



February 13, 2017

Mr. Craig Rankine  
Site Manager  
Department of Ecology  
2108 Grand Blvd, MS: S-70  
Vancouver, Washington 98661-4622

Re: Semi-Annual Groundwater Monitoring Report  
July through December 2016  
NuStar Vancouver Facility  
Vancouver, Washington  
1126-18

Dear Mr. Rankine:

Enclosed, please find the *Semi-Annual Groundwater Monitoring Report July through December 2016*. The report was prepared on behalf of NuStar Terminals Services, Inc. (NuStar) by Apex Companies, LLC (Apex) and presents data collected from January through June 2016.

If you have any questions or would like to discuss this further, please contact me at (503) 924-4704 ext. 1925.

Sincerely,

A handwritten signature in blue ink that reads 'Stephanie B. Salisbury'. The signature is fluid and includes a long, sweeping underline.

Stephanie Bosze Salisbury, L.G.  
Associate Geologist

**ENCLOSURE**

Semi-Annual Groundwater Monitoring Report July through December 2016 (1 hard copy)

**cc:** Ms. Renee Robinson, NuStar Energy, L.P. (electronic deliverable)  
Ms. Patty Boyden, Port of Vancouver (1 digital [CD] copy)  
Mr. Richard Roché, Parametrix (1 digital [CD] copy)  
Mr. Stephan Rosen, NuStar Energy L.P. (1 digital [CD] copy)  
Mr. Aaron Flett, NuStar Energy L.P. (1 digital [CD] copy)



*Semi-Annual Groundwater  
Monitoring Report  
July through December 2016  
NuStar Vancouver Facility  
Vancouver, Washington*

Prepared for:  
NuStar Terminals Services, Inc.

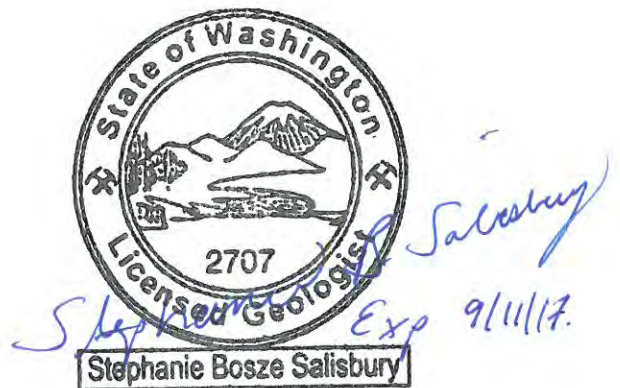
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***Semi-Annual Groundwater Monitoring Report  
July through December 2016  
NuStar Vancouver Facility  
Vancouver, Washington***

**Prepared for:  
NuStar Terminals Services, Inc.**

**February 13, 2017  
1126-18**



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*Stephanie Bosze Salisbury, L.G.  
Associate Geologist*

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## **1.0 Introduction**

This semi-annual groundwater monitoring report was prepared by Apex Companies, LLC (Apex) on behalf of NuStar Terminals Services, Inc. (NuStar) for the NuStar Vancouver Facility (Facility) in Vancouver, Washington (Figure 1). This report presents the results of the groundwater monitoring activities completed at the Facility during the third and fourth quarters of 2016. Additionally, the report includes a summary and evaluation of interim action monitoring data for the reporting period.

The Facility is located at the Port of Vancouver (POV) Terminal No. 2 in Vancouver, Washington (Figure 1). The Facility Site Plan is shown on Figure 2. The property is roughly rectangular with nominal dimensions of 600 by 1,300 feet, and a total area of about 19 acres, and is on the north shore of the Columbia River. Industrial properties owned by the POV border the remaining sides of the Facility.

## **2.0 Groundwater Monitoring Field Activities**

The groundwater monitoring was performed in accordance with the *Groundwater Monitoring Plan* (GWMP; Ash Creek, 2008), which was approved by the Washington State Department of Ecology (Ecology) in a letter to NuStar dated July 30, 2009. The monitoring program for July through December 2016 is summarized in Table 1.

Two monitoring events were conducted during this period: the third quarter 2016 groundwater monitoring event was conducted from September 26 through 30, 2016 and the fourth quarter 2016 event was conducted from December 12 through 16, 2016.

### **2.1 Water Level Measurements**

Third quarter 2016 groundwater levels were measured on September 26, 2016 and fourth quarter 2016 groundwater levels were measured on December 12, 2016. Monitoring well locations are shown on the Facility Site Plan (Figure 2). The wells are screened in three different groundwater zones: Shallow, Intermediate, and Deep. The depth to groundwater was measured at Facility monitoring wells, multi-level groundwater monitoring (MGMS) wells, and selected off-site wells (MW-14, MW-17, MW-23i, MW-25i, MW-26, MW-30i, MW-31i, MW-F, MW-G, S-1, and S-2).

During the fourth quarter event, wells MW-16, MW-32s and MW-32i were under parked vehicles and could not be accessed for gauging. Well MW-E could not be located and was either paved over or buried under equipment. The Port will be contacted to determine the status of the monitoring well.

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## 2.2 Monitoring Well Sampling and Analysis

The sampling and analysis program for third and fourth quarter 2016 is summarized in Table 1. Groundwater monitoring data sheets for the sampling events are included in Appendix A. In addition to the monitoring program, field blanks, equipment blanks, and trip blanks were prepared and sample duplicates were collected from wells (MGMS3-40, MW-7, MW-12, and MW-13 during third quarter and MW-7, MW-12, and MW-19 during fourth quarter) for quality assurance/quality control (QA/QC) purposes. In addition, during both the third and fourth quarter 2016, one or more field blanks, equipment blanks, and trip blanks were submitted to the laboratory along with each sample.

For both sampling events, the samples were uniquely labeled, stored in an insulated cooler with ice, and transported under chain-of-custody protocol to Pace Analytical Laboratory (Pace) in Davis, California for laboratory analysis. Samples were analyzed for selected volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260B (EPA Method 8021 list). Groundwater analytical results for both events are shown in Table 3. Historical data are tabulated in Appendix B.

## **3.0 Groundwater Elevations**

Depth-to-groundwater measurements made during the third and fourth quarter 2016 monitoring events are listed in Table 2. Groundwater elevations and estimated elevation contours for the Shallow and Intermediate Zone wells for the third quarter 2016 are shown on Figures 3 and 4, respectively. Groundwater elevations and estimated elevation contours for the Shallow and Intermediate Zone wells for the fourth quarter 2016 are shown on Figures 5 and 6, respectively.

### **3.1 Third Quarter 2016**

**Shallow Zone.** On September 26, 2016, depth-to-groundwater measurements were made at Shallow Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. The observed depths to groundwater in these wells ranged from 27.34 to 34.20 feet below the ground surface (bgs), and the corresponding groundwater elevations in these wells ranged from 3.23 to 5.82 feet above mean sea level (MSL; Figure 3).

During the third quarter 2016 monitoring event, gauging of the Shallow Zone wells was completed between 9:08 am and 11:27 a.m. (with the exception of the Shallow Zone ports of the multi-port wells). During the time interval in which Shallow Zone monitoring wells were gauged, the water level in the adjacent Columbia River decreased by 0.64 feet. River stage data were obtained from the nearest National Oceanographic and Atmospheric Administration (NOAA) tide station (Columbia River – Vancouver), which is located approximately 0.5 mile upstream of the Facility.

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During the third quarter 2016 gauging event, groundwater elevations in the Shallow Zone were variable, with groundwater highs in the northwest and eastern corners of the terminal, near wells MW-10 and MW-15, respectively. From the groundwater high at well MW-10, groundwater flow was to the southwest and southeast at gradients of 0.007 ft/ft and 0.003 ft/ft, respectively. From the groundwater high at well MW-15, groundwater flow was to the northeast and southwest at a gradient of 0.002 ft/ft.

**Intermediate Zone.** On September 26, 2016, depth-to-groundwater measurements were made at Intermediate Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. Groundwater levels in Intermediate Zone wells were measured collectively during a predicted tidal inflection to minimize the magnitude of tidal influence on water levels during the gauging event. Water levels were collected from Intermediate Zone wells within 2 hours (between 10:21 a.m. and 12:17 p.m.). During the time interval in which Intermediate Zone wells were gauged, water levels in the adjacent Columbia River increased by 0.04 foot.

The observed depths to groundwater in the Intermediate Zone wells ranged from 26.74 to 31.36 feet bgs, and groundwater elevations in these wells ranged from 2.73 to 3.13 feet above MSL (Figure 4). During the September 26, 2016 gauging event groundwater flow was towards the river with a gradient of approximately 0.0005 ft/ft.

**Deep Zone.** Depth to groundwater was measured in well MW-24d, which is screened from 210 to 230 feet bgs, within the Troutdale Formation. Depth to water in well MW-24d was 30.58 feet bgs, corresponding to an elevation of 3.33 feet above MSL. A groundwater potentiometric map was not prepared for Deep Zone groundwater.

### 3.2 Fourth Quarter 2016

**Shallow Zone.** On December 12, 2016, depth-to-groundwater measurements were made at Shallow Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. The observed depths to groundwater in these wells ranged from 22.96 to 31.75 feet bgs, and groundwater elevations in these wells ranged from 6.73 to 9.90 feet above MSL (Figure 5).

During the fourth quarter 2016 monitoring event gauging of the Shallow Zone wells was completed between 10:10 a.m. and 11:44 a.m., with the exception of the multi-port wells which were gauged shortly thereafter. During the gauging activities, the water level in the adjacent Columbia River decreased by 0.16 feet. During the fourth quarter event, groundwater flow was variable at the terminal. With the exception of the vicinity of well MGMS1, groundwater flow at the terminal was minimal to flat., with a slight decrease in groundwater elevation at the northeast corner of the terminal. In well MGMS1, the groundwater elevation was approximately two feet higher than surrounding wells. There is no reason to assume the anomalous MGMS1 elevation data were erroneous; however, given the age of the well's intricate multi-port construction, it is possible that the anomalous data do not accurately represent the water levels at the time of well gauging.



