Propylbenzene	1.19
67	1-Methyl-3-ethylbenzene	1.15
68	1-Methyl-4-ethylbenzene	1.41
69	1,3,5-Trimethylbenzene	3.11
70	3,3,4-Trimethylheptane	0.88

8/15/2015

ZymaX ID
Sample ID

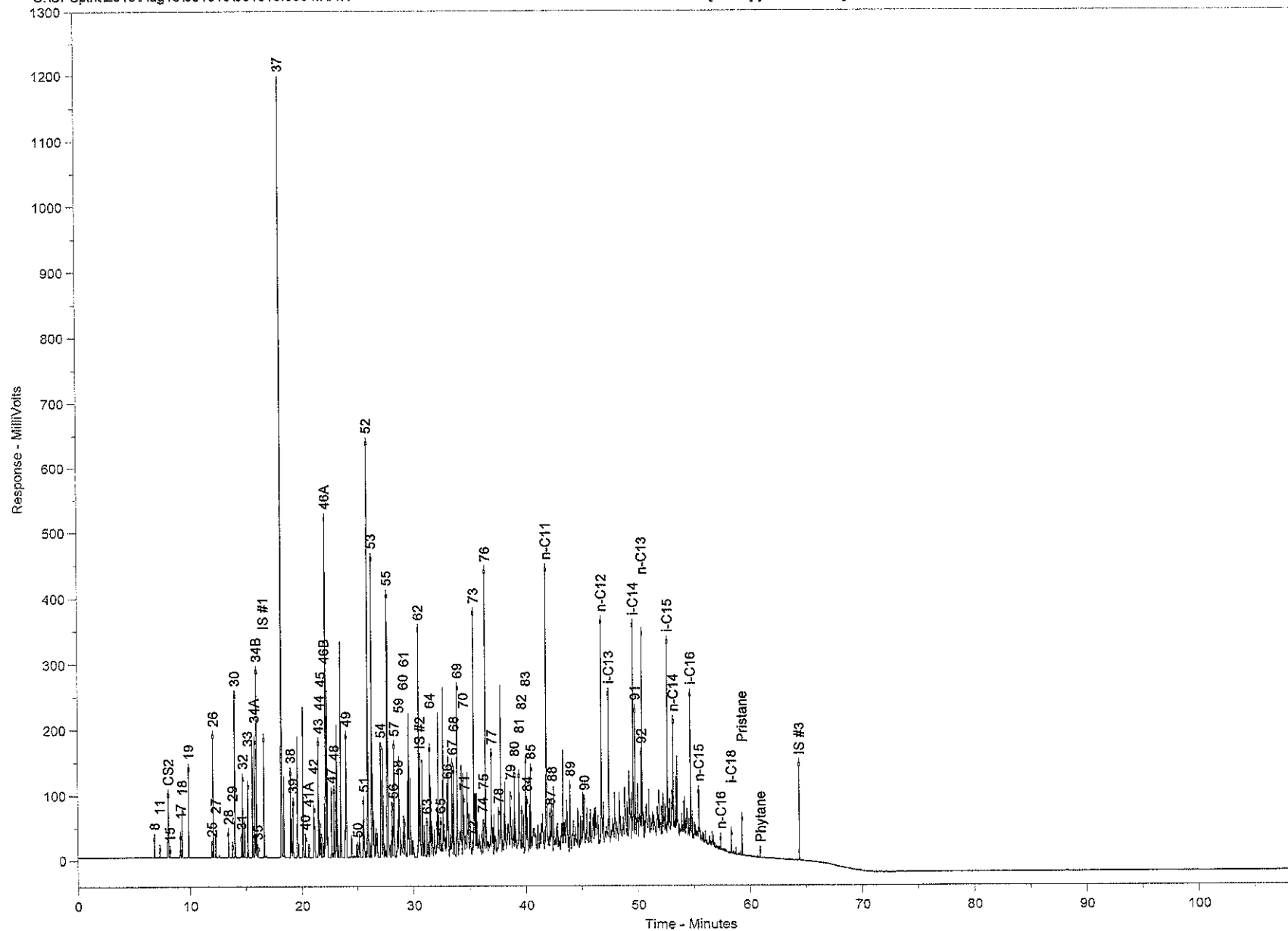
16238-1
TF-18

		Relative Area %
71	1-Methyl-2-ethylbenzene	0.68
72	3-Methylnonane	0.13
73	1,2,4-Trimethylbenzene	3.08
74	Isobutylbenzene	0.27
75	sec-Butylbenzene	0.43
76	n-Decane	3.83
77	1,2,3-Trimethylbenzene	1.61
78	Indan	0.96
79	1,3-Diethylbenzene	1.63
80	1,4-Diethylbenzene	1.03
81	n-Butylbenzene	2.01
82	1,3-Dimethyl-5-ethylbenzene	0.66
83	1,4-Dimethyl-2-ethylbenzene	1.59
84	1,3-Dimethyl-4-ethylbenzene	1.03
85	1,2-Dimethyl-4-ethylbenzene	0.94
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.50
88	1,2,3,5-Tetramethylbenzene	0.73
89	1,2,3,4-Tetramethylbenzene	1.09
90	Naphthalene	0.76
91	2-Methyl-naphthalene	1.62
92	1-Methyl-naphthalene	1.07

Chrom Perfect Chromatogram Report

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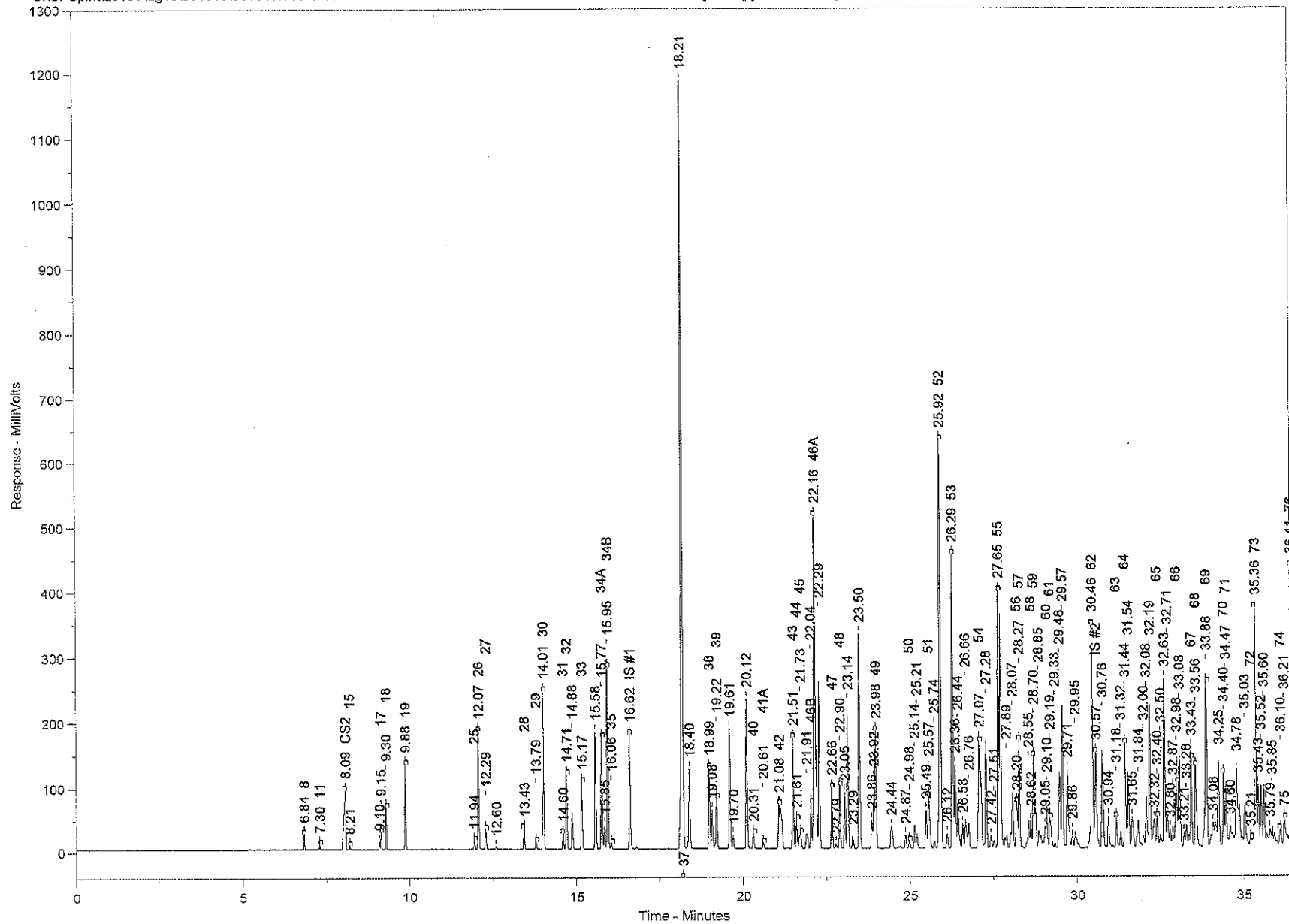
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Chrom Perfect Chromatogram Report

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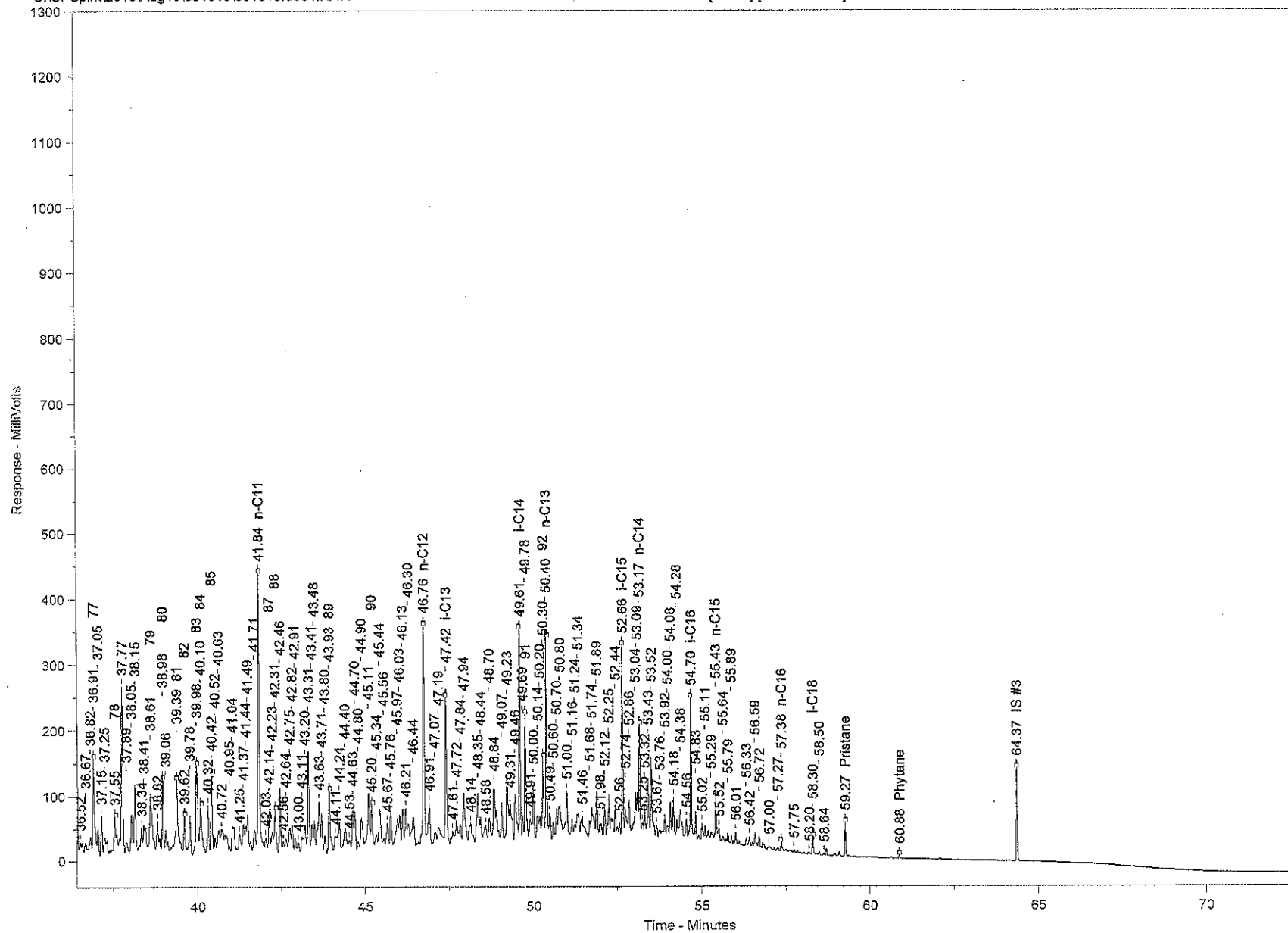
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Chrom Perfect Chromatogram Report

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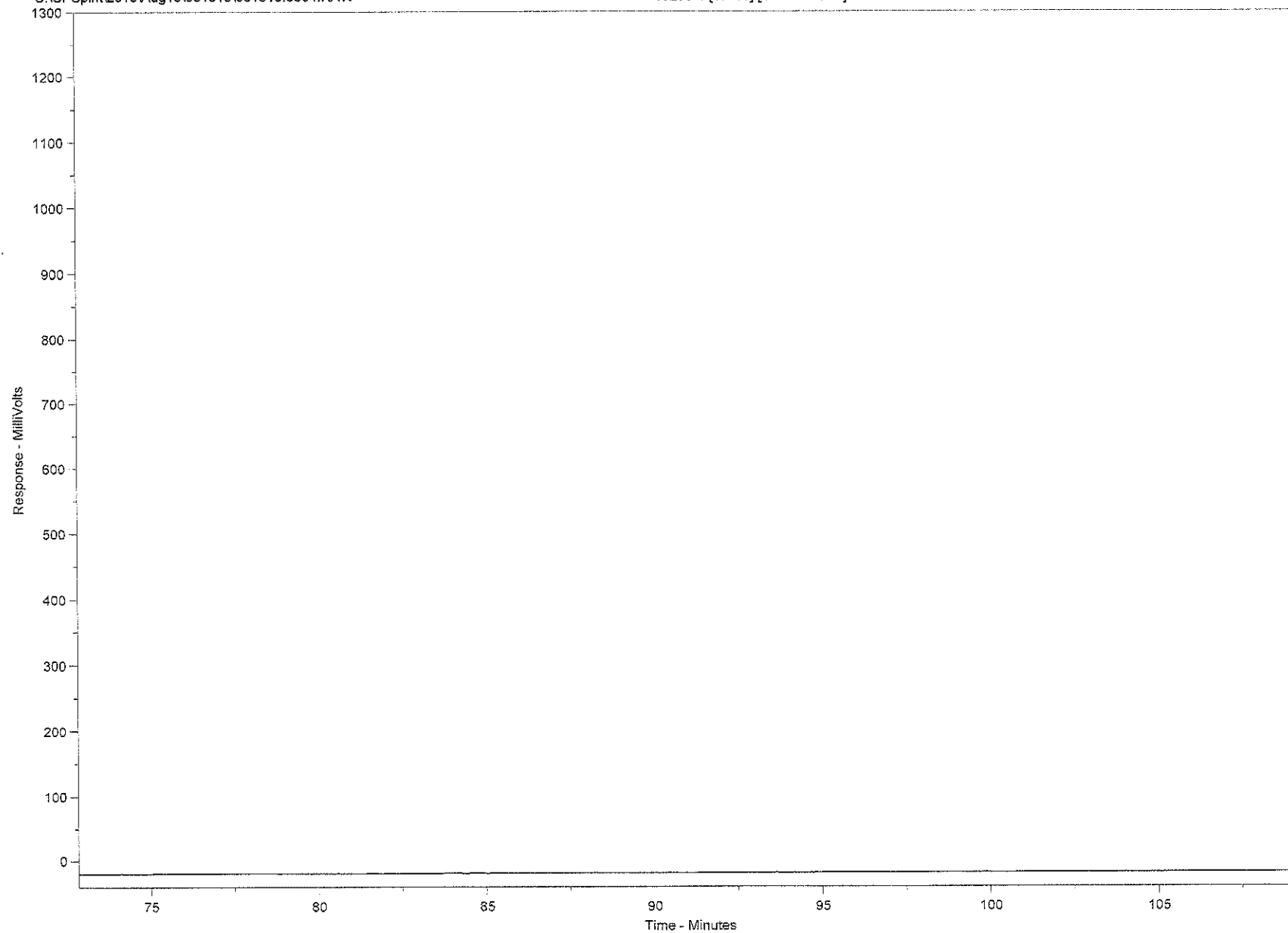
16238-1 [TF-18] [400+600CS2] + IS F-022715-1



Chrom Perfect Chromatogram Report

C:\CPSPirt\2015\Aug15\081515\081515.0004.RAW

16238-1 [TF-18] [400+600CS2] + IS F-022715-1



Chrom Perfect Chromatogram Report

Sample Name = 16238-1 [TF-18] [400+600CS2] + IS F-022715-1

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

Raw File Name = C:\CPSpirit\2015\Aug15\081515\081515.0004.RAW

Date Taken (end) = 8/18/2015 1:37:48 AM

Method File Name = C:\CPSpirit\C344.met

Method Version = 44

Calibration File Name = C:\CPSpirit\080515a.cal

Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.84	0.0407	32275.60
11	7.30	0.0162	12853.86
CS2	8.09	0.4759	377125.60
15	8.21	0.0141	11141.95
	9.10	0.0277	21986.28
17	9.15	0.0636	50417.47
18	9.30	0.1512	119844.90
19	9.88	0.3249	257435.60
25	11.94	0.0417	33019.83
26	12.07	0.5097	403897.70
27	12.29	0.0918	72748.83
	12.60	0.0124	9790.96
28	13.43	0.0964	76411.69
29	13.79	0.0405	32059.01
30	14.01	0.7378	584669.80
31	14.60	0.0781	61880.91
32	14.71	0.3639	288332.70
	14.88	0.1800	142631.10
33	15.17	0.3251	257619.40
	15.58	0.5641	446998.10
34A	15.77	0.5424	429782.70
	15.85	0.1180	93521.68
34B	15.95	0.8847	701079.40
35	16.06	0.0356	28243.55
IS #1	16.62	0.5528	438093.10
37	18.21	4.6076	3651219.00
	18.40	0.4496	356291.00
38	18.99	0.4026	319045.60
	19.08	0.1964	155598.50
39	19.22	0.2796	221560.40
	19.61	0.6058	480070.20
	19.70	0.0731	57945.98
	20.12	0.7605	602641.10
40	20.31	0.0864	68450.79
41A	20.61	0.0333	26400.16
42	21.08	0.5480	434255.00
43	21.51	0.5655	448149.30
44	21.61	0.1520	120434.90
45	21.73	0.1430	113353.60
	21.91	0.1238	98092.85
46B	22.04	0.2277	180400.00
46A	22.16	2.4206	1918189.00
	22.29	0.8111	642739.20
47	22.66	0.3202	253724.80
	22.79	0.0252	19980.94
48	22.90	0.3253	257809.00
	23.05	0.2903	230003.80
	23.14	0.6767	536278.00
	23.29	0.0686	54375.88
	23.50	1.1083	878253.90
	23.86	0.1458	115562.80
	23.92	0.2662	210934.10
49	23.98	0.6333	501819.60
	24.44	0.1841	145849.00
	24.87	0.0723	57293.45

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
50	24.98	0.0441	34936.61
	25.14	0.1226	97120.64
	25.21	0.0803	63644.69
	25.49	0.2117	167747.20
51	25.57	0.3634	287955.10
	25.74	0.0393	31159.42
52	25.92	2.6589	2107039.00
	26.12	0.0868	68774.59
53	26.29	1.6562	1312466.00
	26.36	0.4422	350422.50
	26.44	0.2860	226660.90
	26.58	0.1260	99834.38
54	26.66	0.2030	160900.30
	26.76	0.1379	109312.50
	27.07	1.0698	847713.40
	27.28	0.5732	454187.00
55	27.42	0.0772	61209.73
	27.51	0.0399	31588.78
	27.65	2.5255	2001303.00
	27.89	0.0379	30065.78
56	28.07	0.4088	323928.20
	28.20	0.2983	236396.80
57	28.27	0.5472	433609.80
	28.55	0.1808	143263.60
58	28.62	0.1498	118724.80
59	28.70	0.6818	540241.80
	28.85	0.0472	37411.73
60	29.05	0.0866	68593.65
	29.10	0.1467	116239.20
61	29.19	0.2270	179892.20
	29.33	0.0199	15764.34
	29.48	0.4816	381629.40
	29.57	0.7908	626617.60
62	29.71	0.5141	407360.80
	29.86	0.0966	76519.53
	29.95	0.1506	119324.60
	30.46	1.2991	1029485.00
IS #2	30.57	0.6993	554124.10
	30.76	0.5979	473787.40
63	30.94	0.1624	128675.80
	31.18	0.1823	144440.90
64	31.32	0.1015	80402.16
	31.44	0.6129	485672.70
65	31.54	0.4077	323074.70
	31.65	0.2405	190561.10
	31.84	0.2356	186712.70
	32.00	0.0725	57456.20
66	32.08	0.3035	240474.20
	32.19	0.7850	622081.00
	32.32	0.2620	207643.70
	32.40	0.1870	148172.80
67	32.50	0.1057	83755.28
	32.63	0.9058	717762.60
	32.71	0.2377	188345.00
	32.80	0.1052	83369.66
68	32.87	0.1276	101093.00
	32.98	0.4947	392012.20
	33.08	0.6513	516108.00
	33.21	0.0817	64753.18
69	33.28	0.1374	108894.50
	33.43	0.4780	378806.10
70	33.56	0.5862	464539.10
71	33.88	1.2955	1026605.00
	34.08	0.2276	180329.10
72	34.25	0.4859	385046.00
	34.40	0.3683	291843.60
73	34.47	0.2834	224593.90

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
	34.60	0.1255	99449.90
	34.78	0.3046	241369.60
	35.03	0.2275	180302.30
72	35.21	0.0550	43553.58
73	35.36	1.2825	1016295.00
	35.43	0.2909	230512.60
	35.52	0.3053	241900.60
	35.60	0.3121	247339.50
	35.79	0.0591	46825.98
	35.85	0.0614	48665.65
74	36.10	0.1122	88895.38
75	36.21	0.1809	143354.40
76	36.41	1.5937	1262909.00
	36.52	0.0232	18402.95
	36.67	0.0869	68877.41
	36.82	0.1385	109737.30
77	36.91	0.6705	531336.60
	37.05	0.1523	120711.70
	37.15	0.2122	168117.20
	37.25	0.2228	176560.40
78	37.55	0.3989	316119.90
	37.77	1.1037	874581.10
	37.89	0.1322	104775.10
	38.05	0.3096	245356.00
	38.15	0.4520	358189.90
	38.34	0.2514	199198.60
	38.41	0.3689	292319.90
79	38.61	0.6806	539309.80
	38.82	0.3227	255736.00
80	38.98	0.4278	339035.60
	39.06	0.2411	191023.70
81	39.39	0.8354	661976.60
82	39.62	0.2748	217766.50
	39.78	0.2623	207845.40
83	39.98	0.6606	523457.10
84	40.10	0.4272	338553.20
	40.32	0.2474	196024.20
85	40.42	0.3911	309887.10
	40.52	0.0498	39452.32
	40.63	0.1112	88130.90
	40.72	0.1045	82793.21
	40.95	0.0155	12247.12
	41.04	0.2651	210053.50
	41.25	0.1493	118322.60
	41.37	0.1964	155664.90
	41.44	0.1389	110067.10
	41.49	0.2341	185474.90
	41.71	0.1847	146391.20
n-C11	41.84	1.7652	1398822.00
	42.03	0.1139	90268.94
87	42.14	0.2079	164774.80
	42.23	0.1567	124206.40
88	42.31	0.3053	241916.30
	42.46	0.3769	298634.80
	42.56	0.0729	57757.81
	42.64	0.1117	88519.80
	42.75	0.2138	169417.00
	42.82	0.1584	125538.50
	42.91	0.0996	78928.49
	43.00	0.0741	58742.28
	43.11	0.1511	119741.60
	43.20	0.2026	160565.20
	43.31	0.5930	469900.90
	43.41	0.1903	150786.60
	43.48	0.1972	156263.20
	43.63	0.4896	387946.00
	43.71	0.2268	179719.20

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
89	43.80	0.1049	83121.37
	43.93	0.4543	360006.70
	44.11	0.1246	98758.93
	44.24	0.3112	246622.90
	44.40	0.2879	228125.20
	44.53	0.1160	91897.56
	44.63	0.2728	216138.50
	44.70	0.2257	178888.30
	44.80	0.0677	53678.44
	44.90	0.2984	236456.60
90	45.11	0.4768	377820.90
	45.20	0.3168	251027.50
	45.34	0.1449	114816.00
	45.44	0.3513	278351.20
	45.56	0.0800	63368.75
	45.67	0.2191	173638.30
	45.76	0.2704	214285.10
	45.97	0.3309	262191.70
	46.03	0.1904	150902.40
	46.13	0.2704	214282.80
n-C12	46.21	0.2771	219563.40
	46.30	0.2032	161018.90
	46.44	0.3476	275484.20
	46.76	1.3161	1042885.00
	46.91	0.4041	320195.30
	47.07	0.1481	117341.50
	47.19	0.3009	238446.20
	47.42	0.8846	700979.20
	47.61	0.1472	116674.30
	47.72	0.2130	168777.60
i-C13	47.84	0.1741	138001.00
	47.94	0.4784	379083.70
	48.14	0.2749	217869.90
	48.35	0.4537	359533.30
	48.44	0.1580	125224.40
	48.58	0.2018	159896.20
	48.70	0.2304	182578.60
	48.84	0.6756	535365.60
	49.07	0.2528	200359.60
	49.23	0.4848	384181.80
i-C14	49.31	0.3949	312949.30
	49.46	0.3958	313651.90
	49.61	0.9578	759011.10
	49.69	0.1313	104040.60
	49.78	0.6769	536374.40
	49.91	0.1927	152721.30
	50.00	0.3108	246261.20
	50.14	0.2001	158536.50
	50.20	0.1344	106522.00
	50.30	0.4438	351714.80
91	50.40	0.9398	744724.20
	50.49	0.1746	138387.90
	50.60	0.0994	78767.14
	50.70	0.1590	126010.40
	50.80	0.3970	314563.80
	51.00	0.3852	305276.20
	51.16	0.1302	103149.40
	51.24	0.0911	72213.14
	51.34	0.2427	192323.40
	51.46	0.2694	213454.90
92	51.68	0.0758	60099.21
	51.74	0.2960	234578.90
	51.89	0.2567	203423.70
	51.98	0.1174	93012.96
	52.12	0.1373	108804.30
	52.25	0.1805	143011.50
	52.44	0.1089	86266.02
n-C13			

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
i-C15	52.56	0.0444	35158.56
	52.66	0.7712	611151.00
	52.74	0.1844	146119.00
	52.86	0.2093	165890.80
	53.04	0.3161	250464.70
n-C14	53.09	0.2358	186864.80
	53.17	0.4624	366445.30
	53.25	0.0926	73394.40
	53.32	0.1330	105371.60
	53.43	0.3214	254664.20
	53.52	0.4415	349821.40
	53.67	0.0667	52828.73
	53.76	0.0510	40434.01
	53.92	0.1227	97237.80
	54.00	0.0983	77871.04
	54.08	0.1781	141102.60
	54.18	0.2055	162848.00
	54.28	0.1372	108747.10
	54.38	0.2630	208389.50
	54.56	0.1058	83850.09
i-C16	54.70	0.6819	540389.10
	54.83	0.1149	91050.02
	55.02	0.1011	80123.12
	55.11	0.0781	61867.04
	55.29	0.0813	64410.82
n-C15	55.43	0.2433	192781.20
	55.52	0.0882	69854.98
	55.64	0.0496	39319.60
	55.79	0.0446	35376.12
	55.89	0.0276	21843.37
	56.01	0.0448	35485.70
	56.33	0.0351	27776.63
	56.42	0.0503	39827.34
	56.59	0.0865	68550.41
	56.72	0.0603	47757.25
n-C16	57.00	0.0308	24443.79
	57.27	0.0227	18002.13
	57.38	0.0488	38665.59
	57.75	0.0128	10134.20
	58.20	0.0129	10238.24
i-C18	58.30	0.0879	69652.80
	58.50	0.0172	13603.65
	58.64	0.0103	8156.08
Pristane	59.27	0.1494	118378.30
Phytane	60.88	0.0163	12915.30
IS #3	64.37	0.3386	268326.30

Total Area = 7.924332E+07

Total Height = 2.461375E+07

Total Amount = 0

8/15/2015

ZymaX ID	16238-2
Sample ID	GW-15

Evaporation

n-Pentane / n-Heptane	0.07
2-Methylpentane / 2-Methylheptane	0.39

Waterwashing

Benzene / Cyclohexane	0.12
Toluene / Methylcyclohexane	0.02
Aromatics / Total Paraffins (n+iso+cyc)	0.37
Aromatics / Naphthenes	1.17

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	213.80
3-Methylhexane / n-Heptane	0.45
Methylcyclohexane / n-Heptane	1.80
Isoparaffins + Naphthenes / Paraffins	2.13

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.01
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Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	23.20
% Isoparaffinic	26.30
% Aromatic	26.93
% Naphthenic	23.06
% Olefinic	0.52

8/15/2015

ZymaX ID
Sample ID

16238-2
GW-15

		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.17
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.34
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.05
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.21
18	2-Methylpentane	1.32
19	3-Methylpentane	0.98
20	Hexane	2.25
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.10
26	Methylcyclopentane	2.39
27	2,4-Dimethylpentane	0.22
28	Benzene	0.26
29	5-Methyl-1-hexene	0.09
30	Cyclohexane	2.18
31	2-Methylhexane/TAME	1.66
32	2,3-Dimethylpentane	0.77
33	3-Methylhexane	2.29
34A	1-trans-3-Dimethylcyclopentane	1.16
34B	1-cis-3-Dimethylcyclopentane	1.95
35	2,2,4-Trimethylpentane	0.10
I.S. #1	à,à,à-Trifluorotoluene	0.00