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**Intermediate Zone.** On December 12, 2016, depth-to-groundwater measurements were made at Intermediate Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. Water levels were collected from Intermediate Zone wells within 114 minutes (between 10:24 a.m. and 11:18 a.m.), with the exception of the multi-port wells which were gauged shortly thereafter. During the Intermediate Zone gauging event, water levels in the adjacent Columbia River decreased by 0.12 foot. The observed depths to groundwater in these wells ranged from 22.13 to 26.84 feet bgs, and groundwater elevations in these wells ranged from 7.35 to 9.63 feet above MSL (Figure 6). With the exception of near well MGMS1, the groundwater flow during the December gauging event was to the southeast (towards the river) with a gradient of 0.0003 ft/ft. As in the Shallow Zone groundwater, the water elevation in MGMS1 was two feet higher than all surrounding wells and is anomalous compared to historical monitoring events.

**Deep Zone.** Depth to water in Deep Zone well MW-24d was 26.04 feet bgs, corresponding to an elevation of 7.87 feet above MSL.

## **4.0 Groundwater Sample Analytical Results**

Complete copies of the laboratory reports for the third and fourth quarter 2016 groundwater monitoring events, including the quality assurance evaluation report and chain-of-custody documentation, are included in Appendix C.

### **4.1 Third Quarter 2016**

The September 2016 monitoring program included the collection of groundwater samples from the wells listed in the first column of Table 1. The sample results for third quarter 2016 are summarized in Table 3 and select VOCs are shown on Figure 7.

### **4.2 Fourth Quarter 2016**

The December 2016 monitoring program included the collection of groundwater samples from the wells listed in the second column of Table 1. The sample results for second quarter 2016 are summarized in Table 3 and select VOCs are shown on Figure 8.

### **4.3 Evaluation of Results**

VOC concentration trend plots for each monitoring well are provided in Appendix D. Monitoring results demonstrate decreasing VOC concentration trends in Shallow and Intermediate Zone groundwater in 32 of 33 monitoring wells, the exception being well MGMS3-132, which exhibited a slightly increasing concentration trend. The concentrations in this deeper well have always been variable and relatively low (i.e. PCE ranging from 1  $\mu$  to 13  $\mu$ g/l ) that it has been difficult to discern a strong concentration trend for the well. Monitoring

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wells in the source area exhibit concentration decreases of over 99% for tetrachloroethene (PCE) and trichloroethene (TCE) since initiating interim actions in 2008. VOCs in monitoring wells on the periphery or outside of the source area also reflect historical decreasing trends.

## **5.0 Interim Action Measure Activities**

Several interim actions have been implemented at the Facility, including:

- During the spring/summer of 2008, which involved bioremediation injections for remediation of Facility groundwater and the installation of a soil vapor extraction (SVE) system for the remediation of VOCs in vadose-zone soils. These activities are herein referred to as the 2008 interim action.
- The interim action was expanded during the summer of 2011; the expansion is herein referred to as the 2011 interim action. The expansion included 17 additional SVE well locations (shallow and deeper SVE well pairs at each location; total of 34 wells), additional bioremediation injections in the 2008 interim action area, and bioremediation injections in an expanded interim action area. Details of the 2008 and 2011 interim actions are provided in the *Interim Action Installation Report* (Ash Creek, 2009b) and the *2011 Interim Action Evaluation Report* (Ash Creek, 2012), respectively.
- An enhanced bioremediation interim action was implemented in 2016 in accordance with the *2015 Interim Action Work Plan* (Apex, 2016).

These interim actions and results to date are described in the following subsections.

### **5.1 Summary of 2008 Interim Action**

The 2008 interim action consisted of SVE in the vadose zone and enhanced anaerobic bioremediation of the Shallow Zone groundwater. The 2008 enhanced bioremediation locations and the SVE system layout are provided in Appendix E. The 2008 SVE system removed approximately 3,150 pounds of VOCs between startup in September 2008 and the expansion in 2011. The mass removal rate at startup in 2008 was 58.8 pounds per day (lbs/day), and had decreased to an average of 1.7 lbs/day by the third quarter of 2011. Historical monitoring tables and a mass removal chart are provided in Appendix E.

### **5.2 Summary of 2011 Interim Action**

A soil and groundwater investigation in 2010 indicated that the 2008 interim action had reduced VOCs in vadose-zone soils by 90 percent for PCE and 98 percent for TCE, and had reduced total molar ethene concentrations in source area groundwater by 77 percent (Ash Creek, 2011). The investigation results were summarized in an appendix to the *2011 Interim Action Work Plan* (Work Plan; Ash Creek, 2011) that was submitted to Ecology on March 25, 2011. The Work Plan included a proposal for the expansion of the SVE system to include 17 additional SVE well locations, additional bioremediation injections in the 2008 interim

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action area, and bioremediation injections in an expanded interim action area. On May 23, 2011, Ecology approved the Work Plan. The bioinjection activities were conducted from July 21 through August 31, 2011, and the SVE installation activities were conducted from August 2 through 5, 2011 and August 29 through October 3, 2011. The 2008 and 2011 bioremediation injection locations are shown on Figure 9.

The initial Facility SVE system installed in 2008, herein referred to as the 2008 SVE system, was comprised of 17 wells, divided among five branches, which were connected by a network of underground piping as shown on drawings provided in Appendix E. As part of the 2011 SVE system expansion, Branches 4 and 5 were disconnected from the other System branches and were connected to a new blower unit located approximately 150 feet to the northeast of the railroad tracks (Figure 11). The wells and piping associated with Branches 4 and 5 and the associated blower unit are herein referred to as the "North System".

From August 2 through 5, 2011, 17 additional SVE well pairs (for a total of 34 additional SVE wells) were installed within and to the south of Warehouse No. 13 (a.k.a. the Butler building), in general accordance with the *2011 Interim Action Work Plan* (Ash Creek, 2011; Figure 11). For each well pair, one well is screened in vadose-zone soils from 10 to 15 feet bgs and the second well is screened in vadose-zone soils from 15 to 25 feet bgs. These 17 well pairs, along with the Branch 1 through 3 wells from the 2008 SVE system, are piped underground to a blower unit located outside of the southeast corner of Warehouse No. 13. These SVE wells, associated underground piping, and the blower unit are herein referred to as the "South System". Effluent from the South System is treated with a series of two carbon vessels prior to discharge. Monitoring of the North and South Systems occurs on a monthly basis as described in Section 5.4.2.

### 5.3 Summary of 2016 Interim Action

NuStar and the Port of Vancouver originally submitted a joint Feasibility Study to Ecology in March 2014 (Apex and Parametrix, 2014). The FS approval process is ongoing. To avoid potential delays in groundwater treatment while working through the FS and the associated regulatory approval process, NuStar proposed to implement a portion of the recommended remedial action for the NuStar source area as an interim action. The details of the proposed interim action were submitted to Ecology in an *Interim Action Work Plan* on September 15, 2015. After a 30-day public comment period from May 12 to June 10, 2016, the work plan was approved on June 14, 2016. The interim action consisted of bioremediation injections along the southern portion of the NuStar terminal near the seawall, where source material remains. Per Ecology's request, the interim action also included baseline sediment and surface water sampling in the Columbia River. Additionally, enhanced bioremediation injections were implemented in an isolated area to the northwest of the NuStar terminal which has been less responsive to monitored natural attenuation than the VOCs at the NuStar terminal. The "NW Area bioremediation injections" were completed as a joint project between NuStar and the Port of Vancouver.

The NW Area injections were implemented in July 2016 and included the injection of 52,000 gallons of bioremediation oil substrate (EosPro; diluted with water) into the shallow zone groundwater through 30

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boreholes in the vicinity of and between (NuStar) monitoring wells MW-14 and MW-26. Figure 10 illustrates the approximate boring locations in the “NW Area”. The same substrate material was injected at the NuStar terminal in August and September 2016 and included the injection of 100,000 gallons of EosPro substrate (diluted with water) into 72 borings along the southern portion of the NuStar facility, adjacent to the seawall. Figure 10 identifies the approximate locations of the injection boreholes near the NuStar seawall. In accordance with the approved *Interim Action Work Plan*, a summary of the groundwater injection and surface/water sampling activities will be provided to Ecology in an Interim Action Summary Report during the second quarter of 2017. The report will also include the results of the baseline surface water and sediment sampling as well as the results of two quarters of post interim action groundwater monitoring. A brief evaluation of the groundwater monitoring results from the interim action area is summarized in Section 5.4 below. As the bioremediation injections were completed in September 2016, the December 2016 groundwater monitoring event results provide the first data set collected following the bioremediation injections.

## **5.4 Interim Action Monitoring and Evaluation**

### **5.4.1 Enhanced Bioremediation Injections**

In conjunction with the third and fourth quarter 2016 monitoring events, additional groundwater samples were collected from wells MP-1, MW-24i, MW-12, MW-13, MW-14, MW-26, MW-19, MGMS1-40 and MGMS3-40 for total organic carbon (TOC; by EPA Method 5310 D); and ethene by (EPA Method RSK-175M) analysis, to evaluate the performance of the bioremediation injections. The TOC and ethene analyses were performed by Pace Analytical.

In addition to the laboratory analysis of groundwater samples, field measurements of oxidation-reduction potential (ORP) and dissolved oxygen (DO) were collected from the monitoring wells during the third and fourth quarter 2016 monitoring events. Table 4 shows the results of interim action groundwater monitoring from the February 2007 baseline event through the fourth quarter 2016 monitoring event. Wells MW-24i and MGMS2-40 were not located within the 2008 interim action injection area but are located within the footprint of the 2011 and 2016 interim action areas; therefore, interim action monitoring data for these wells are only presented from the second quarter 2011 baseline event through fourth quarter 2016. Wells MW-13, MW-14, MW-19, MW-26, MGMS-1, and MGMS-3 were not located within the 2008 or 2011 interim action areas, but are located in the 2016 interim action area; therefore, monitoring data for those wells are only presented beginning September 2016.

A discussion of reductive dechlorination of VOCs in groundwater from prior to the 2008 interim action through second quarter 2016 is provided below.

**VOC Concentrations Evaluation.** Concentration trend plots for PCE, TCE, total dichloroethenes (DCE), and vinyl chloride (VC) in interim action area wells MW-7, EX, MP-1, and MGMS2-40 are provided in Appendix F. VOC data are included from the baseline event prior to the 2008 interim action (first quarter 2007; second

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quarter 2007 for well MGMS2-40) through December 2016. It should be noted that well MW-7 is not in the current (2016) interim action area; however, the groundwater concentrations in well MW-7 have decreased dramatically since the 2008 interim action, and the conditions in the well will continue to be evaluated to confirm that concentration rebound is not occurring. The concentration of PCE and TCE has decreased in each well, with observed reductions through December 2016 exceeding 99 percent in each of the four wells.

Preliminary monitoring results from the 2016 interim action area indicate reductions in concentrations of PCE and TCE of up to two orders of magnitude prior to and one quarter after the 2016 enhanced bioremediation injections. Future quarterly monitoring will be utilized to further evaluate these concentration trends, both in the Shallow Zone source area as well as outside of the source area treatment zone and in Intermediate Zone groundwater.

Another indicator of effective reduction of chlorinated ethenes is a decrease in the total molar chloroethene concentration (the molar concentration of PCE, TCE, DCE, and VC combined). The use of total molar concentrations allows an assessment of changes in the total number of related contaminant molecules as the reductive dechlorination process transitions from the relatively heavy PCE to the progressively lighter TCE, DCE, and VC. Molar concentration trend plots for wells MW-7, EX, MP-1, and MGMS2-40 are provided in Appendix F. Between the February 2007 baseline event and the December 2016 monitoring event, the decrease in total molar concentration in the interim action monitoring wells MP-1, MW-7, EX and MGMS2-40 ranged from 96 percent in well EX to over 99 percent in wells MP-1, MW-7, and MGMS2-40.

**Total Organic Carbon Evaluation.** The presence of elevated TOC indicates that the bioremediation injections have increased the electron donor carbon source needed to reductively dechlorinate the VOCs present in groundwater at the Facility. While a baseline monitoring event was not intentionally conducted prior to the 2016 injection event, data are available for wells MP-1 and MW-12 for the event prior to the injections (June 2016) and the two events concurrent with and following the injections (September and December 2016). In both wells, TOC values increased by over 3 orders of magnitude between June and September 2016, with concentrations remaining elevated during the December 2016 monitoring event.

**Summary of Enhanced Bioremediation Results.** The 2016 groundwater interim action was implemented in July through September 2016 and included over 72 bioremediation injections across the NuStar source area and 30 bioremediation injections at the off-site Northwest Area. Since implementation, groundwater in the 2016 interim action area has been monitored for one quarter for indicators of reductive dechlorination. The results from the fourth quarter 2016 event provide preliminary indication that enhanced reductive dechlorination is occurring at the Site in response to the interim action, as follows:

- Observed trends in breakdown product concentrations are consistent with reductive dechlorination of chlorinated ethene compounds

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- PCE and TCE concentrations are consistently decreasing (greater than 99% reduction in the four interim action area wells that have been monitored since implementation of the first bioremediation injection interim action in 2008 (MW-7, MP-1, EX, and MGMS2-40)).
  - Total molar ethene concentrations from wells MW-7, MP-1, EX, and MGMS2-40 have decreased by 96 to over 99 percent, indicating that VOC mass is being significantly reduced in the source area.
  - Reductions of PCE and TCE concentrations in the 2016 interim action area have been observed at up to 2 orders of magnitude between the September 2016 (baseline) and December 2016 monitoring events in seven of the eight wells.

#### **5.4.2 SVE Monitoring Evaluation**

The following paragraphs summarize the monitoring and analytical results as well as the total VOC mass removal for the North and South SVE Systems at the Facility. Field vapor measurements were collected with a photoionization detector (PID). Effluent vapor samples from the SVE systems were collected into Summa™ canisters and submitted to TestAmerica Laboratories (Test America) in Los Angeles, California, for analysis of VOCs by method TO-15.

Monthly SVE monitoring events occurred on July 26, August 30, September 29, October 25, November 28, and December 28 during this reporting period. North SVE System operating and analytical data are provided in Tables 5 and 6, respectively. South SVE System operating data and analytical are provided in Tables 7 and 8, respectively.

During the December 28 monitoring event, a valve on the South SVE system was observed as damaged, prohibiting the field staff from taking accurate effluent measurements and samples. The South SVE system was shut down and the part was repaired during the month of January 2017. During the subsequent (January 2017) monitoring event, the system was restarted and immediately sampled. The results from the January monitoring event will be presented in the first semi-annual 2017 groundwater monitoring report.

**SVE System Mass Removal.** The approximate VOC mass removed by the North and South SVE Systems through December 2016 is presented in Tables 9 and 10 and on Figures 11 and 12, respectively. The North and South Systems have removed approximately 228 and 2,681 pounds of VOCs, respectively, since startup in October 2011. Including the mass removed from the 2008 SVE System, the total mass removal by SVE at the Facility to date is approximately 6,060 pounds.

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## **6.0 Future Activities**

Quarterly groundwater monitoring for the first and second quarters of 2017 will be conducted in March and June, respectively. The proposed sampling will be completed in accordance with the GWMP (Ash Creek, 2008). SVE operations and maintenance will occur on a monthly basis in accordance with the schedule proposed in the *2011 Interim Action Evaluation Report* (Ash Creek, 2012).

As previously discussed, the results of the 2016 interim action, including the results from baseline surface water and sediment sampling, will be summarized in an Interim Action Summary Report to be submitted to Ecology by the end of second quarter 2017.

A Draft Revised NuStar – Port of Vancouver Feasibility Study (FS) was submitted to Ecology in December 2016. Representatives from NuStar and the Port of Vancouver will meet with Ecology in February 2017 to discuss the revisions to the Feasibility Study and to address any preliminary questions from Ecology (if any). Upon Ecology approval of the FS, a Draft Cleanup Action Plan will be prepared by NuStar and the Port of Vancouver and submitted to Ecology.

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## **7.0 References**

- Apex Companies, LLC (Apex). *First Semi-Annual Groundwater Monitoring Report, January through June 2013. NuStar Vancouver Facility Vancouver, Washington.* August 14, 2013.
- Apex, 2016. *2015 Interim Action Work Plan.* NuStar Vancouver Facility. Vancouver, Washington. April 15, 2016.
- Apex and Parametrix Inc., 2014. *Feasibility Study Report NuStar, Cadet, and Swan Manufacturing Company Sites.* March 14, 2004.
- Ash Creek Associates, Inc. (Ash Creek), 2007. *Release Area Interim Action Design, Support Terminals Services Vancouver Facility.* May 8, 2007.
- Ash Creek, 2008. *Groundwater Monitoring Plan, NuStar Vancouver Facility, Vancouver, Washington.* May 1, 2008.
- Ash Creek, 2009a. *Revised Remedial Investigation Report, NuStar Terminals Services, Inc. Vancouver Main Terminal.* October 1, 2009.
- Ash Creek, 2009b. *Interim Action Installation Report. NuStar Terminals Services, Inc., Vancouver Washington.* May 5, 2009.
- Ash Creek, 2010. (DRAFT) *Feasibility Study NuStar Terminals Services, Inc. Vancouver Main Terminal Vancouver, Washington.* January 14, 2010.
- Ash Creek, 2011. *2011 Interim Action Work Plan NuStar Vancouver Facility, Vancouver, Washington.* March 25, 2011.
- Ash Creek, 2012. *2011 Interim Action Evaluation Report. NuStar Vancouver Facility, Vancouver, Washington.* March 29, 2012.



Table 1

## Groundwater Monitoring Plan: Third and Fourth Quarters 2016

NuStar Vancouver Facility

Vancouver, Washington

Monitoring Program	Well ID	Groundwater Zone	Included Monitoring Wells	
			Third Quarter	Fourth Quarter
Groundwater monitoring includes depth-to-water measurement.	MW-1	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-2	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-3	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-5	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-6	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	MW-7	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-8	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-9	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-10	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-12	Shallow	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-13	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-14	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-15	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-16	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-17	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-18i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-19	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-19i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-20i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-21i-40	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-21i-105	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-22i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-23i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-24i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-24d	Deep	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-25i	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-26	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-30i	Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-31i	Intermediate	<input type="checkbox"/>	<input type="checkbox"/>
	MW-32s	Shallow	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	MW-32i	Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MGMS1-3(43)	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MGMS1-2 (60)	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MGMS1-1(110)	Lower Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MGMS2-4(40)	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MGMS2-3 (60)	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MGMS2-2(110)	Lower Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MGMS2-1(132)	Lower Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MGMS3-4(40)	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Please refer to notes at end of table.

Semi-Annual Groundwater Monitoring Report  
July through December 2016

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Table 1  
 Groundwater Monitoring Plan: Third and Fourth Quarters 2016  
 NuStar Vancouver Facility  
 Vancouver, Washington

Monitoring Program	Well ID	Groundwater Zone	Included Monitoring Wells	
			Third Quarter	Fourth Quarter
Groundwater monitoring includes depth-to-water measurement.	MGMS3-3(60)	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MGMS3-2(101)	Lower Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MGMS3-1(132)	Lower Intermediate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	MW-E	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	MW-F	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	MW-G	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	EW-1	Shallow	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	EX	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MP-1	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	MP-2	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	MP-3	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	MP-4	Shallow	<input type="checkbox"/>	<input type="checkbox"/>
	S-1	Intermediate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	S-2	Shallow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**Notes:**

- = Included in sampling program represented in this report.
- = Not included in sampling program represented in this report: water level measurement only.
- Wells MW-E, MW-G, MW-30i, MW-31i, and MW-32i are sampled by the Port of Vancouver.

Table 2  
 Groundwater Elevation Data: 2016  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
<i>Groundwater Monitoring Wells</i>			
MW-1 (32.60)	03/07/16	23.24	9.36
	06/15/16	26.76	5.84
	09/26/16	28.92	3.68
	12/12/16	24.68	7.92
MW-2 (34.04)	03/07/16	26.37	7.67
	06/15/16	28.34	5.70
	09/26/16	30.52	3.52
	12/12/16	26.34	7.70
MW-3 (34.41)	03/07/16	25.50	8.91
	06/15/16	27.20	7.21
	09/26/16	30.22	4.19
	12/12/16	26.48	7.93
MW-5 (33.86)	03/07/16	25.00	8.86
	06/15/16	26.47	7.39
	09/26/16	29.50	4.36
	12/12/16	25.99	7.87
MW-6 (32.83)	03/07/16	23.48	9.35
	06/15/16	25.84	6.99
	09/26/16	28.50	4.33
	12/12/16	24.65	8.18
MW-7 (33.74)	03/07/16	Not gauged; monument under water.	
	06/15/16	26.24	7.50
	09/26/16	29.20	4.54
	12/12/16	26.04	7.70
MW-8 (33.97)	03/07/16	24.92	9.05
	06/15/16	25.91	8.06
	09/26/16	28.54	5.43
	12/12/16	26.00	7.97
MW-9 (33.86)	03/07/16	25.12	8.74
	06/15/16	26.29	7.57
	09/26/16	29.27	4.59
	12/12/16	26.21	7.65
MW-10 (34.83)	03/07/16	25.76	9.07
	06/15/16	26.25	8.58
	09/26/16	29.01	5.82
	12/12/16	26.75	8.08

Please refer to notes at end of table.