8/15/2015

ZymaX ID
Sample ID

16238-2
GW-15

		Relative Area %
36	n-Heptane	5.09
37	Methylcyclohexane	9.16
38	2,5-Dimethylhexane	0.34
39	2,4-Dimethylhexane	0.48
40	2,3,4-Trimethylpentane	0.15
41	Toluene/2,3,3-Trimethylpentane	0.16
42	2,3-Dimethylhexane	0.92
43	2-Methylheptane	3.40
44	4-Methylheptane	0.89
45	3,4-Dimethylhexane	0.23
46A	3-Ethyl-3-methylpentane	3.88
46B	1,4-Dimethylcyclohexane	1.80
47	3-Methylheptane	0.49
48	2,2,5-Trimethylhexane	0.59
49	n-Octane	6.29
50	2,2-Dimethylheptane	0.06
51	2,4-Dimethylheptane	0.55
52	Ethylcyclohexane	4.43
53	2,6-Dimethylheptane	0.65
54	Ethylbenzene	1.59
55	m+p Xylenes	5.73
56	4-Methyloctane	0.97
57	2-Methyloctane	1.10
58	3-Ethylheptane	0.25
59	3-Methyloctane	1.81
60	o-Xylene	1.39
61	1-Nonene	0.33
62	n-Nonane	5.19
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.24
64	3,3,5-Trimethylheptane	0.56
65	2,4,5-Trimethylheptane	0.43
66	n-Propylbenzene	0.97
67	1-Methyl-3-ethylbenzene	1.21
68	1-Methyl-4-ethylbenzene	0.91
69	1,3,5-Trimethylbenzene	2.00
70	3,3,4-Trimethylheptane	0.71

8/15/2015

ZymaX ID
Sample ID

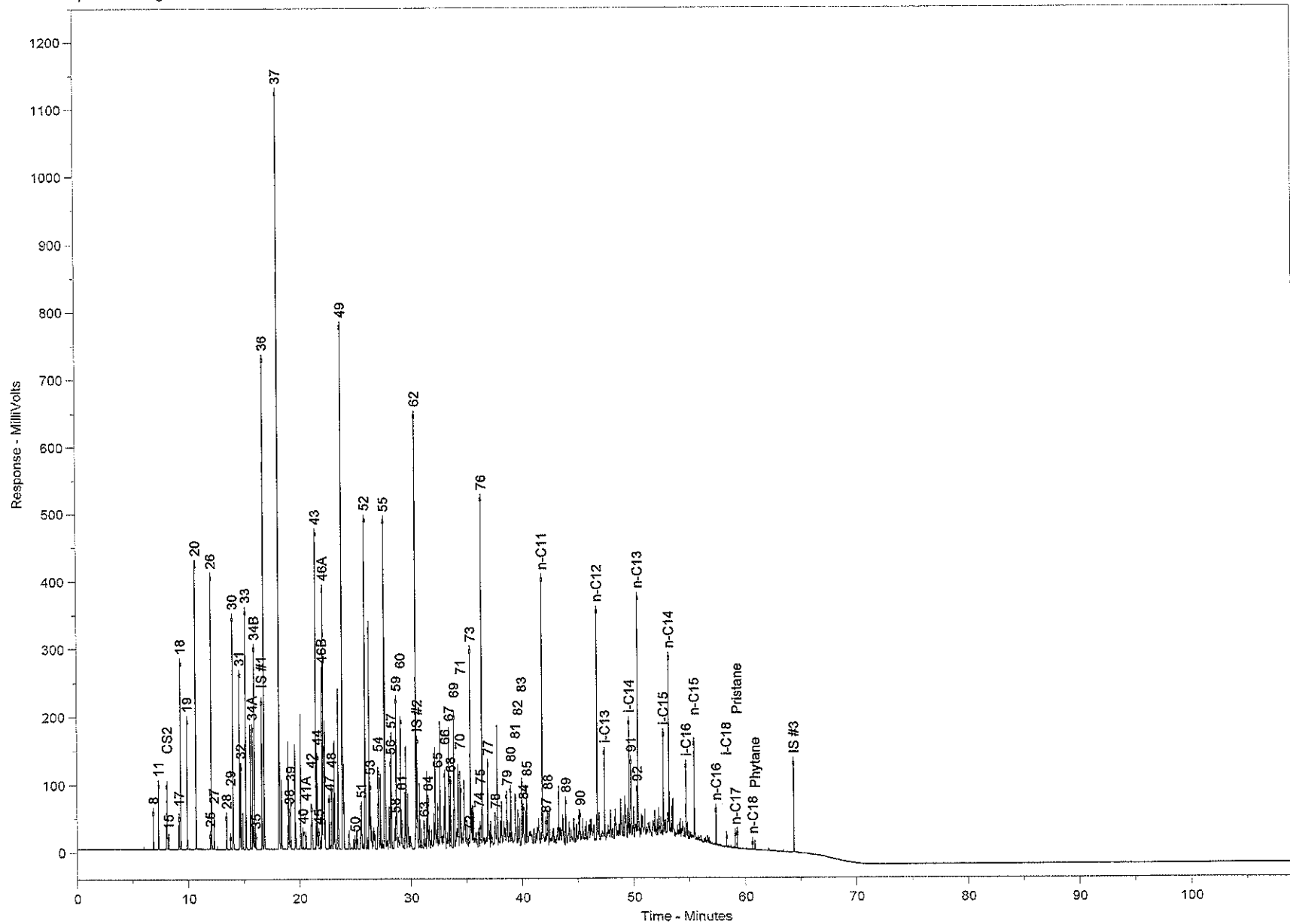
16238-2
GW-15

		Relative Area %
71	1-Methyl-2-ethylbenzene	0.58
72	3-Methylnonane	0.07
73	1,2,4-Trimethylbenzene	2.13
74	Isobutylbenzene	0.16
75	sec-Butylbenzene	0.25
76	n-Decane	4.04
77	1,2,3-Trimethylbenzene	1.13
78	Indan	0.43
79	1,3-Diethylbenzene	0.99
80	1,4-Diethylbenzene	0.60
81	n-Butylbenzene	0.79
82	1,3-Dimethyl-5-ethylbenzene	0.41
83	1,4-Dimethyl-2-ethylbenzene	0.91
84	1,3-Dimethyl-4-ethylbenzene	0.59
85	1,2-Dimethyl-4-ethylbenzene	0.52
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.26
88	1,2,3,5-Tetramethylbenzene	0.40
89	1,2,3,4-Tetramethylbenzene	0.60
90	Naphthalene	0.38
91	2-Methyl-naphthalene	0.85
92	1-Methyl-naphthalene	0.50

Chrom Perfect Chromatogram Report

C:\CPSPirt\2015\Aug15\081515\081515.0005.RAW

16238-2 [GW-15] [400+600CS2] + IS F-022715-1



— C:\CPSPrint\2015\Aug15\081515\081515.0005.RAW

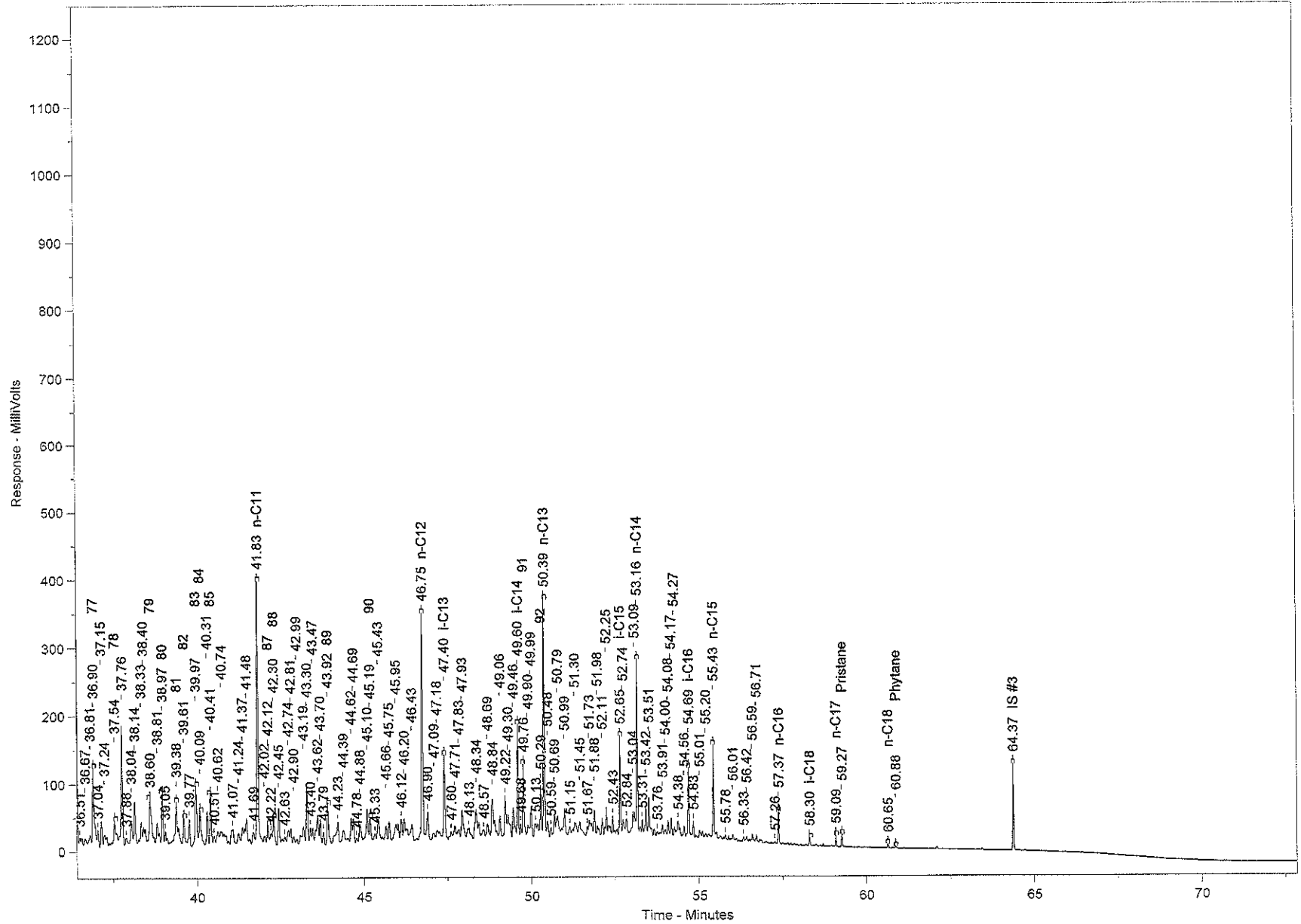
This chromatogram displays the detector response in MilliVolts over a 37-minute period. The baseline is stable at approximately 100 mV. Numerous peaks are observed, each labeled with its retention time and a sample identifier. The peaks are distributed across the entire time range, with a significant peak at 18.21 minutes.

Retention Time (min)	Sample Identifier
6.84	8
7.31	11
8.09	CS2 15
8.22	
9.11	9.16 17
9.31	18
9.89	19
10.68	20
11.95	25
12.08	26
12.30	27
12.61	
13.45	28
13.80	29
14.02	30
14.62	31
14.72	32
15.19	33
15.59	15.78 34A 34B
16.07	35
16.63	IS #1
16.85	36
18.21	37
18.41	
19.09	38
19.22	39
19.62	
20.13	
20.32	20.58 40 41A
21.09	42
21.62	44
21.74	45
21.82	
21.92	22.05 46B
22.16	22.29 48A
22.67	47
22.91	23.05 23.15 48
23.29	
23.39	
23.50	
23.90	49
24.45	
24.87	24.98 25.15 50
25.49	25.57 25.74 51
26.11	26.36 26.44 26.58 26.66
26.76	
27.07	27.27 54
27.42	27.51
27.89	27.89 57
28.01	28.20 28.27 56
28.55	28.62
28.70	28.85 58 59
29.10	29.10 60 61
29.47	29.56 29.71
29.86	29.94
30.37	IS #2
30.76	
30.94	31.18 31.31 31.44 31.54 63 64
31.84	31.83 31.98 32.07 32.18 65
32.31	32.40 32.49 32.62 32.70
32.86	32.98 33.07 33.20 33.27 33.42 66 67
33.55	
33.88	69
34.07	
34.24	34.39 34.46 70 71
34.59	
34.77	
35.02	72
35.20	35.42 35.51 35.59 35.78 73
35.84	
36.09	36.20 74 75

Chrom Perfect Chromatogram Report

C:\CPSpirit\2015\Aug15\081515\081515.0005.RAW

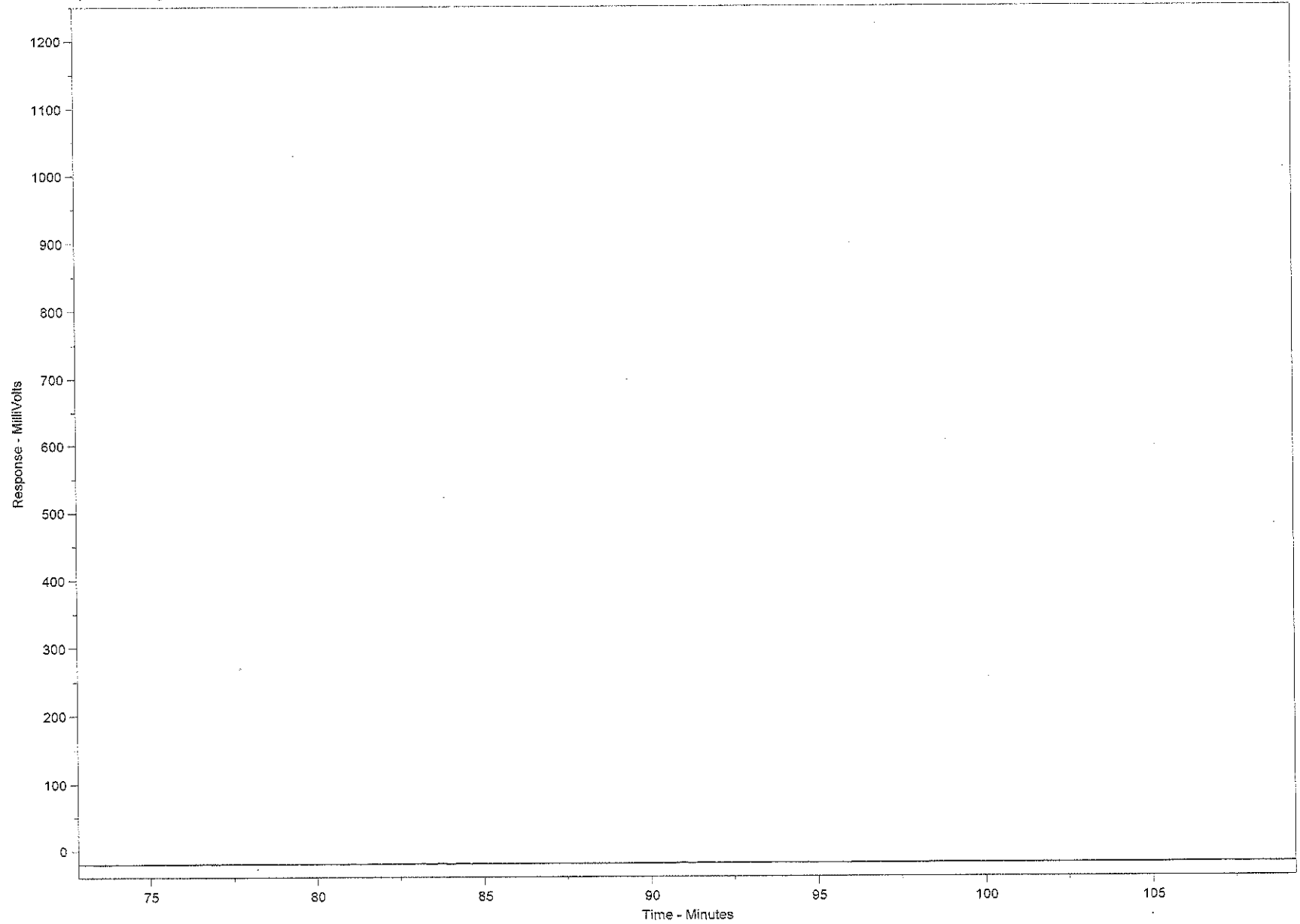
16238-2 [GW-15] [400+600CS2] + IS F-022715-1