Table 2  
 Groundwater Elevation Data: 2016  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-12 (31.43)	03/07/16	22.01	9.42
	06/15/16	25.60	5.83
	09/26/16	27.34	4.09
	12/12/16	23.44	7.99
MW-13 (33.15)	03/07/16	24.05	9.10
	06/15/16	26.32	6.83
	09/26/16	28.74	4.41
	12/12/16	25.38	7.77
MW-14 (33.81)	03/07/16	25.09	8.72
	06/15/16	Not gauged; monument damaged.	
	09/26/16	29.27	4.54
	12/12/16	26.15	7.66
MW-15 (39.13)	03/07/16	30.45	8.68
	06/15/16	31.42	7.71
	09/26/16	34.20	4.93
	12/12/16	31.75	7.38
MW-16 (33.05)	03/07/16	23.85	9.20
	06/28/16	Not gauged; monument under water.	
	09/26/16	29.60	3.45
	12/14/16	24.85	8.20
MW-17 (32.65)	03/07/16	23.71	8.94
	06/15/16	25.84	6.81
	09/26/16	28.35	4.30
	12/12/16	24.76	7.89
MW-18i (33.40)	03/07/16	24.21	9.19
	06/15/16	28.10	5.30
	09/26/16	30.34	3.06
	12/12/16	25.71	7.69
MW-19 (33.59)	03/07/16	24.79	8.80
	06/15/16	26.61	6.98
	09/26/16	29.18	4.41
	12/12/16	25.91	7.68
MW-19i (33.62)	03/07/16	24.48	9.14
	06/15/16	28.38	5.24
	09/26/16	30.65	2.97
	12/12/16	25.99	7.63
MW-20i (33.14)	03/07/16	24.03	9.11
	06/15/16	27.85	5.29
	09/26/16	30.13	3.01
	12/12/16	25.50	7.64

Please refer to notes at end of table.

Table 2  
 Groundwater Elevation Data: 2016  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW21i-40 (34.10)	03/07/16	24.95	9.15
	06/15/16	28.90	5.20
	09/26/16	31.11	2.99
	12/12/16	26.44	7.66
MW-21i-105 (33.99)	03/07/16	24.67	9.32
	06/15/16	28.64	5.35
	09/26/16	30.98	3.01
	12/12/16	26.31	7.68
MW-22i (34.39)	03/07/16	25.30	9.09
	06/15/16	29.10	5.29
	09/26/16	31.28	3.11
	12/12/16	26.69	7.70
MW-23i (33.80)	03/07/16	24.64	9.16
	06/15/16	28.67	5.13
	09/26/16	30.95	2.85
	12/12/16	26.17	7.63
MW-24i (33.47)	03/07/16	24.10	9.37
	06/15/16	28.37	5.10
	09/26/16	30.68	2.79
	12/12/16	26.12	7.35
MW-25i (33.58)	03/07/16	24.46	9.12
	06/15/16	28.38	5.20
	09/26/16	30.72	2.86
	12/12/16	25.92	7.66
MW-26 (33.73)	03/07/16	25.19	8.54
	06/15/16	26.05	7.68
	09/26/16	29.15	4.58
	12/12/16	26.22	7.51
MW-24d (33.91)	03/07/16	24.51	9.40
	06/15/16	28.79	5.12
	09/26/16	30.58	3.33
	12/12/16	26.04	7.87
EW-1 (31.40)	03/07/16	21.92	9.48
	06/15/16	25.40	6.00
	09/26/16	27.54	3.86
	12/12/16	23.40	8.00
<i>Secor Interim Action Pilot Study Wells</i>			
S-1 (33.24)	03/07/16	24.08	9.16
	06/15/16	28.11	5.13
	09/26/16	30.39	2.85
	12/12/16	25.52	7.72
S-2 (33.15)	03/07/16	24.02	9.13
	06/15/16	27.97	5.18
	09/26/16	29.59	3.56
	12/12/16	25.44	7.71

Please refer to notes at end of table.

Table 2  
 Groundwater Elevation Data: 2016  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
<i>Multi-Level Monitoring Wells</i>			
MGMS1-3 (43)* (32.86)	03/07/16	23.89	8.97
	06/15/16	26.42	6.44
	09/26/16	28.73	4.13
	12/12/16	22.96	9.90
MGMS1-2(60)* (32.86)	03/07/16	23.85	9.01
	06/15/16	27.80	5.06
	09/26/16	30.10	2.76
	12/12/16	23.23	9.63
MGMS1-1(110)* (32.86)	03/07/16	Well damaged; unable to gauge.	
	06/15/16	27.81	5.05
	09/26/16	30.11	2.75
	12/12/16	23.12	9.74
MGMS2-4(40)* (32.59)	03/07/16	22.99	9.60
	06/15/16	25.54	7.05
	09/26/16	28.19	4.40
	12/12/16	24.36	8.23
MGMS2-3(60)* (32.59)	03/07/16	23.32	9.27
	06/15/16	27.51	5.08
	09/26/16	29.68	2.91
	12/12/16	24.91	7.68
MGMS2-2(110)* (32.59)	03/07/16	23.33	9.26
	06/15/16	27.42	5.17
	09/26/16	29.70	2.89
	12/12/16	24.71	7.88
MGMS2-1(132)* (32.59)	03/07/16	23.41	9.18
	06/15/16	27.4	5.19
	09/26/16	29.65	2.94
	12/12/16	24.91	7.68
MGMS3-4(40)* (31.65)	03/07/16	22.45	9.20
	06/15/16	26.24	5.41
	09/26/16	28.42	3.23
	12/12/16	24.06	7.59
MGMS3-3(60)* (31.65)	03/07/16	22.45	9.20
	06/15/16	26.68	4.97
	09/26/16	28.92	2.73
	12/12/16	23.93	7.72
MGMS3-2(110)* (31.65)	03/07/16	22.41	9.24
	06/15/16	26.75	4.90
	09/26/16	28.91	2.74
	12/12/16	24.05	7.60
MGMS3-1(132)* (31.65)	03/07/16	22.52	9.13
	06/15/16	26.74	4.91
	09/26/16	28.93	2.72
	12/12/16	24.11	7.54

Please refer to notes at end of table.

Table 2  
 Groundwater Elevation Data: 2016  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number/ (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
<i>Port of Vancouver Wells</i>			
MW-30i (29.77)	03/07/16	20.66	9.11
	06/15/16	24.39	5.38
	09/26/16	26.74	3.03
	12/12/16	22.13	7.64
MW-31i** (31.33)	03/07/16	22.29	9.04
	06/15/16	Did not measure; under water	
	09/26/16	31.36	-0.03
	12/12/16	26.84	4.49
MW-32s (34.34)	03/07/16	25.58	8.76
	06/15/16	27.93	6.41
	09/26/16	30.35	3.99
	12/14/16	26.18	8.16
MW-32i (34.41)	03/07/16	25.28	9.13
	06/15/16	29.12	5.29
	09/26/16	31.28	3.13
	12/14/16	26.50	7.91
MW-E ** (30.64)	03/07/16	Under shipping containers; no access.	
	06/15/16	25.74	4.90
	09/26/16	26.89	3.75
	12/12/16	Well not found; under asphalt.	
MW-F (33.48)	03/07/16	24.94	8.54
	06/15/16	28.67	4.81
	09/26/16	31.02	2.46
	12/12/16	26.43	7.05
MW-G (31.50)	03/07/16	23.26	8.24
	06/15/16	27.11	4.39
	09/26/16	29.37	2.13
	12/12/16	24.77	6.73

**Notes:**

1. TOC = Top of casing; BTOC = Below top of casing.
2. Utilizes new survey information from June 2010. NGVD29 datum (ft MSL).
3. \* Water levels measurement points are located at the top of the plastic fittings mounted on the well covers.
4. NM = Not measured.
5. The casing has been modified at Port of Vancouver wells MW-E and MW-31i. The TOC elevation has not yet been re-surveyed, so groundwater elevation data for these wells is likely inaccurate.

Table 3  
Groundwater Analytical Results: 2016  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MW-1	3/7/2016	<0.00050	<0.002	<0.0050	<0.00050	<b>0.0044</b>	<0.00050	<0.00050	<b>0.0519</b>	<0.00050	<0.00050	<b>0.0180</b>	<0.00050	<0.00050	<b>0.0103</b>	<b>0.00057</b>
	6/15/2016	<0.00050	<0.002	<0.00050	<0.00050	<b>0.0037</b>	<0.00050	<0.00050	<b>0.0131</b>	<0.00050	<0.00050	<b>0.00067</b>	<0.00050	<0.00050	<b>0.00120</b>	<b>0.0053</b>
	9/27/2016	<0.00050	<0.002	<0.00050	<0.00050	<b>0.0086</b>	<0.00050	<0.00050	<b>0.0252</b>	<0.00050	<0.00050	<b>0.0023</b>	<0.00050	<0.00050	<b>0.0031</b>	<b>0.0239</b>
	12/16/2016	<0.00050	<0.002	<0.00050	<0.00050	<b>0.0034</b>	<0.00050	<0.00050	<b>0.0225</b>	<0.00050	<0.00050	<b>0.00800</b>	<0.00050	<0.00050	<b>0.00580</b>	<b>0.00086</b>
MW-2	3/19/2015	<0.00050	<b>0.00096</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/23/2015	<0.00050	<b>0.0027</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/7/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/29/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MW-3	3/7/2016	<0.00050	<0.0020	<b>0.00076</b>	<0.00050	<b>0.0022</b>	<0.00050	<0.00050	<b>0.062</b>	<b>0.0025</b>	<b>0.0013</b>	<b>0.199</b>	<b>0.0036</b>	<0.00050	<b>0.0451</b>	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0011</b>	<0.00050	<0.00050	<b>0.0502</b>	<b>0.00082</b>	<0.00050	<b>0.0495</b>	<b>0.00077</b>	<0.00050	<b>0.0174</b>	<0.00050
	9/30/2016	<0.00050	<0.0020	<b>0.00067</b>	<0.00050	<b>0.0082</b>	<b>0.00073</b>	<0.00050	<b>0.0953</b>	<b>0.0015</b>	<b>0.0016</b>	<b>0.145</b>	<b>0.002</b>	<0.00050	<b>0.0401</b>	<0.00050
	12/16/2016	<0.00050	<0.0020	<b>0.00052</b>	<0.00050	<b>0.0011</b>	<0.00050	<0.00050	<b>0.0268</b>	<b>0.0009</b>	<b>0.00057</b>	<b>0.0862</b>	<b>0.0012</b>	<0.00050	<b>0.0239</b>	<0.00050
MW-5	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0040</b>	<0.00050	<0.00050	<b>0.0099</b>	<0.00050	<0.00050	<b>0.0031</b>	<0.00050
	6/17/2016	<0.00050	<b>0.00750</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0233</b>	<0.00050	<0.00050	<b>0.0073</b>	<0.00050	<0.00050	<b>0.0032</b>	<0.00050
	9/29/2016	<0.0050	<0.020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0043</b>	<0.00050	<0.00050	<b>0.0115</b>	<0.00050	<0.00050	<b>0.0025</b>	<b>0.0011</b>
MW-6	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/7/2016	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MW-7	12/8/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0041</b>	<0.00050	<0.00050	<b>0.0094</b>	<0.00050	<0.00050	<b>0.0017</b>	<b>0.0019</b>
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0006</b>	<0.00050	<0.00050	<b>0.0109</b>	<0.00050	<0.00050	<b>0.00069</b>	<0.00050	<0.00050	<b>0.0021</b>	<b>0.0054</b>
	6/17/16 DUP	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0110</b>	<0.00050	<0.00050	<b>0.00062</b>	<0.00050	<0.00050	<b>0.0020</b>	<b>0.0054</b>
	9/29/2016	<0.00050	<0.002	<0.00050	<0.00050	<b>0.0011</b>	<0.00050	<0.00050	<b>0.0109</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0055</b>	<b>0.0055</b>
	9/29/2016 DUP	<0.00050	<0.002	<0.00050	<0.00050	<b>0.0011</b>	<0.00050	<0.00050	<b>0.0109</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0060</b>	<b>0.0055</b>
	12/14/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0092</b>	<0.00050	<0.00050	<b>0.00065</b>	<0.00050	<0.00050	<0.00050	<b>0.00098</b>
12/14/2016 DUP	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0094</b>	<0.00050	<0.00050	<b>0.00078</b>	<0.00050	<0.00050	<0.00050	<b>0.0010</b>	
MW-8	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0013</b>	<0.00050	<0.00050	<b>0.0064</b>	<0.00050	<0.00050	<0.00050	<0.00050
	6/15/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0041</b>	<0.00050	<0.00050	<0.00050	<0.00050
	9/27/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0053</b>	<0.00050	<0.00050	<0.00050	<0.00050
	12/14/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0031</b>	<0.00050	<0.00050	<b>0.0038</b>	<0.00050	<0.00050	<0.00050	<0.00050
MW-9	3/8/2016	<0.0010	<0.0040	<0.0010	<0.0010	<b>0.00410</b>	<0.001	<0.0010	<b>0.1170</b>	<b>0.00380</b>	<0.0010	<b>0.1640</b>	<b>0.0023</b>	<0.0010	<b>0.0946</b>	<b>0.0034</b>
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.00180</b>	<0.00050	<b>0.00058</b>	<b>0.0607</b>	<b>0.00240</b>	<0.00050	<b>0.1160</b>	<b>0.0017</b>	<0.00050	<b>0.0683</b>	<b>0.00089</b>
	9/29/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0012</b>	<0.00050	<0.00050	<b>0.0393</b>	<b>0.0018</b>	<0.00050	<b>0.192</b>	<b>0.0025</b>	<0.00050	<b>0.0919</b>	<b>0.00076</b>
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0013</b>	<0.00050	<0.00050	<b>0.0597</b>	<b>0.0016</b>	<0.00050	<b>0.0758</b>	<b>0.0011</b>	<0.00050	<b>0.0449</b>	<b>0.00052</b>

Please refer to notes at end of table.



Table 3  
Groundwater Analytical Results: 2016  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MW-10	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.0018	<0.00050
	9/21/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0016	<0.00050
	3/7/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050
	9/27/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.0014	<0.00050
MW-12	3/8/2016	<0.0036	<0.0143	<0.0036	<0.0036	0.080	<0.0036	0.0154	1.38	0.0162	<0.0036	0.325	0.0077	<0.0036	0.209	0.0213
	3/8/16 DUP	<0.0036	<0.0143	<0.0036	<0.0036	0.082	<0.0036	0.0166	1.39	0.0156	<0.0036	0.336	0.0077	<0.0036	0.210	0.0212
	6/16/2016	<0.0084	<0.0334	<0.0084	<0.0084	0.174	<0.0084	0.0299	3.31	0.0316	<0.0084	0.314	0.0128	<0.0084	0.288	0.0523
	6/16/16 DUP	<0.0084	<0.0334	<0.0084	<0.0084	0.192	<0.0084	0.0319	3.42	0.0374	<0.0084	0.367	0.0154	<0.0084	0.311	0.0670
	9/27/2016	<0.010	<0.040	<0.010	<0.010	0.026 D	<0.010	<0.010	0.525 D	<0.010	<0.010	0.0676 D	<0.010	<0.010	0.0454 D	0.0148
	9/27/2016 DUP	<0.0025	<0.010	<0.0025	<0.0025	0.0444 D	<0.0025	0.0115	0.867 D	0.0114	<0.0025	0.387 D	0.0039	<0.0025	0.163 D	0.0226
	12/14/2016	<0.001	<0.004	<0.001	<0.001	<0.001	<0.001	<0.001	0.0069 D	0.0023	<0.001	<0.001	<0.001	<0.001	<0.001	0.0205
	12/14/2016 DUP	<0.0025	0.0291	<0.0025	<0.0025	0.0165	<0.0025	0.0047	0.744 D	<0.0025	<0.0025	0.0623	<0.0025	<0.0025	0.0422	0.0212
MW-13	3/8/2016	<0.0025	<0.010	<0.0025	<0.0025	0.01430	<0.0025	0.00640	0.336	0.00460	<0.0025	0.839	0.0037	<0.0025	0.736	<0.0025
	6/16/2016	<0.0084	<0.0334	<0.0084	<0.0084	0.04130	<0.0084	0.01780	0.841	0.01920	<0.0084	2.47	0.0101	<0.0084	1.820	<0.0084
	9/28/2016	<0.025	<0.10	<0.025	<0.025	<0.0025	<0.0025	<0.025	0.148	<0.025	<0.025	4.84	<0.025	<0.025	0.895	<0.025
	9/28/16 DUP	<0.025	<0.10	<0.025	<0.025	<0.0025	<0.0025	<0.025	0.145	<0.025	<0.025	5.09	<0.025	<0.025	0.951	<0.025
	12/16/2016	<0.005	<0.020	<0.005	<0.005	<0.005	<0.005	<0.005	0.509	<0.005	<0.005	1.02	<0.005	<0.005	0.394	<0.005
MW-14	12/8/2015	Not sampled; well monument under water.														
	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.013	<0.00050	<0.00050	0.029	<0.00050
	9/27/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0072	<0.00050	0.0021	0.0618	0.00094	<0.00050	0.10	0.0017	<0.00050	0.218	<0.00050
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.00056	<0.00050	<0.00050	0.00097	<0.00050
MW-15	9/23/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	<0.00050	<0.00050
	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00059	<0.00050	<0.00050	<0.00050	<0.00050
	9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	<0.00050	<0.00050
MW-16	9/23/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00056	<0.00050	0.00065	0.0104	<0.00050	<0.00050	0.173	0.0012	<0.00050	0.0435	<0.00050
	12/7/2015	Not sampled; well monument under water.														
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0095	<0.00050	<0.00050	0.144	0.00066	<0.00050	0.0356	<0.00050
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.0515	<0.00050	<0.00050	0.0116	<0.00050
MW-17	9/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.0042	<0.00050
	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.00083	<0.00050	<0.00050	0.00330	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0227	<0.00050
	9/27/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00150	<0.00050	<0.00050	0.0042	<0.00050	<0.00050	0.0104	<0.00050
MW-18i	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.0010	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00098	<0.00050	<0.00050	0.00073	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.00085	<0.00050
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0028	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.0012	<0.00050

Please refer to notes at end of table.