Chrom Perfect Chromatogram Report

C:\CPSpirit\2015\Aug15\081515\081515.0005.RAW

16238-2 [GW-15] [400+600CS2] + IS F-022715-1



Chrom Perfect Chromatogram Report

Sample Name = 16238-2 [GW-15] [400+600CS2] + IS F-022715-1

Instrument = Instrument 1

Acquisition Port = DP#

Heading 1 =

Heading 2 =

Raw File Name = C:\CPSpirit\2015\Aug15\081515\081515.0005.RAW

Date Taken (end) = 8/18/2015 3:57:34 AM

Method File Name = C:\CPSpirit\C344.met

Method Version = 44

Calibration File Name = C:\CPSpirit\080515a.cal

Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.84	0.0928	63556.96
11	7.31	0.1812	124117.70
CS2	8.09	0.5143	352379.90
15	8.22	0.0283	19411.65
	9.11	0.0928	63557.32
17	9.16	0.1108	75941.80
18	9.31	0.7109	487072.10
19	9.89	0.5266	360822.70
20	10.68	1.2137	831570.80
25	11.95	0.0541	37036.20
26	12.08	1.2886	882895.20
27	12.30	0.1213	83118.10
	12.61	0.0155	10612.53
28	13.45	0.1416	97009.09
29	13.80	0.0476	32635.79
30	14.02	1.1752	805167.10
31	14.62	0.8958	613780.70
32	14.72	0.4170	285714.10
	14.89	0.1963	134522.50
33	15.19	1.2368	847415.70
	15.59	0.6598	452088.90
34A	15.78	0.6264	429166.10
	15.87	0.1268	86904.59
34B	15.96	1.0551	722894.90
35	16.07	0.0552	37792.65
IS #1	16.63	0.7731	529707.80
36	16.85	2.7473	1882332.00
37	18.21	4.9464	3389023.00
	18.41	0.4360	298755.60
	19.00	0.5886	403303.40
38	19.09	0.1819	124597.40
39	19.22	0.2569	176033.90
	19.62	0.5799	397299.30
	19.71	0.0645	44225.46
	20.13	0.7517	515015.60
40	20.32	0.0812	55650.91
41A	20.58	0.0843	57733.77
42	21.09	0.4942	338605.70
43	21.52	1.8368	1258444.00
44	21.62	0.4788	328066.90
45	21.74	0.1248	85493.62
	21.92	0.1170	80152.18
46B	22.05	0.9693	664103.30
46A	22.16	2.0941	1434749.00
	22.29	0.6781	464593.30
47	22.67	0.2661	182339.50
	22.79	0.0235	16080.81
48	22.91	0.3196	218985.40
	23.05	0.2892	198161.90
	23.15	0.6165	422397.00
	23.29	0.0582	39882.35
	23.50	0.9096	623224.60
49	23.90	3.3988	2328674.00
	23.99	0.5450	373416.20
	24.45	0.1610	110304.10

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
50	24.87	0.0602	41228.46
	24.98	0.0350	23966.70
	25.15	0.0824	56488.97
51	25.49	0.1774	121521.80
	25.57	0.2963	202980.70
	25.74	0.0342	23434.47
52	25.92	2.3919	1638796.00
	26.11	0.0770	52779.49
	26.28	1.3674	936856.60
53	26.36	0.3484	238731.00
	26.44	0.2269	155432.10
	26.58	0.1061	72720.65
54	26.66	0.1698	116362.30
	26.76	0.1148	78644.38
	27.07	0.8592	588709.70
55	27.27	0.4427	303305.60
	27.42	0.0650	44514.89
	27.51	0.0260	17826.59
56	27.65	3.0961	2121299.00
	27.89	0.0251	17198.73
	28.07	0.3314	227064.60
57	28.20	0.5238	358886.00
	28.27	0.5959	408299.40
	28.55	0.1554	106481.90
58	28.62	0.1342	91913.39
	28.70	0.9792	670920.80
	28.85	0.0353	24201.98
60	29.10	0.7480	512501.30
	29.19	0.1772	121377.30
	29.47	0.4035	276475.30
61	29.56	0.6276	430007.20
	29.71	0.4011	274794.50
	29.86	0.0777	53228.57
62	29.94	0.1324	90701.97
	30.47	2.8026	1920167.00
	30.57	0.7498	513713.30
IS #2	30.76	0.4523	309905.70
	30.94	0.1227	84071.37
	31.18	0.1317	90230.71
63	31.31	0.0797	54578.74
	31.44	0.4917	336907.30
	31.54	0.3031	207690.10
64	31.64	0.2083	142684.10
	31.83	0.1812	124150.80
	31.99	0.0529	36272.58
65	32.07	0.2342	160447.60
	32.18	0.6102	418107.70
	32.31	0.2010	137709.00
66	32.40	0.2309	158230.20
	32.49	0.0800	54797.40
	32.62	0.7502	514017.80
67	32.70	0.1780	121966.10
	32.86	0.0992	67965.88
	32.98	0.3574	244885.20
68	33.07	0.5246	359407.50
	33.20	0.0643	44050.68
	33.27	0.1045	71564.00
69	33.42	0.6548	448635.70
	33.55	0.4926	337511.70
	33.88	1.0812	740750.50
70	34.07	0.1527	104622.40
	34.24	0.4774	327062.20
	34.39	0.3833	262588.60
71	34.46	0.3117	213533.90
	34.59	0.0949	65042.13
	34.77	0.2894	198280.80
	35.02	0.1719	117770.30

Chrom Perfect Chromatogram Report

Peak Name	Ret. Time	Area %	Area
72	35.20	0.0399	27342.19
73	35.35	1.1479	786455.90
	35.42	0.2122	145395.30
	35.51	0.2394	164001.10
	35.59	0.2307	158070.00
	35.68	0.0381	26085.69
	35.78	0.0395	27042.05
	35.84	0.0496	33960.37
74	36.09	0.0864	59162.63
75	36.20	0.1337	91629.95
76	36.41	2.1821	1495037.00
	36.51	0.0175	12003.12
	36.67	0.0612	41921.50
	36.81	0.0997	68304.82
77	36.90	0.6110	418626.40
	37.04	0.1084	74261.51
	37.15	0.1370	93867.71
	37.24	0.0412	28261.97
78	37.54	0.2307	158062.70
	37.76	0.8062	552397.90
	37.88	0.0730	49999.31
	38.04	0.1991	136409.80
	38.14	0.2923	200260.00
	38.33	0.1969	134918.70
	38.40	0.2362	161841.20
79	38.60	0.5346	366295.90
	38.81	0.2394	163992.50
80	38.97	0.3219	220525.30
	39.05	0.1523	104347.30
81	39.38	0.4250	291195.60
82	39.61	0.2204	151023.60
	39.77	0.1954	133879.10
83	39.97	0.4908	336276.30
84	40.09	0.3187	218339.80
	40.31	0.1998	136864.30
85	40.41	0.2796	191587.10
	40.51	0.0352	24096.78
	40.62	0.0744	50954.70
	40.74	0.0671	45968.82
	41.07	0.1771	121364.20
	41.24	0.1114	76341.52
	41.37	0.1416	97040.77
	41.48	0.1775	121597.10
	41.69	0.1183	81021.46
n-C11	41.83	1.7583	1204671.00
	42.02	0.0782	53561.53
87	42.12	0.1409	96569.44
	42.22	0.0993	68043.82
88	42.30	0.2136	146321.20
	42.45	0.2411	165209.30
	42.63	0.0720	49304.01
	42.74	0.1402	96074.24
	42.81	0.1092	74820.21
	42.90	0.0646	44250.94
	42.99	0.0509	34861.70
	43.19	0.2482	170074.60
	43.30	0.3922	268713.60
	43.40	0.1293	88615.34
	43.47	0.1202	82340.80
	43.62	0.3283	224922.40
	43.70	0.1677	114902.80
	43.79	0.0891	61049.34
89	43.92	0.3252	222835.90
	44.23	0.3258	223201.50
	44.39	0.1996	136763.30
	44.62	0.1872	128293.00
	44.69	0.1670	114418.10

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Peak Name	Ret. Time	Area %	Area
90	44.78	0.0451	30873.93
	44.88	0.1990	136327.00
	45.10	0.3197	219070.40
	45.19	0.2033	139280.40
	45.33	0.0920	63015.67
	45.43	0.2505	171617.40
	45.66	0.1573	107774.10
	45.75	0.1689	115693.20
	45.95	0.2247	153934.20
	46.12	0.1819	124653.80
	46.20	0.1827	125179.80
	46.43	0.2247	153965.40
n-C12	46.75	1.4065	963654.20
	46.90	0.2728	186906.90
	47.09	0.0998	68376.92
i-C13	47.18	0.2045	140097.40
	47.40	0.5742	393424.80
	47.60	0.0949	65028.88
	47.71	0.1501	102829.60
	47.83	0.1107	75827.91
	47.93	0.3120	213799.10
	48.13	0.1887	129276.80
	48.34	0.4350	298019.50
	48.57	0.1250	85637.68
	48.69	0.1653	113237.20
	48.84	0.5037	345102.10
	49.06	0.1682	115233.80
i-C14	49.22	0.3287	225173.20
	49.30	0.2619	179450.80
	49.46	0.2789	191071.10
	49.60	0.5697	390298.70
	49.68	0.0825	56492.78
91	49.76	0.4607	315679.60
	49.90	0.1275	87360.32
	49.99	0.2013	137938.10
92	50.13	0.1338	91653.58
	50.29	0.2722	186521.80
	50.39	1.1578	793243.40
	50.48	0.1176	80597.34
	50.59	0.0625	42832.42
	50.69	0.1302	89232.52
	50.79	0.2617	179285.00
	50.99	0.2116	144992.60
	51.15	0.0826	56605.09
	51.30	0.1573	107793.10
	51.45	0.1824	124994.40
	51.67	0.0512	35068.66
n-C13	51.73	0.1955	133958.90
	51.88	0.1606	110058.80
	51.98	0.0783	53616.96
	52.11	0.0891	61074.20
	52.25	0.1079	73908.64
	52.43	0.0855	58594.80
	52.65	0.4549	311641.20
	52.74	0.1235	84626.77
	52.84	0.1171	80251.63
	53.04	0.1752	120017.70
	53.09	0.1367	93685.57
	53.16	0.7851	537941.00
i-C15	53.31	0.0807	55271.53
	53.42	0.1907	130628.30
	53.51	0.2516	172362.30
	53.76	0.0302	20665.17
	53.91	0.0692	47423.18
	54.00	0.0605	41435.55
	54.08	0.0929	63622.43
	54.17	0.1166	79897.41

Chrom Perfect Chromatogram Report

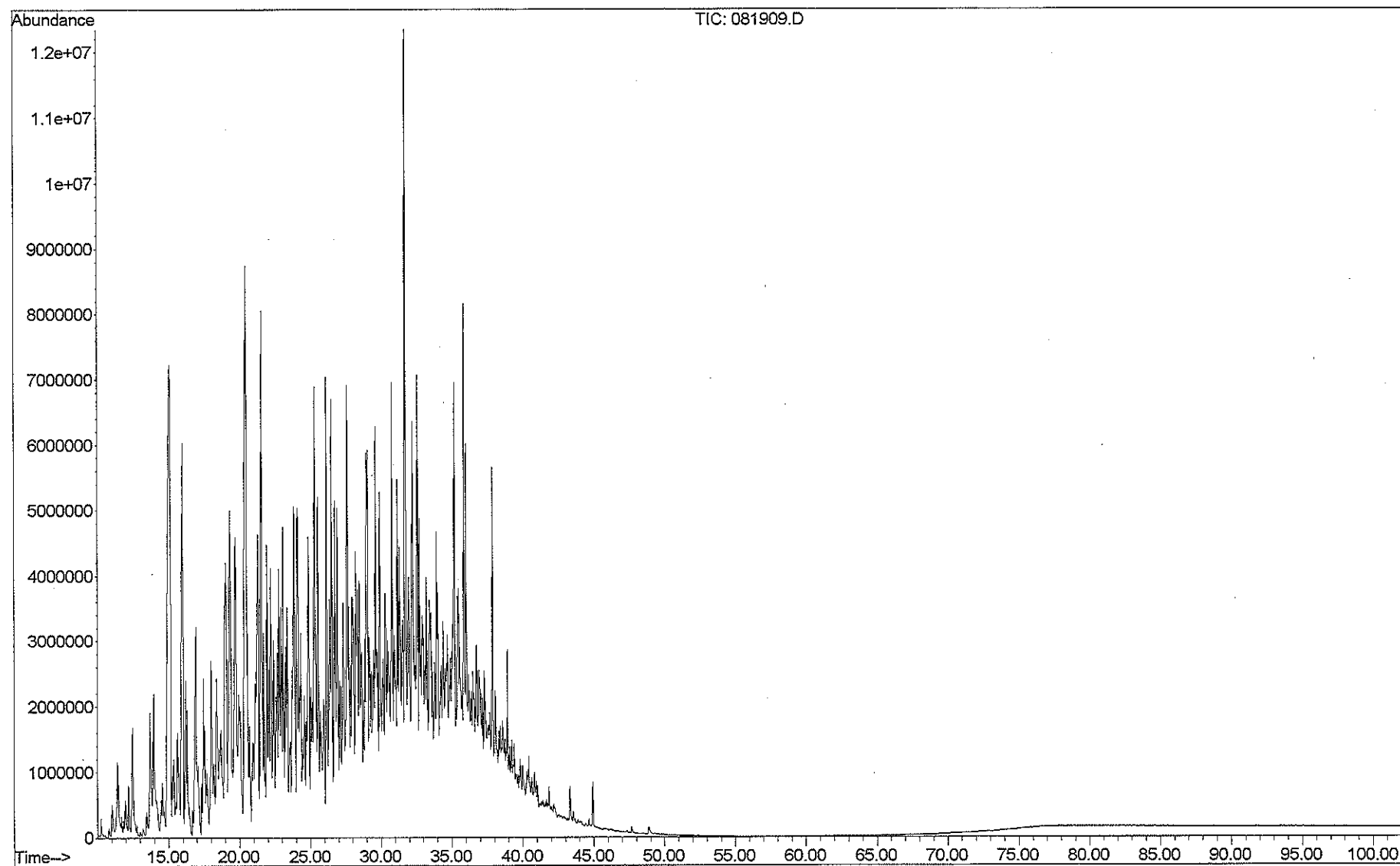
Peak Name	Ret. Time	Area %	Area
	54.27	0.0803	55049.34
	54.38	0.1598	109515.80
	54.56	0.0618	42315.72
i-C16	54.69	0.3762	257736.40
	54.83	0.0835	57220.71
	55.01	0.0537	36769.57
	55.20	0.0202	13836.21
n-C15	55.43	0.3742	256405.50
	55.78	0.0160	10985.84
	56.01	0.0237	16211.33
	56.33	0.0188	12880.89
	56.42	0.0312	21354.30
	56.59	0.0512	35059.28
	56.71	0.0394	26986.49
	57.26	0.0132	9060.87
n-C16	57.37	0.1357	92949.70
i-C18	58.30	0.0428	29339.32
n-C17	59.09	0.0469	32109.37
Pristane	59.27	0.0601	41147.93
n-C18	60.65	0.0181	12405.62
Phytane	60.88	0.0088	6045.91
IS #3	64.37	0.3489	239060.70

Total Area = 6.851458E+07

Total Height = 2.286781E+07

Total Amount = 0

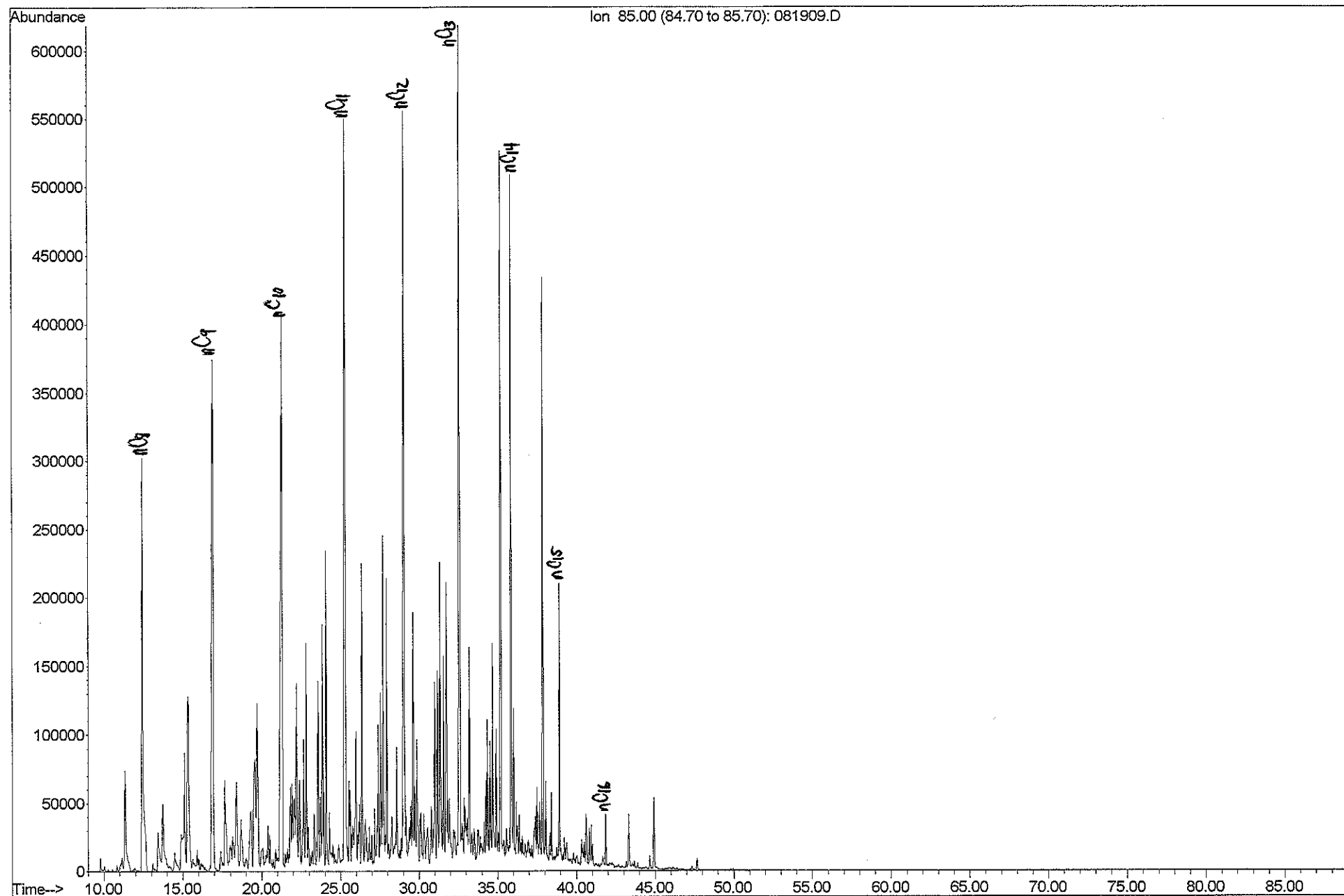
Sample Name: GMW-102 (16238-3)
Misc Info :

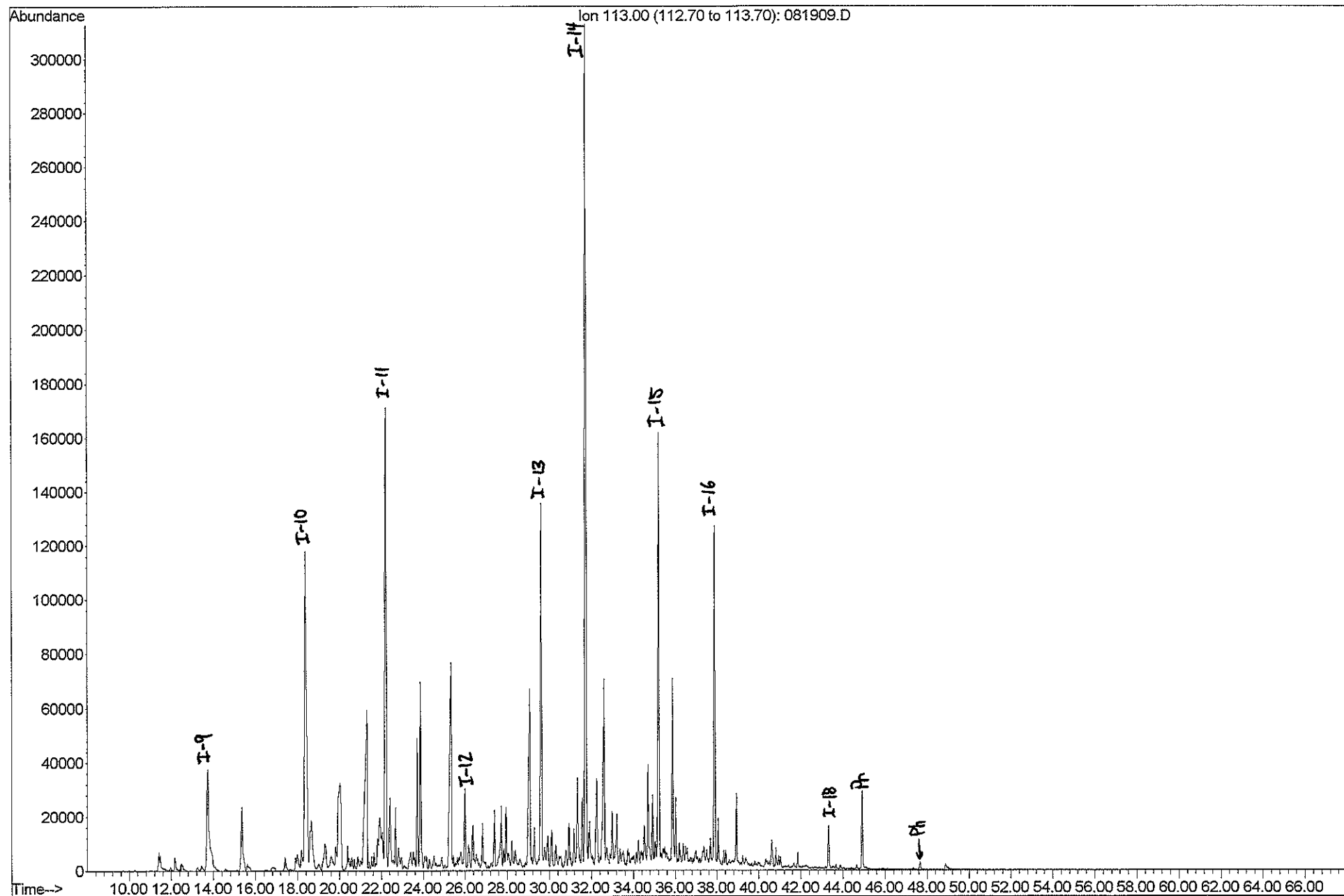


Table

**Key to Chromatogram Symbol Identification
for m/z 85 and m/z 113 Paraffins and Isoparaffins**

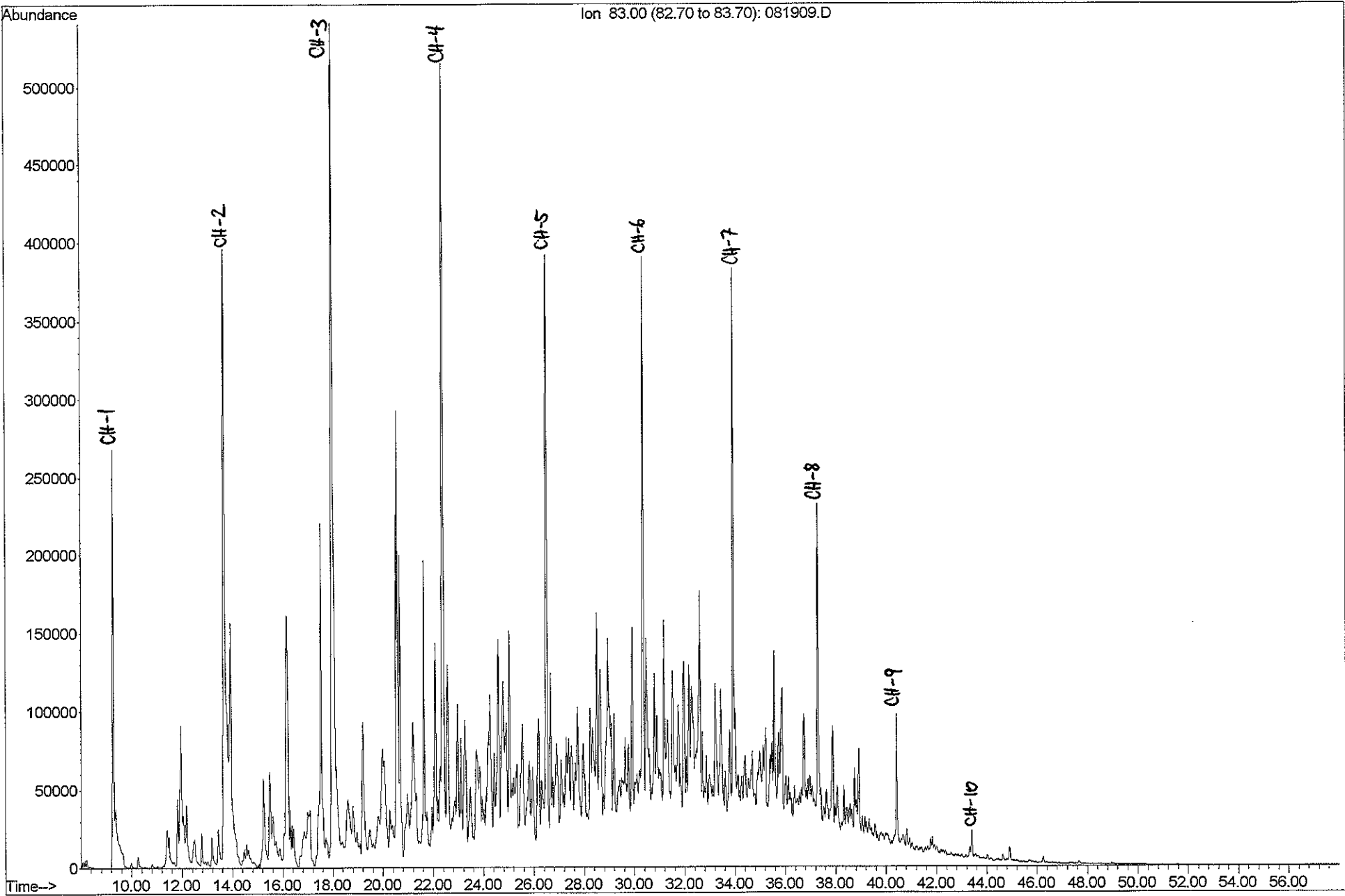
Symbol	Detail
i-10	Iso-alkane with 10 carbon atoms
i-15	Farnesane (isoprenoid with 15 carbon atoms)
i-16	Isoprenoid with 16 carbon atoms
Pr	Pristane (isoprenoid with 19 carbon atoms)
Ph	Phytane (isoprenoid with 20 carbon atoms)
nC ₈	n-C ₈ normal alkane
nC ₁₅	n-C ₁₅ normal alkane
i-8	2,5-(2,4)-Dimethylhexane
i-8'	2,3,4-Trimethylpentane
i-8''	2,3-Dimethylhexane
CH- <i>n</i>	Alkylcyclohexane (where <i>n</i> indicates number of carbon atoms in the side chain)





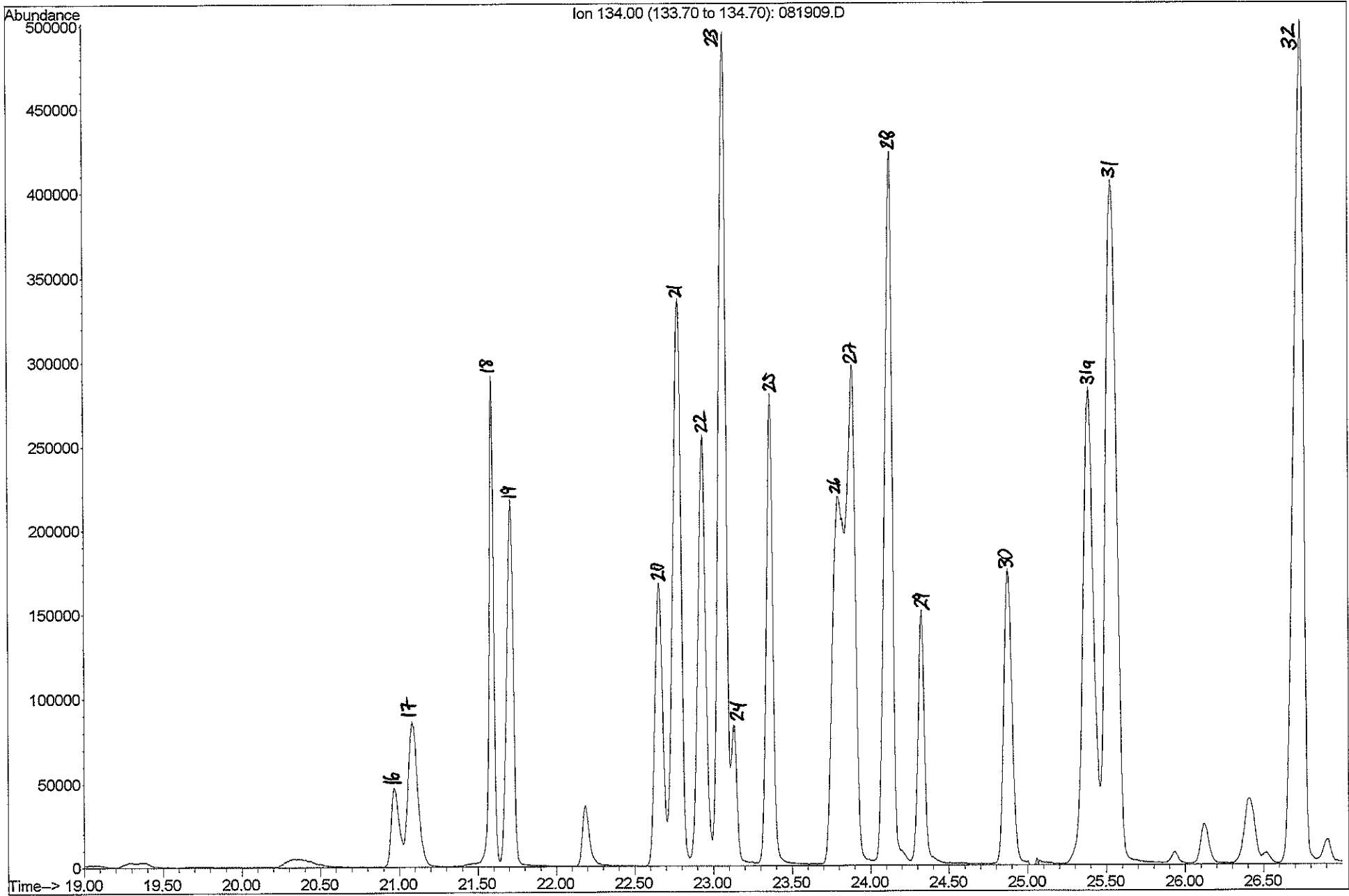
Table**Key for Alkylcyclohexanes at m/z 83**