Table 3  
Groundwater Analytical Results: 2016  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MW-19	3/8/2016	<0.010	<0.040	<0.010	<0.010	<b>0.0966</b>	<0.010	<b>0.0420</b>	<b>1.520</b>	<b>0.0202</b>	<0.010	<b>4.08</b>	<b>0.0408</b>	<0.010	<b>2.61</b>	<b>0.0648</b>
	3/8/16 DUP	<0.010	<0.040	<0.010	<0.010	<b>0.0930</b>	<0.010	<b>0.0428</b>	<b>1.460</b>	<b>0.0182</b>	<0.010	<b>3.76</b>	<b>0.0404</b>	<0.010	<b>2.56</b>	<b>0.0724</b>
	6/16/2016	<0.010	<0.040	<0.010	<0.010	<0.010	<0.010	<b>0.0222</b>	<b>0.507</b>	<0.010	<0.010	<b>3.25</b>	<b>0.0292</b>	<0.010	<b>1.03</b>	<b>0.0183</b>
	6/16/2016 DUP	<0.0125	<0.050	<0.0125	<0.0125	<b>0.0195</b>	<0.0125	<b>0.0238</b>	<b>0.505</b>	<0.0125	<0.0125	<b>3.46</b>	<b>0.0281</b>	<0.0125	<b>1.02</b>	<b>0.0176</b>
	9/26/2016	<0.005	<0.020	<0.005	<0.005	<b>0.0104</b>	<0.005	<b>0.0110</b>	<b>0.235</b>	<0.005	<0.005	<b>1.52</b>	<b>0.0145</b>	<0.005	<b>0.592</b>	<b>0.0101</b>
	12/12/2016	<0.005	<0.020	<0.005	<0.005	<b>0.0728</b>	<0.005	<b>0.0112</b>	<b>1.030</b>	<b>0.0107</b>	<0.005	<b>1.73</b>	<b>0.0109</b>	<0.005	<b>0.812</b>	<b>0.0282</b>
	12/12/2016 DUP	<0.0025	<0.010	<0.0025	<0.0025	<b>0.0787</b>	<0.0025	<b>0.0142</b>	<b>1.010</b>	<b>0.0116</b>	<0.0025	<b>1.53</b>	<b>0.0155</b>	<0.0025	<b>0.975</b>	<b>0.0319</b>
MW-19i	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0054</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0032</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0059</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0024</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MW-20i	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0068</b>	<0.00050	<0.00050	<b>0.0034</b>	<0.00050	<0.00050	<b>0.0018</b>	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0074</b>	<0.00050	<0.00050	<b>0.0021</b>	<0.00050	<0.00050	<b>0.0015</b>	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0087</b>	<0.00050	<0.00050	<b>0.004</b>	<0.00050	<0.00050	<b>0.0022</b>	<0.00050
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0025</b>	<0.00050	<0.00050	<b>0.00054</b>	<0.00050	<0.00050	<0.00050	<0.00050
MW-21i-105	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/26/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0117</b>	<0.00050	<0.00050	<b>0.0058</b>	<0.00050	<0.00050	<b>0.0051</b>	<0.00050
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MW-21i-40	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0021</b>	<0.00050	<0.00050	<b>0.0586</b>	<0.00050	<0.00050	<b>0.0142</b>	<0.00050	<0.00050	<b>0.0151</b>	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0023</b>	<0.00050	<b>0.00080</b>	<b>0.0678</b>	<0.00050	<0.00050	<b>0.0181</b>	<0.00050	<0.00050	<b>0.0171</b>	<0.00050
	9/26/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0026</b>	<0.00050	<b>0.00087</b>	<b>0.0772</b>	<0.00050	<0.00050	<b>0.0201</b>	<0.00050	<0.00050	<b>0.0198</b>	<0.00050
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0024</b>	<0.00050	<b>0.00083</b>	<b>0.0742</b>	<0.00050	<0.00050	<b>0.0214</b>	<0.00050	<0.00050	<b>0.0194</b>	<0.00050
MW-22i	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.008</b>	<0.00050	<0.00050	<b>0.0022</b>	<0.00050	<0.00050	<b>0.0120</b>	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0065</b>	<0.00050	<0.00050	<b>0.001</b>	<0.00050	<0.00050	<b>0.0079</b>	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0081</b>	<0.00050	<0.00050	<b>0.0013</b>	<0.00050	<0.00050	<b>0.009</b>	<0.00050
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0086</b>	<0.00050	<0.00050	<b>0.002</b>	<0.00050	<0.00050	<b>0.0102</b>	<0.00050
MW-23i	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/27/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MW-24i	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0035</b>	<0.00050	<0.00050	<b>0.0041</b>	<0.00050	<0.00050	<b>0.0016</b>	<0.00050
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.00099</b>	<0.00050	<0.00050	<b>0.0078</b>	<0.00050	<0.00050	<b>0.0115</b>	<0.00050	<0.00050	<b>0.0063</b>	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.00053</b>	<0.00050	<0.00050	<b>0.0054</b>	<0.00050	<0.00050	<b>0.0058</b>	<0.00050	<0.00050	<b>0.0031</b>	<0.00050
	12/12/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0011</b>	<0.00050	<0.00050	<0.00050	<0.00050

Please refer to notes at end of table.

Table 3  
Groundwater Analytical Results: 2016  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MW-24d	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0014</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.00087</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.00062</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/12/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MW-25i	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/9/2016 DUP	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/15/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/29/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.00081</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/13/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.00077</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MW-26	3/8/2016	<0.0012	<0.005	<0.0012	<0.0012	<b>0.008</b>	<0.0012	<b>0.0015</b>	<b>0.0761</b>	<b>0.0018</b>	<0.0012	<b>0.171</b>	<b>0.0037</b>	<0.0012	<b>0.370</b>	<0.0012
	6/15/2016	<0.001	<0.004	<0.001	<0.001	<b>0.0046</b>	<0.001	<b>0.0014</b>	<b>0.0831</b>	<b>0.0022</b>	<0.001	<b>0.192</b>	<b>0.0022</b>	<0.001	<b>0.343</b>	<0.001
	9/27/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0039</b>	<0.00050	<b>0.0011</b>	<b>0.0611</b>	<b>0.0016</b>	<0.00050	<b>0.16</b>	<b>0.0024</b>	<0.00050	<b>0.288</b>	<0.00050
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0089</b>	<0.00050	<b>0.0024</b>	<b>0.0859</b>	<b>0.0020</b>	<0.00050	<b>0.167</b>	<b>0.0033</b>	<0.00050	<b>0.410</b>	<0.00050
MW-32s	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/7/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
EW-1	9/21/2015	<0.00050	<0.00050	<b>0.0020</b>	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0039</b>	<0.00050	<0.00050	<b>0.0453</b>	<b>0.00056</b>	<0.00050	<b>0.0125</b>	<0.00050
	3/8/2016	<0.00050	<0.0020	<b>0.0020</b>	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0029</b>	<0.00050	<0.00050	<b>0.0626</b>	<b>0.00083</b>	<0.00050	<b>0.0143</b>	<0.00050
	9/29/2016	<0.00050	<0.0020	<b>0.0011</b>	<0.00050	<0.00050	<b>0.0015</b>	<0.00050	<b>0.0054</b>	<0.00050	<0.00050	<b>0.0386</b>	<0.00050	<0.00050	<b>0.0105</b>	<0.00050
S-1	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/27/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0011</b>	<0.00050	<0.00050	<b>0.00073</b>	<0.00050	<0.00050	<b>0.003</b>	<0.00050
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.00057</b>	<0.00050	<0.00050	<b>0.00054</b>	<0.00050	<0.00050	<b>0.0016</b>	<0.00050
S-2	6/16/2015	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0041</b>	<0.00050	<0.00050	<b>0.0038</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/8/2015	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0030</b>	<0.00050	<0.00050	<b>0.0032</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0043</b>	<0.00050	<0.00050	<b>0.0060</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/26/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0062</b>	<0.00050	<0.00050	<b>0.011</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0035</b>	<0.00050	<0.00050	<b>0.0049</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MGMS1-3(43)	3/9/2016	<0.010	<0.040	<0.010	<0.010	<b>0.094</b>	<0.010	<0.010	<b>1.70</b>	<b>0.0124</b>	<0.010	<b>0.0241</b>	<0.010	<0.010	<b>0.082</b>	<b>0.209</b>
	6/17/2016	<0.0083	<0.0333	<0.0083	<0.0083	<b>0.163</b>	<0.0083	<b>0.0266</b>	<b>3.13</b>	<b>0.0361</b>	<0.0083	<b>0.0646</b>	<0.0083	<0.0083	<b>0.248</b>	<b>0.288</b>
	9/30/2016	<0.0083	<0.0333	<0.0083	<0.0083	<b>0.0819</b>	<0.0083	<b>0.0135</b>	<b>1.98</b>	<b>0.0242</b>	<0.0083	<b>0.23</b>	<0.0083	<0.0083	<b>0.366</b>	<b>0.052</b>
	12/16/2016	<0.0084	<0.0334	<0.0084	<0.0084	<b>0.0926</b>	<0.0084	<b>0.0095</b>	<b>1.81</b>	<b>0.0201</b>	<0.0084	<b>0.0641</b>	<0.0084	<0.0084	<b>0.171</b>	<b>0.239</b>

Please refer to notes at end of table.

Table 3  
Groundwater Analytical Results: 2016  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MGMS1-2(60)	3/9/2016	<0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	<0.00050	0.0175	<0.00050	<0.00050	0.0169	<0.00050	<0.00050	0.014	<0.00050
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0118	<0.00050	<0.00050	0.0180	<0.00050	<0.00050	0.0111	<0.00050
	9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.00089	<0.00050	<0.00050	0.0177	<0.00050	<0.00050	0.0225	<0.00050	<0.00050	0.0176	<0.00050
	12/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0051	<0.00050	<0.00050	0.0076	<0.00050	<0.00050	0.0047	<0.00050
MGMS1-1(110)	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	0.00069	0.126	<0.00050	<0.00050	0.0237	<0.00050	<0.00050	0.0415	0.00082
	9/21/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0490	<0.00050	<0.00050	0.0194	<0.00050	<0.00050	0.0204	<0.00050
	9/30/2016	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.0567	<0.00050	<0.00050	0.0184	<0.00050	<0.00050	0.0287	<0.00050
MGMS2-4(40)	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0206	<0.00050	0.0016	0.036	<0.00050	<0.00050	0.0065	<0.00050	<0.00050	0.0062	0.0360
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0249	<0.00050	0.0264	0.744	0.0028	<0.00050	0.2230	0.0031	<0.00050	0.1460	0.2270
	9/29/2016	<0.0050	<0.020	<0.0050	<0.0050	0.0121	<0.0050	<0.0050	0.115	<0.0050	<0.0050	0.0333	<0.0050	<0.0050	0.0248	0.142
	12/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0103	<0.00050	<0.00050	0.0052	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.0019	0.0020
MGMS2-3(60)	12/8/2015	Well Damaged, Unable to Sample														
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0194	<0.00050	<0.00050	0.0172	<0.00050	<0.00050	0.0118	0.0034
	9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.04	<0.00050	<0.00050	0.0096	<0.00050	<0.00050	0.0115	0.0096
	12/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.0353	<0.00050	<0.00050	0.0407	<0.00050	<0.00050	0.0248	0.0014
MGMS2-2(110)	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0183	<0.00050	<0.00050	0.0079	<0.00050	<0.00050	0.0048	0.0046
	9/25/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0153	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0059	0.0041
	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.0226	<0.00050	<0.00050	0.0071	<0.00050	<0.00050	0.00800	0.01
	9/29/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	0.0168	<0.00050	<0.00050	0.0065	<0.00050	<0.00050	0.0063	0.0058
MGMS2-1(132)	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0105	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0044	0.00075
	9/25/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0205	<0.00050	<0.00050	0.0067	<0.00050	<0.00050	0.0052	0.0046
	3/9/2016	<0.00050	<0.00050	<0.00050	<0.00050	0.00086	<0.00050	<0.00050	0.0368	<0.00050	<0.00050	0.0079	0.00069	<0.00050	0.0107	0.0124
	9/29/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.00070	<0.00050	<0.00050	0.0314	<0.00050	<0.00050	0.0064	<0.00050	<0.00050	0.0079	0.0082
MGMS3-4(40)	3/9/2016	<0.0025	<0.010	<0.0025	<0.0025	0.0116	<0.0025	<0.0025	0.610	0.0040	<0.0025	0.0867	<0.0025	<0.0025	0.0897	0.0229
	3/8/2016 DUP	<0.0025	<0.010	<0.0025	<0.0025	0.0124	<0.0025	<0.0025	0.643	0.0054	<0.0025	0.0974	<0.0025	<0.0025	0.1020	0.0280
	6/17/2016	<0.0012	<0.0050	<0.0012	<0.0012	0.0245	<0.0012	0.006	0.955	0.0091	<0.0012	0.2320	<0.0012	<0.0012	0.2090	0.0859
	9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0041	<0.00050	0.00054	0.226	0.0018	<0.00050	0.0017	<0.00050	<0.00050	0.0013	0.0458
	9/30/2016 DUP	<0.00050	<0.0020	<0.00050	<0.00050	0.0045	<0.00050	0.00060	0.219	0.002	<0.00050	0.0015	<0.00050	<0.00050	0.0014	0.0521
	12/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.0013	0.00097	<0.00050	0.00063	<0.00050	<0.00050	<0.00050	0.00088
MGMS3-3(60)	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0028	<0.00050	<0.00050	0.0008	<0.00050
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0174	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.0050	<0.00050
	9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0077	<0.00050	<0.00050	0.0037	<0.00050	<0.00050	0.0019	<0.00050
	12/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.00068	<0.00050