Symbol	Detail
CH-1:	Methylcyclohexane
CH-2:	Ethylcyclohexane
CH-3:	Propylcyclohexane
CH-4:	Butylcyclohexane
CH-5:	Pentylcyclohexane
CH-6:	Hexylcyclohexane
CH-7:	Heptylcyclohexane
CH-8:	Octylcyclohexane
CH-9:	Nonylcyclohexane
CH-10:	Decylcyclohexane
CH-11:	Undecylcyclohexane
CH-12:	Dodecylcyclohexane
CH-13:	Tridecylcyclohexane
CH-14:	Tetradecylcyclohexane



Key for C₄-Alkylbenzenes (m/z 134 mass chromatograms)

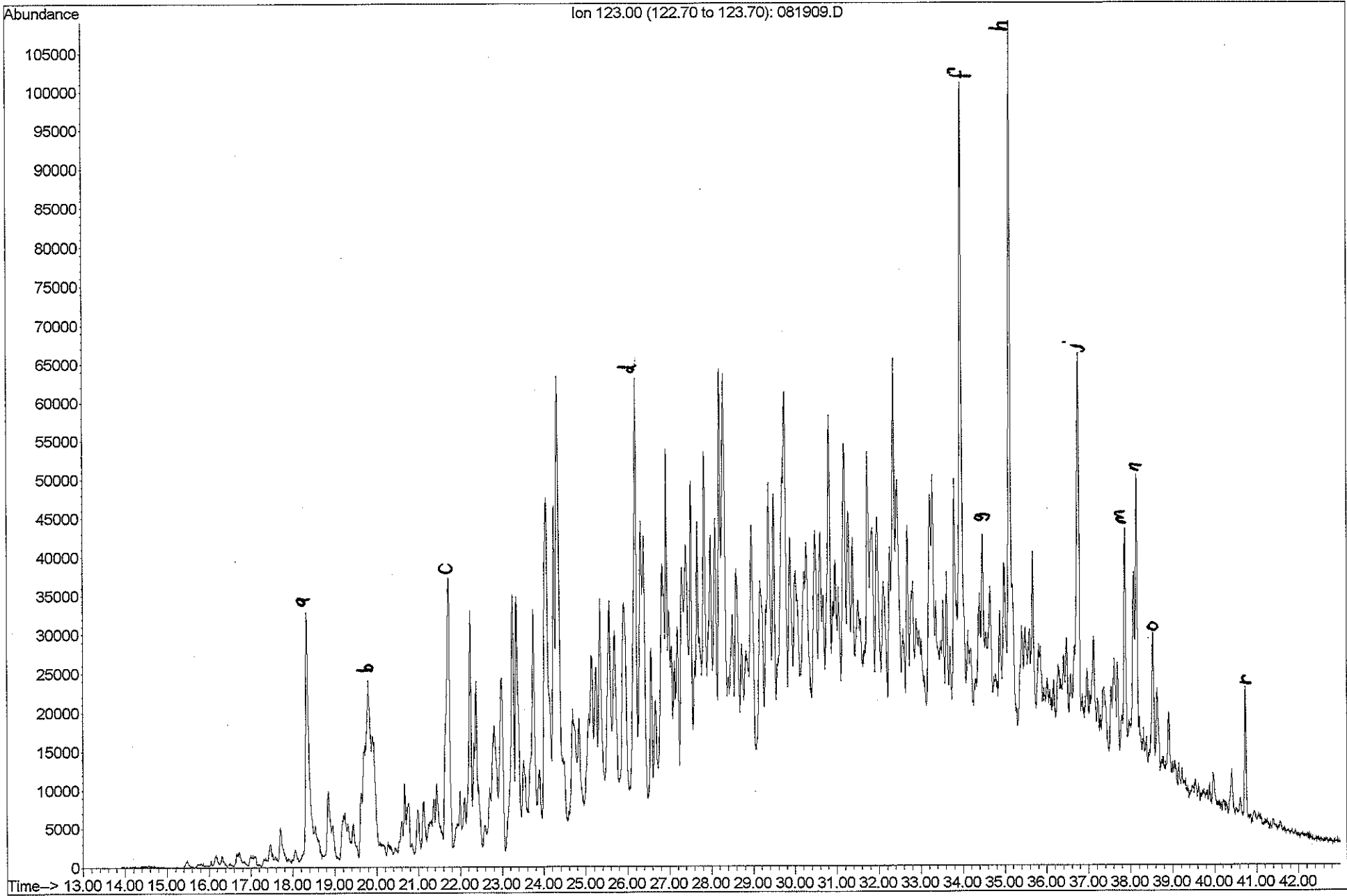
#	Compound
16	Sec-Butylbenzene
17	1-Methyl-3-Isopropylbenzene
18	1-Methyl-4-Isopropylbenzene
19	1-Methyl-2-Isopropylbenzene
20	1,3-Diethylbenzene
21	1-Methyl-3-Propylbenzene
22	Butylbenzene
23	1,3-Dimethyl-5-Ethylbenzene
24	1,2-Diethylbenzene
25	1-Methyl-2-Propylbenzene
26	1,4-Dimethyl-2-Ethylbenzene
27	1,3-Dimethyl-4-Ethylbenzene
28	1,2-Dimethyl-4-Ethylbenzene
29	1,3-Dimethyl-2-Ethylbenzene
30	1,2-Dimethyl-3-Ethylbenzene
31a	1,2,4,5-Tetramethylbenzene
31	1,2,3,5-Tetramethylbenzene
32	1,2,3,4-Tetramethylbenzene

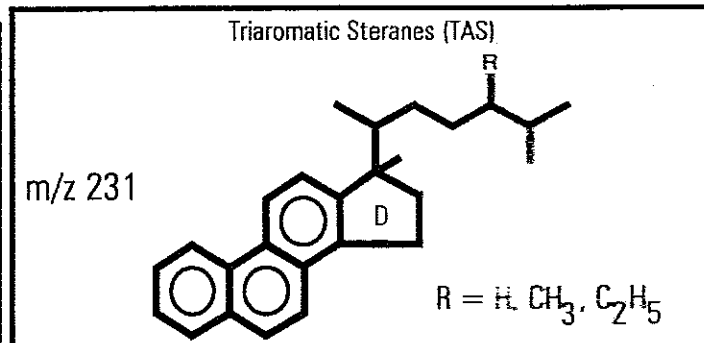
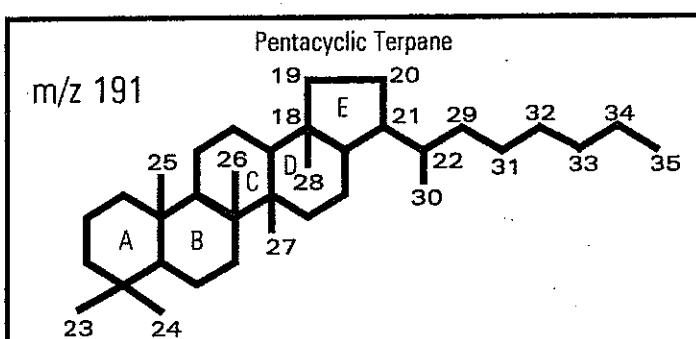
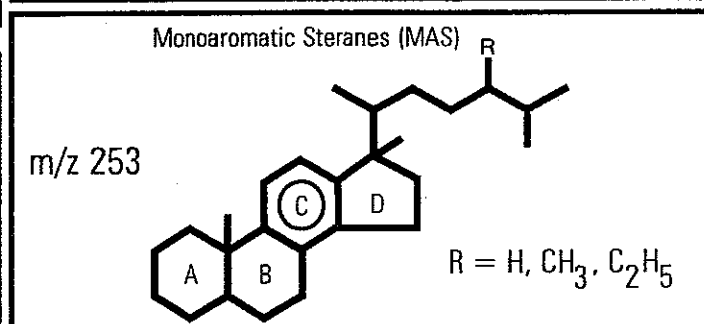
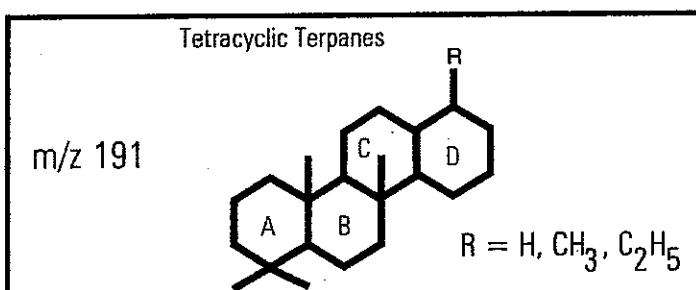
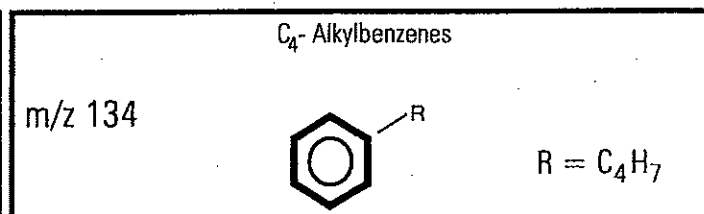
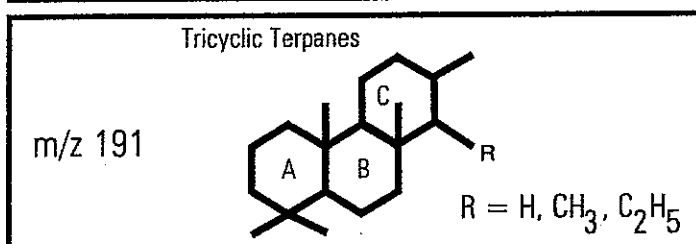
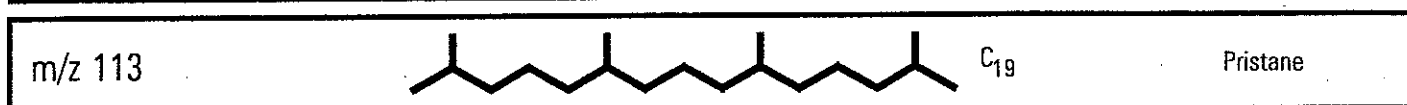
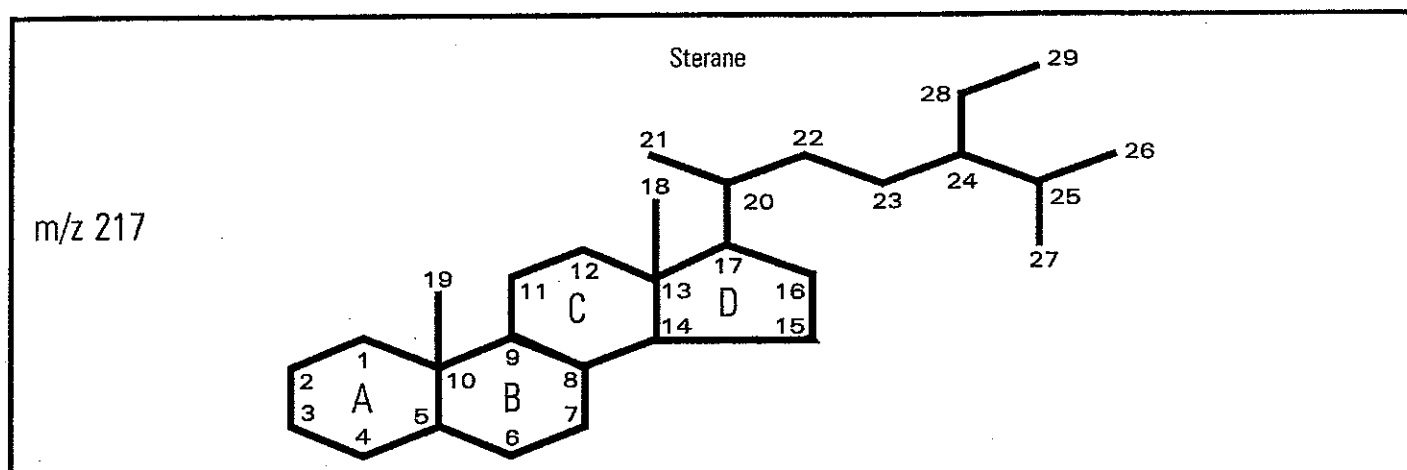


Table

**Key for identification of the Bicyclanes
(m/z 123 mass chromatograms)**

Peak No.	Identity	Formula	M.W.
a	2,2,3-Trimethylbicycloheptane	$C_{10}H_{18}$	138
b	C_{10} bicycloalkane	$C_{10}H_{18}$	138
c	3,3,7-Trimethylbicycloheptane	$C_{10}H_{18}$	138
d	C_{11} decalin	$C_{11}H_{20}$	152
f	Nordrimane	$C_{14}H_{26}$	194
g	Nordrimane	$C_{14}H_{26}$	194
h	Rearranged drimane	$C_{15}H_{28}$	208
j	Rearranged drimane	$C_{15}H_{28}$	208
k	Isomer of eudesmane	$C_{15}H_{28}$	208
l	4 β (H) Eudesmane	$C_{15}H_{28}$	208
m	C_{15} bicyclic sesquiterpane	$C_{15}H_{28}$	208
n	8 β (H) Drimane	$C_{15}H_{28}$	208
o	C_{15} bicyclic sesquiterpane	$C_{15}H_{28}$	208
p	C_{16} bicyclic sesquiterpane	$C_{16}H_{30}$	222
q	C_{16} bicyclic sesquiterpane	$C_{16}H_{30}$	222
r	8 β (H) Homodrimane	$C_{16}H_{30}$	222

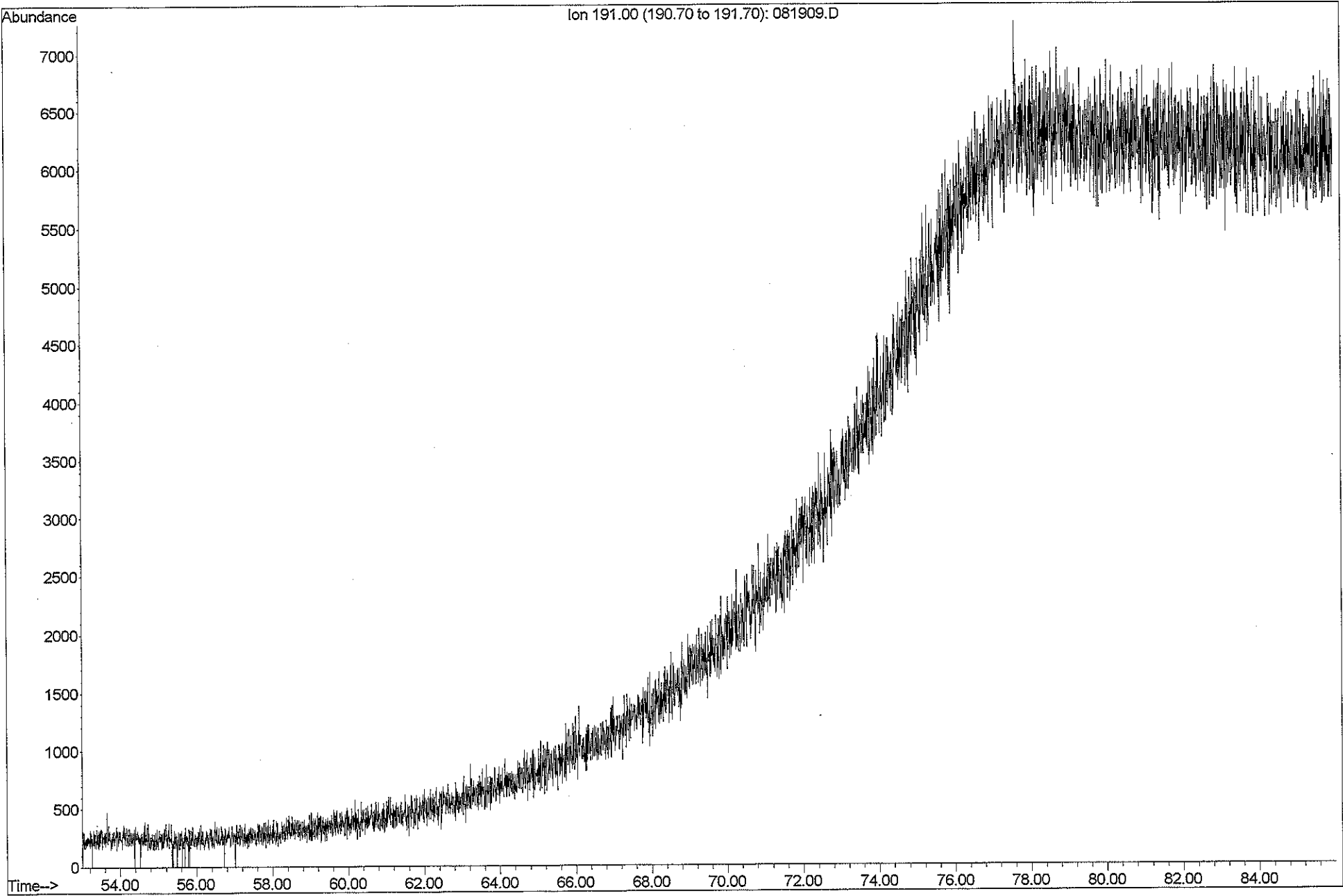




The compound structures of pristane, C₄-alkylbenzenes, sterane; terpanes; monoaromatic and triaromatic steranes

Key for Tricyclic, Tetracyclic, and Pentacyclic Terpanes
Identification (m/z 191 mass chromatograms)

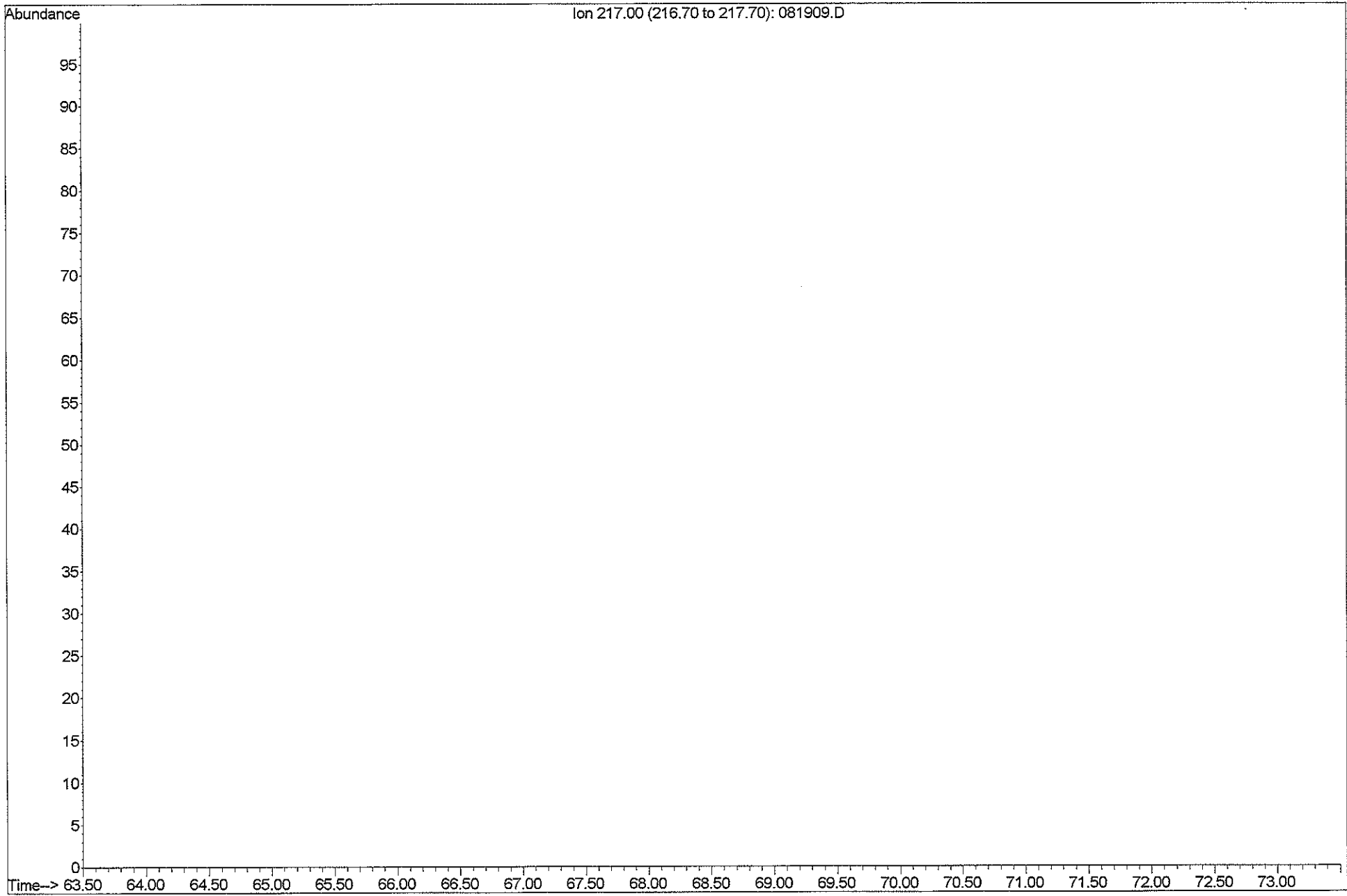
Code	Identity	Carbon #
0	C ₂₀ -Tricyclic Terpane	20
1	C ₂₁ -Tricyclic Terpane	21
2	C ₂₂ -Tricyclic Terpane	22
3	C ₂₃ -Tricyclic Terpane	23
4	C ₂₄ -Tricyclic Terpane	24
5	C ₂₅ -Tricyclic Terpane	25
Z4	C ₂₄ -Tetracyclic Terpane	24
6a	C ₂₆ -Tricyclic Terpane	26
6b	C ₂₆ -Tricyclic Terpane	26
7	C ₂₇ -Tricyclic Terpane	27
A	C ₂₈ -Tricyclic Terpane #1	28
B	C ₂₈ -Tricyclic Terpane #2	28
C	C ₂₉ -Tricyclic Terpane #1	29
D	C ₂₉ -Tricyclic Terpane #2	29
E	18 α -22,29,30-Trisnorneohopane (Ts)	27
F	17 α -22,29,30-Trisnorhopane (Tm)	27
G	17 β -22,29,30-Trisnorhopane	27
H	17 α -23,28-Bisnorlupane	28
10a	C ₃₀ -Tricyclic Terpane #1	30
10b	C ₃₀ -Tricyclic Terpane #2	30
I	17 α -28,30-Bisnorhopane	28
11a	C ₃₁ -Tricyclic Terpane #1	31
J	17 α -25-Norhopane	29
11b	C ₃₁ -Tricyclic Terpane #2	31
K	17 α ,21 β -30-Norhopane	29
C ₂₉ Ts	18 α -30-Norneohopane	29
C ₃₀ *	17 α -Diahopane	30
L	17 β -21 α -30-Normoretane	29
Ma	18 α -Oleanane	30
Mb	18 β -Oleanane	30
N	17 α ,21 β -Hopane	30
O	17 β ,21 α -Moretane	30
13a	C ₃₃ -Tricyclic Terpane #1	33
13b	C ₃₃ -Tricyclic Terpane #2	33
P	22S-17 α ,21 β -30-Homohopane	31
Q	22R-17 α ,21 β -30-Homohopane	31
R	Gammacerane	30
14a	C ₃₄ -Tricyclic Terpane #1	34
S	17 β ,21 α -Homomoretane	31
14b	C ₃₄ -Tricyclic Terpane #2	34
T	22S-17 α ,21 β -30-Bishomohopane	32
U	22R-17 α ,21 β -30-Bishomohopane	32
15a	C ₃₅ -Tricyclic Terpane #1	35
15b	C ₃₅ -Tricyclic Terpane #2	35
V	17 β ,21 α -C ₃₂ -Bishomomoretane	32
WS	22S-17 α ,21 β -30,31,32-Trishomohopane	33
WR	22R-17 α ,21 β -30,31,32-Trishomohopane	33
16a	C ₃₆ -Tricyclic Terpane #1	36
16b	C ₃₆ -Tricyclic Terpane #2	36
XS	22S-17 α ,21 β -30,31,32,33-Tetrahomohopane	34
XR	22R-17 α ,21 β -30,31,32,33-Tetrahomohopane	34
YS	22S-17 α ,21 β -30,31,32,33,34-Pentahomohopane	35
YR	22R-17 α ,21 β -30,31,32,33,34-Pentahomohopane	35



Table

Key for Steranes Identification (m/z 217 Mass Chromatogram)

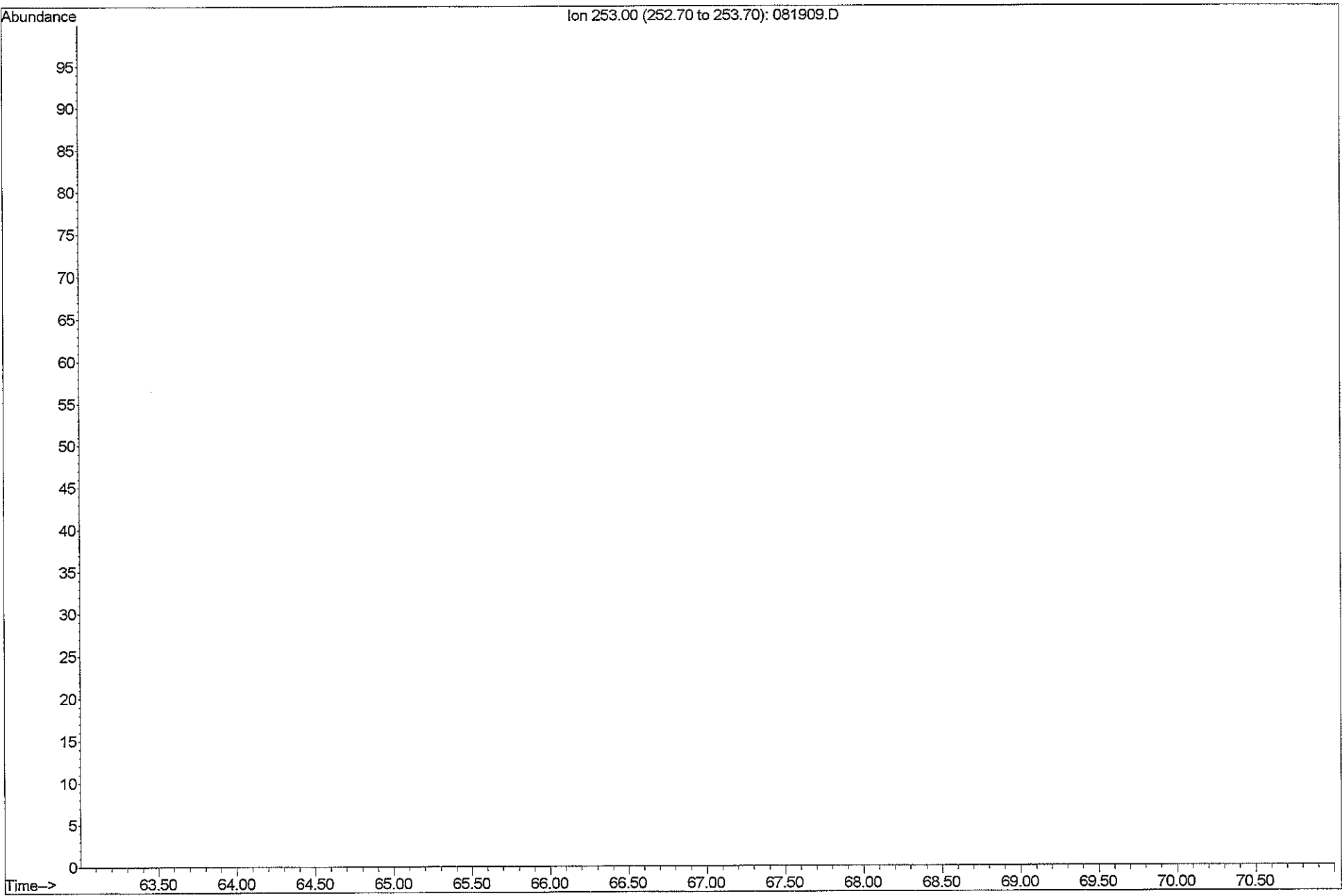
Code	Identity	Carbon #
1	13 β ,17 α -diacholestane (20S)	27
2	13 β ,17 α -diacholestane (20R)	27
3	13 α ,17 β -diacholestane (20S)	27
4	13 α ,17 β -diacholestane (20R)	27
5	24-methyl-13 β ,17 α -diacholestane (20S)	28
6	24-methyl-13 β ,17 α -diacholestane (20R)	28
7D	24-methyl-13 α ,17 β -diacholestane (20S)	28
7	14 α ,17 α -cholestane (20S)	27
8D	24-ethyl-13 β ,17 α -diacholestane (20S)	29
8	14 β ,17 β -cholestane (20R)	27
9	14 β ,17 β -cholestane (20S)	27
9D	24-methyl-13 α ,17 β -diacholestane (20R)	28
10	14 α ,17 α -cholestane (20R)	27
11	24-ethyl-13 β ,17 α -diacholestane (20R)	29
12	24-ethyl-13 α ,17 β -diacholestane (20S)	29
13	24-methyl-14 α ,17 α -cholestane (20S)	28
14D	24-ethyl-13 α ,17 β -diacholestane (20R)	29
14	24-methyl-14 β ,17 β -cholestane (20R)	28
15	24-methyl-14 β ,17 β -cholestane (20S)	28
16	24-methyl-14 α ,17 α -cholestane (20R)	28
17	24-ethyl-14 α -cholestane (20S)	29
18	24-ethyl-14 β ,17 β -cholestane (20R)	29
19	24-ethyl-14 β ,17 β -cholestane (20S)	29
20	24-ethyl-14 α ,17 α -cholestane (20R)	29
21A	24-n-Propylcholestane (20S)	30
21B	4-methyl-24-ethylcholestane (20S)	30
22A	4 α -methyl-24-ethyl-14 β ,17 β -cholestane(20S)	30
22B	24-n-propyl-14 β ,17 β -cholestane (20S)	30
23A	4 α -methyl-24-ethyl-14 β ,17 β -cholestane(20R)	30
23B	24-n-propyl-14 β ,17 β -cholestane (20R)	30
24A	4 α -methyl-24-ethylcholestane(20R)	30
24B	24-n-propylcholestane (20R)	30