Please refer to notes at end of table.

Table 3  
Groundwater Analytical Results: 2016  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
		Concentrations in mg/L (ppm)														
MGMS3-2(101)	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0051</b>	<0.00050	<0.00050	<b>0.0044</b>	<0.00050	<0.00050	<b>0.0028</b>	<0.00050
	9/22/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0053</b>	<0.00050	<0.00050	<b>0.0038</b>	<0.00050	<0.00050	<b>0.0026</b>	<b>0.0012</b>
	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0073</b>	<0.00050	<0.00050	<b>0.0075</b>	<0.00050	<0.00050	<b>0.0061</b>	<0.00050
	9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0065</b>	<0.00050	<0.00050	<b>0.0044</b>	<0.00050	<0.00050	<b>0.003</b>	<0.00050
MGMS3-1(132)	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.00053</b>	<0.00050	<0.00050	<b>0.0093</b>	<0.00050	<0.00050	<b>0.0063</b>	<0.00050	<0.00050	<b>0.0060</b>	<b>0.00056</b>
	9/22/2015	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.00074</b>	<0.00050	<0.00050	<b>0.0133</b>	<0.00050	<0.00050	<b>0.0081</b>	<0.00050	<0.00050	<b>0.0082</b>	<b>0.0012</b>
	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.00100</b>	<0.00050	<b>0.00056</b>	<b>0.0144</b>	<0.00050	<0.00050	<b>0.0135</b>	<b>0.00056</b>	<0.00050	<b>0.0127</b>	<b>0.0008</b>
	9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.00084</b>	<0.00050	<b>0.00054</b>	<b>0.0129</b>	<0.00050	<0.00050	<b>0.0138</b>	<0.00050	<0.00050	<b>0.0119</b>	<0.00050
EX-1	3/8/2016	<0.0012	<0.0050	<0.0012	<0.0012	<b>0.0040</b>	<0.0012	<b>0.0029</b>	1.16 E	<b>0.0036</b>	<0.0012	<b>0.274</b>	<b>0.0050</b>	<0.0012	<b>0.0711</b>	<b>0.0133</b>
	6/17/2016	<0.0050	<0.02	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<b>1.040</b>	<0.0050	<0.0050	<b>0.592</b>	<0.0050	<0.0050	<b>0.0908</b>	<0.0050
	9/28/2016	<0.0017	<0.0067	<0.0017	<0.0017	<b>0.0046</b>	<0.0017	<b>0.0035</b>	2.23	<b>0.0038</b>	<0.0017	<b>0.0394</b>	<b>0.0025</b>	<0.0017	<b>0.549</b>	<b>0.128</b>
	12/12/2016	<0.00050	<b>0.0037</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<b>0.0081</b>	<0.00050	<0.00050	<b>0.0043</b>	<0.00050	<0.00050	<b>0.00096</b>	<b>0.0519</b>
MP-1	3/8/2016	<0.00084	<0.0033	<0.00084	<0.00084	<b>0.0075</b>	<0.00084	<b>0.0021</b>	<b>0.1480</b>	<b>0.0012</b>	<0.00084	<b>0.433</b>	<0.00084	<0.00084	<b>0.1000</b>	<0.00084
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0050</b>	<0.00050	<b>0.0015</b>	<b>0.1250</b>	<b>0.00097</b>	<0.00050	<b>0.206</b>	<0.00050	<0.00050	<b>0.0673</b>	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.0013</b>	<0.00050	<b>0.0031</b>	<b>0.0405</b>	<0.00050	<0.00050	<b>0.0994</b>	<0.00050	<0.00050	<b>0.0355</b>	<b>0.0033</b>
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.00064</b>	<0.00050	<b>0.00092</b>	<b>0.209</b>	<b>0.00055</b>	<0.00050	<b>0.0029</b>	<0.00050	<0.00050	<b>0.0010</b>	<b>0.0043</b>

Notes:

1. mg/L (ppm) = Milligrams per liter (parts per million).
2. **Bold** values represents detected concentration of listed analyte.
3. < = Not detected at or above the specified laboratory method reporting limit (MRL).
4. E = Analyte concentration exceeded the calibration range. Reported result is estimated.
5. D = Relative percent difference (RPD) between sample and duplicate is outside of the acceptable range of +/- 30%.

Table 4  
Interim Action: Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number: Sample Date:	MW-7																																
	2/6/2007	12/16/2008	3/23/2009	6/18/2009	9/18/2009	12/18/2009	3/16/2010	6/17/2010	9/23/2010	12/10/2010	3/11/2011	6/7/2011	9/19/2011	12/9/2011	3/12/2012	06/22/2012	9/14/2012	12/14/2012	3/15/2013	6/14/2013	9/20/2013	12/16/2013	3/24/2014	6/25/2014	9/30/2014	12/15/2014	3/20/2015	6/17/2015	9/23/2015	12/8/2015	6/17/2016	9/29/2016	12/14/2016
Analyte	Concentrations in mg/L (ppm)																																
<b>Volatile Organic Compounds</b>																																	
Tetrachloroethene	31.5	15	3.3	0.89	2.6	1.6	0.55	0.2	0.75	0.22	0.42	0.43	0.41	0.2	0.041	0.025	0.028	0.011	0.0016	0.0016	<0.00050	0.00051	0.0098	<0.00050	<0.00050	0.00061	<0.00050	0.0012	0.0045	0.00094	0.00069	<0.00050	0.00078
Trichloroethene	0.352	0.45	0.27	0.35	0.25	0.16	0.056	0.072	0.11	0.036	0.082	0.11	0.084	0.032	0.0086	0.0052	0.0052	0.0068	0.00078	<0.00050	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.0015	0.0011	0.001	0.0042	0.0017	0.0021	0.0055	<0.00050
cis-1,2-Dichloroethene	<0.100	0.13	0.42	0.52	0.93	0.33	0.18	0.36	0.69	0.094	0.15	1.4	1.3	3.4	1.6	0.5	0.18	0.13	0.11	0.058	0.056	0.0069	0.013	0.00062	0.0045	0.016	0.0084	0.012	0.0127	0.0041	0.0109	0.0109	0.0094
trans-1,2-Dichloroethene	<0.100	<0.050	<0.015	<0.0030	<0.0030	<0.0050	<0.0020	<0.0015	<0.0030	<0.00090	0.00091	0.0033	<0.0050	0.0068	<0.0050	<0.0020	0.0007	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Vinyl chloride	<0.100	<0.050	<0.015	<0.0030	<0.0030	<0.0050	<0.0020	<0.0015	0.0048	0.0017	0.0093	0.0079	0.078	0.11	0.6	0.29	0.08	0.018	0.011	0.016	0.01	0.0091	0.0076	0.0014	0.0098	0.021	0.001	0.0126	0.0048	0.0019	0.0054	0.0055	0.001
Ethene	N/A	N/A	N/A	N/A	<0.0010	<0.0010	<0.0010	<0.0010	0.00119	0.00776	<0.0010	N/A	0.0387	0.071	0.13	0.047	0.0195	0.0133	0.00586	0.0186	0.005	0.22	0.0219	<0.0010	<0.0010	<0.0062	<0.010	<0.010	<0.010	<0.010	N/A	N/A	
1,1-Dichloroethene	<0.100	<0.050	<0.015	<0.0030	0.0055	<0.0050	<0.0020	<0.0015	<0.0030	<0.00090	0.0016	0.0034	<0.0050	0.0069	<0.0050	<0.0020	0.00054	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1-Dichloroethane	<0.100	<0.050	<0.015	0.0037	0.0098	0.0067	<0.0020	<0.0015	0.0033	0.0018	0.0066	0.0048	<0.0050	0.008	0.0092	0.009	0.0038	0.0019	0.00069	0.00051	0.0015	0.0029	0.0016	0.00019	0.0027	0.0045	0.001	0.0026	0.0018	<0.00050	0.0006	0.0011	<0.00050
1,2-Dichloroethane	<0.100	<0.050	<0.00050	<0.0030	<0.0030	<0.0050	<0.0020	<0.0015	<0.0030	<0.00090	<0.00090	<0.0025	<0.0050	<0.0050	<0.0050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1,1-Trichloroethane	<0.100	<0.050	<0.015	0.0052	0.01	0.0067	0.002	0.0027	0.0035	0.0016	0.0051	0.004	<0.0050	<0.0050	<0.0050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
<b>Attenuation Chemistry</b>																																	
Total Organic Carbon	< 1.00	2.40	6.7	N/A	4.10	2.50	2.6	2.8	8.2	0.84	1.10	4.7	3.400	1.600	1.000	790	790	550	250	220	270	250	77	120	160	28.5	23.5	46	40.6	9.8	18.9	N/A	N/A
<b>Field Parameters</b>																																	
Dissolved Oxygen	1.20	0.72	0.69	6.97	0.59	1.23	1.37	1.86	0.64	6.29	6.65	0.45	4.53	1.19	2.97	6.28	2.29	0.34	1.02	0.29	0.45	0.44	0.43	0.6	1.93	1.61	1.19	0.81	0.87	1.98	1.67	0.96	1.13
Oxidation Reduction Potential (mV)	245.7	-103.2	-614.5	-16.4	121.7	162.1	147.7	240.0	-483.4	111.6	132.3	108.6	695.8	-117.5	96.8	-137.9	93.3	24.1	53.3	47.9	-189.3	-66.1	76.9	-90.5	-112.0	-34.0	-76.8	-4.9	-30.5	84.1	-120.1	164.1	5.6

Please refer to notes at end of table.