Table

Key for Monoaromatic Steranes Identification
(m/z 253 mass chromatogram)

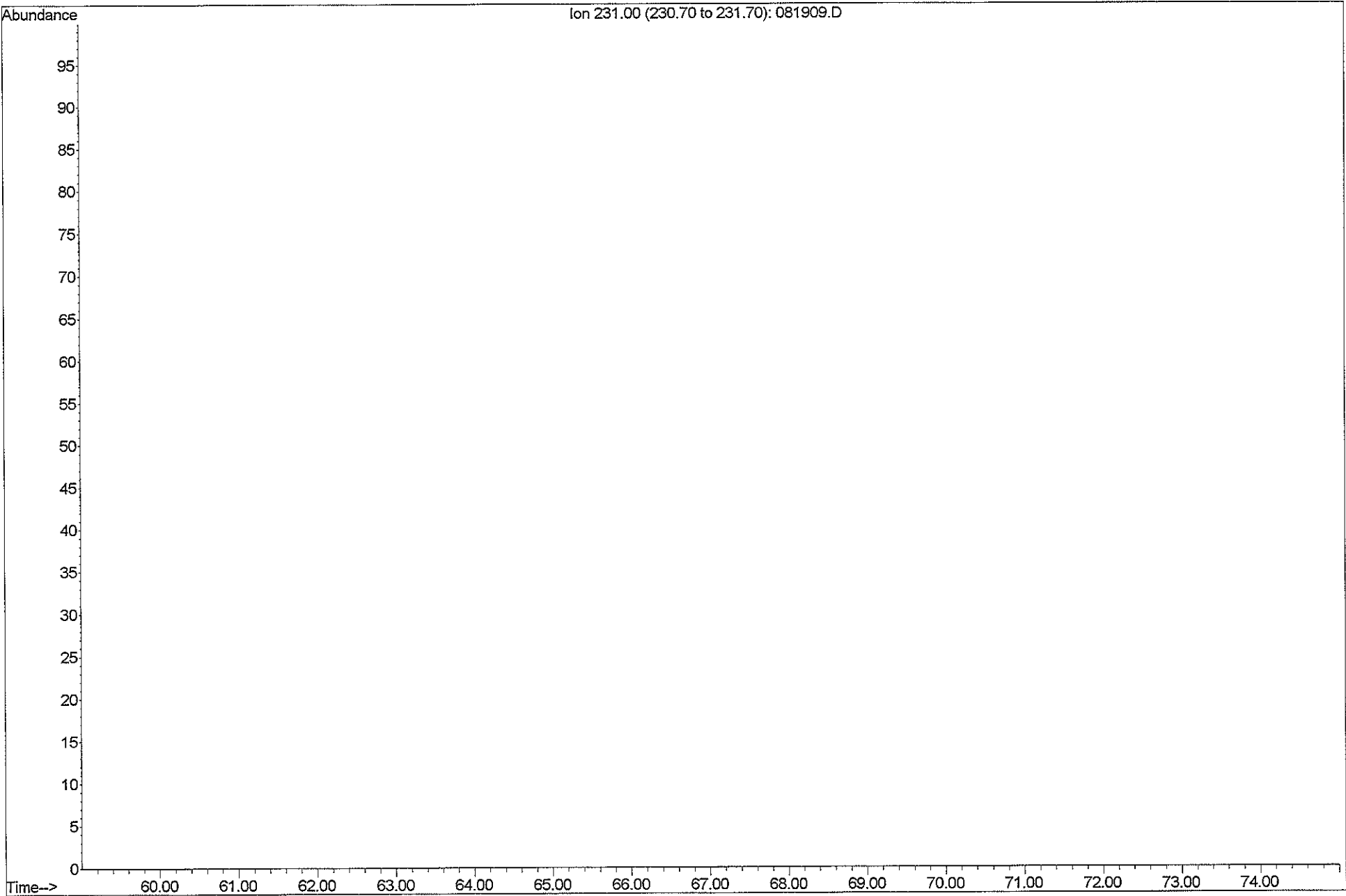
Code	Identity	Elemental Composition
a	20S, 5 β C ₂₇ -Monoaromatic sterane	C ₂₇ H ₄₂
b	20S, dia C ₂₇ -Monoaromatic sterane	C ₂₇ H ₄₂
c	20R, 5 β C ₂₇ -Monoaromatic sterane + 20R C ₂₇ dia MAS	C ₂₇ H ₄₂
d	20S, 5 α C ₂₇ -Monoaromatic sterane	C ₂₇ H ₄₂
e	20S, 5 β C ₂₈ -Monoaromatic sterane + 20S C ₂₈ dia MAS	C ₂₈ H ₄₄
f	20R, 5 α C ₂₇ -Monoaromatic sterane	C ₂₇ H ₄₂
g	20S, 5 α C ₂₈ -Monoaromatic sterane	C ₂₈ H ₄₄
h	20R, 5 β C ₂₈ -Monoaromatic sterane + 20R C ₂₈ dia MAS	C ₂₈ H ₄₄
i	20S, 5 β C ₂₉ -Monoaromatic sterane + 20S C ₂₉ dia MAS	C ₂₉ H ₄₆
j	20S, 5 α C ₂₉ -Monoaromatic sterane	C ₂₉ H ₄₆
k	20R, 5 α C ₂₈ -Monoaromatic sterane	C ₂₈ H ₄₄
l	20R, 5 β C ₂₉ -Monoaromatic sterane + 20R C ₂₉ dia MAS	C ₂₉ H ₄₆
m	20R, 5 α C ₂₉ -Monoaromatic sterane	C ₂₉ H ₄₆



Table

Key for Triaromatic Steranes Identification
(m/z 231 chromatogram)

Code	Identity	Elemental Composition
T1	C ₂₀ Triaromatic sterane	C ₂₀ H ₂₀
T2	C ₂₁ Triaromatic sterane	C ₂₁ H ₂₂
T3	20S C ₂₆ Triaromatic sterane	C ₂₆ H ₃₂
T4	20R C ₂₆ + 20S C ₂₇ -Triaromatic steranes	C ₂₆ H ₃₂ + C ₂₇ H ₃₄
T5	20S C ₂₈ -Triaromatic sterane	C ₂₈ H ₃₆
T6	20R C ₂₇ -Triaromatic sterane	C ₂₇ H ₃₄
T7	20R C ₂₈ -Triaromatic sterane	C ₂₈ H ₃₆

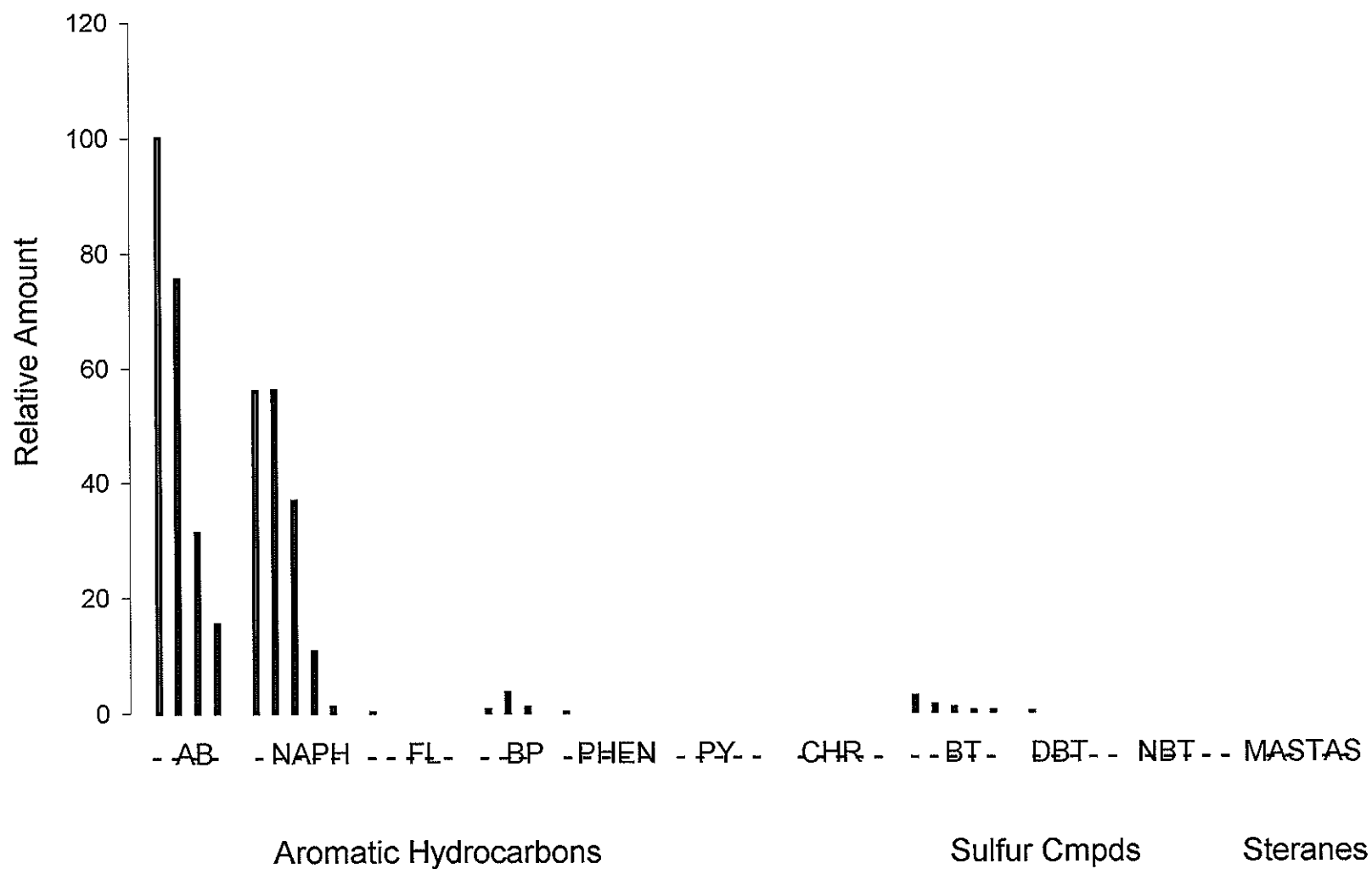


Key for Identifying Aromatic Hydrocarbons

No.	m/z	Abbreviation	Compound
1	120	AB	C ₃ -alkylbenzenes
2	134		C ₄ -alkylbenzenes
3	148		C ₅ -alkylbenzenes
4	162		C ₆ -alkylbenzenes
5	128	NAPH	C ₀ -naphthalene
6	142		C ₁ -naphthalenes
7	156		C ₂ -naphthalenes
8	170		C ₃ -naphthalenes
9	184		C ₄ -naphthalenes
10	166	FL	C ₀ -fluorene
11	180		C ₁ -fluorenes
12	194		C ₂ -fluorenes
13	208		C ₃ -fluorenes
14	222		C ₄ -fluorenes
15	154	BP	C ₀ -biphenyl
16	168		C ₁ -biphenyls + dibenzofuran
17	182		C ₂ -biphenyls + C ₁ -dibenzofuran
18	178	PHEN	C ₀ -phenanthrene
19	192		C ₁ -phenanthrenes
20	206		C ₂ -phenanthrenes
21	220		C ₃ -phenanthrenes
22	234		C ₄ -phenanthrenes
23	202	PY	C ₀ -pyrene/fluoranthene
24	216		C ₁ -pyrenes/fluoranthenes
25	230		C ₂ -pyrenes/fluoranthenes
26	244		C ₃ -pyrenes/fluoranthenes
27	258		C ₄ -pyrenes/fluoranthenes
28	228	CHR	C ₀ -chrysene
29	242		C ₁ -chrysenes
30	256		C ₂ -chrysenes
31	270		C ₃ -chrysenes
32	284		C ₄ -chrysenes
33	148	BT	C ₁ -benzothiophenes
34	162		C ₂ -benzothiophenes
35	176		C ₃ -benzothiophenes
36	190		C ₄ -benzothiophenes
37	204		C ₅ -benzothiophenes
38	184	DBT	C ₂ -dibenzothiophene
39	198		C ₃ -dibenzothiophenes
40	212		C ₄ -dibenzothiophenes
41	226		C ₅ -dibenzothiophenes
42	240		C ₆ -dibenzothiophenes
43	234	NBT	C ₀ -naphthobenzothiophene
44	248		C ₁ -naphthobenzothiophenes
45	262		C ₂ -naphthobenzothiophenes
46	276		C ₃ -naphthobenzothiophenes
47	290		C ₄ -naphthobenzothiophenes
48	253	MAS	Monoaromatic steranes
49	267		Monoaromatic steranes
50	239		Monoaromatic steranes
51	231	TAS	Triaromatic steranes
52	245		Triaromatic steranes

Aromatic Hydrocarbon Distribution

GMW-02 (16238-3)



REPORT OF ANALYTICAL RESULTS

Client: Daniel Swenson
The Source Group
1962 Freeman Avenue
Signal Hill, CA 90755

Lab Number: 16238-1
Collected: 7/28/2015
Received: 7/29/2015
Matrix: Product

Project: DFSP Norwalk

Project Number: 04-NDLA-008
Collected by: -

Sample Description: TF-18

Analyzed: 8/13/2015
Method: EPA 1624 GC/MS SIM

CONSTITUENT	PQL* mg/Kg	RESULT** mg/Kg
t-Amyl Methyl Ether (TAME)	100	ND
t-Butyl Alcohol (TBA)	10	ND
Diisopropyl Ether (DIPE)	100	ND
Ethanol	10	ND
Ethyl-t-Butyl Ether (ETBE)	50	ND
Methyl-t-Butyl Ether (MTBE)	50	ND
Percent Surrogate Recovery (MTBE-d3)		88

*PQL - Practical Quantitation Limit

**Results listed as ND would have been reported if present at or above the listed PQL.

J: Value below PQL

REPORT OF ANALYTICAL RESULTS

Client: Daniel Swenson
The Source Group
1962 Freeman Avenue
Signal Hill, CA 90755

Lab Number: 16238-1
Collected: 7/28/2015
Received: 7/29/2015
Matrix: Product

Project: DFSP Norwalk

Project Number: 04-NDLA-008
Collected by: -

Sample Description: GW-15

Analyzed: 8/13/2015
Method: EPA 1624 GC/MS SIM

CONSTITUENT	PQL* mg/Kg	RESULT** mg/Kg
t-Amyl Methyl Ether (TAME)	100	ND
t-Butyl Alcohol (TBA)	10	ND
Diisopropyl Ether (DIPE)	100	ND
Ethanol	10	ND
Ethyl-t-Butyl Ether (ETBE)	50	ND
Methyl-t-Butyl Ether (MTBE)	50	ND
Percent Surrogate Recovery (MTBE-d3)		95

*PQL - Practical Quantitation Limit

**Results listed as ND would have been reported if present at or above the listed PQL.

J: Value below PQL

Simulated Distillation Curve

The Source Group

16238