Table 4  
Interim Action: Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number:	MP-1																																		
	Sample Date:	2/6/2007	12/16/2008	3/23/2009	6/18/2009	9/18/2009	12/18/2009	3/16/2010	6/17/2010	9/23/2010	12/10/2010	3/14/2011	6/7/2011	9/19/2011	12/9/2011	3/9/2012	6/22/2012	9/14/2012	12/14/2012	3/15/2013	6/14/2013	9/20/2013	12/16/2013	3/24/2014	6/23/2014	9/30/2014	12/15/2014	3/20/2015	6/18/2015	9/22/2015	12/8/2015	3/8/2016	6/17/2016	9/28/2016	12/13/2016
Analyte	Concentrations in mg/L (ppm)																																		
<b>Volatile Organic Compounds</b>																																			
Tetrachloroethene	1.61	1.6	1.2	1.5	1.1	1	1.5	0.8	0.73	1	1.2	0.64	0.03	0.64	0.49	0.69	0.34	0.23	0.23	0.33	0.26	0.29	0.36	1.2	0.36	0.32	0.57	0.376	0.343	0.308	0.433	0.206	0.0994	0.0029	
Trichloroethene	0.421	0.23	0.18	0.18	0.31	0.18	0.4	0.14	0.12	0.15	0.18	0.13	0.072	0.12	0.14	0.12	0.083	0.048	0.069	0.07	0.066	0.07	0.054	0.13	0.063	0.059	0.096	0.0808	0.0683	0.0626	0.1	0.0673	0.0355	0.001	
cis-1,2-Dichloroethene	0.347	0.07	0.089	0.043	0.24	0.058	0.41	0.12	0.041	0.027	0.15	0.075	0.0041	0.049	0.44	0.53	0.17	0.17	0.14	0.19	0.077	0.067	0.24	0.29	0.11	0.058	0.19	0.091	0.0383	0.0509	0.148	0.125	0.0405	0.209	
trans-1,2-Dichloroethene	0.0085	<0.0050	<0.0040	<0.0040	0.0089	<0.0040	0.013	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0025	<0.0015	0.0031	0.0063	0.0029	0.0022	0.0017	0.0025	0.0016	0.0015	0.00092	<0.0015	0.0017	<0.0020	<0.0015	0.0015	0.00087	<0.0012	<0.0012	0.0012	0.00097	<0.00050	0.00055
Vinyl chloride	0.0236	<0.0050	<0.0040	<0.0040	0.0073	<0.0040	0.01	<0.0030	<0.0030	<0.0030	0.0059	<0.0025	0.0016	<0.0025	0.021	0.048	0.0045	0.0018	0.0018	0.0018	<0.00090	<0.00090	<0.0015	0.005	0.016	<0.0015	0.025	<0.00084	<0.0012	<0.0012	<0.00084	<0.00050	0.0033	0.0043	
Ethene	N/A	N/A	N/A	N/A	<0.001	<0.001	0.00247	<0.0010	<0.0010	<0.0010	<0.0000010	<0.0010	NA	0.00328	0.0159	0.0666	0.016	0.0211	0.00586	0.00296	0.00317	<0.0010	0.033	0.0196	<0.0010	<0.0010	<0.0062	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1-Dichloroethene	<0.0050	<0.0050	<0.0040	<0.0040	<0.0040	<0.0040	0.0047	<0.0030	<0.0030	<0.0030	<0.0030	<0.0025	<0.0015	<0.0025	0.0028	0.0028	<0.0015	<0.00090	0.00094	0.0014	<0.00090	0.0011	<0.0015	0.0023	<0.0020	<0.0015	0.0015	0.0015	0.0014	0.0015	0.0021	0.0015	0.0031	0.00092	
1,1-Dichloroethane	0.0184	<0.005	0.006	0.0043	0.014	<0.0040	0.022	0.0032	<0.0030	<0.0030	0.0071	0.0049	0.0024	0.0026	0.0094	0.0056	0.004	0.002	0.0051	0.0045	0.0029	0.0017	0.0022	0.0049	0.0028	0.0017	0.0036	0.0029	0.0018	0.0018	0.0075	0.005	0.0013	0.00064	
1,2-Dichloroethane	<0.0050	<0.0050	<0.0040	<0.0040	<0.0040	<0.0040	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0025	<0.0015	<0.0025	<0.0015	<0.0025	<0.0015	<0.00090	<0.00090	<0.00090	<0.00090	<0.00090	<0.0015	<0.0015	<0.0020	<0.0015	<0.0010	<0.00084	<0.0012	<0.0012	<0.00084	<0.00050	<0.00050	<0.00050	
1,1,1-Trichloroethane	0.0112	0.01	0.01	0.012	0.0082	0.0071	0.0086	0.0054	0.004	0.0045	0.0064	0.0033	0.0019	0.0031	0.0035	0.012	0.002	0.001	0.001	0.0014	0.00095	0.0012	0.0018	0.0095	<0.0020	<0.0015	0.001	<0.00084	<0.0012	<0.0012	<0.00084	<0.00050	<0.00050	<0.00050	
<b>Attenuation Chemistry</b>																																			
Total Organic Carbon	<1.00	1.80	2.0	N/A	1.50	1.60	2.4	2.4	2.0	1.0	0.96	1.6	3.7	8.3	16	26	23	18	35	28	35	26	38	34	29	2.4	7.8	6.0	2.2	9.9	5.1	<1.0	2620	130	
<b>Field Parameters</b>																																			
Dissolved Oxygen	0.39	1.37	1.05	3.65	0.48	0.78	0.89	3.22	0.53	0.52	1.35	0.52	0.69	0.83	0.23	0.83	0.43	0.28	0.44	0.34	0.44	1.10	0.69	3.00	4.09	0.88	1.04	1.75	1.66	1.20	1.13	3.71	1.32	3.57	
Oxidation Reduction Potential (mV)	208.9	-78.5	127.3	-43.7	99.7	155.3	83.2	228.3	-464.0	-4.6	159.6	48.9	913.5	-51.7	77.7	-51.7	98.2	-15.2	60.4	187.2	1.2	10.3	-18.7	-14.0	42.3	-28.6	29.8	-148.5	105.5	82.8	29.5	-8.6	135.2	12.1	

Please refer to notes at end of table.

Table 4  
Interim Action: Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number: Sample Date:	EX																																	
	2/6/2007	12/16/2008	3/23/2009	6/18/2009	9/18/2009	12/18/2009	3/16/2010	6/17/2010	9/23/2010	12/21/2010	3/31/2011	6/7/2011	9/19/2011	12/9/2011	3/9/2012	6/22/2012	9/14/2012	12/14/2012	3/15/2013	6/14/2013	9/20/2013	12/16/2013	3/24/2014	6/23/2014	9/30/2014	12/15/2014	3/19/2015	6/18/2015	9/22/2015	12/8/2015	3/8/2016	6/17/2016	9/28/2016	12/12/2016
Analyte	Concentrations in mg/L (ppm)																																	
<b>Volatile Organic Compounds</b>																																		
Tetrachloroethene	2.81	4.5	1.4	0.024	2.1	0.7	0.15	0.15	2.4	0.9	6.8	1.4	4.1	<0.050	0.033	0.003	0.003	0.00087	0.0012	0.00079	0.0041	0.002	0.02	0.029	NS	0.022	0.17	0.186	0.302	0.0944	0.274	0.592	0.0394	0.0043
Trichloroethene	0.564	0.83	0.42	0.011	0.38	0.056	0.033	0.039	0.22	0.099	0.91	0.17	0.46	<0.050	0.01	0.0011	<0.0015	<0.00050	<0.00050	<0.00050	0.0026	0.0014	0.0075	0.015	NS	0.0027	0.056	0.042	0.0619	0.0213	0.0711	0.0908	0.549	0.00096
cis-1,2-Dichloroethene	0.0682	0.49	0.05	0.0042	0.12	0.0056	0.02	0.092	0.09	0.03	0.24	0.14	0.29	12	1.4	0.17	0.32	0.026	<0.00050	0.0016	0.071	0.034	0.03	0.16	NS	0.01	0.69	0.42	0.543	0.427	1.16	1.04	2.23	0.0081
trans-1,2-Dichloroethene	<0.010	<0.015	<0.0050	<0.00050	0.00076	<0.0025	<0.00050	<0.00050	0.00053	<0.00050	<0.0040	<0.0040	<0.0050	0.0093	0.0086	0.0013	<0.0015	<0.00050	<0.00050	0.00068	<0.00050	<0.00050	0.00097	NS	<0.00050	0.0019	0.0016	0.0026	<0.00050	0.0036	<0.0050	0.0038	<0.00050	
Vinyl chloride	<0.010	<0.015	<0.0050	<0.00050	0.0011	<0.0025	<0.00050	0.0022	0.0018	0.00071	0.0051	<0.0040	0.014	0.14	0.29	0.12	0.042	0.012	0.0044	<0.00050	0.03	0.028	0.011	0.038	NS	<0.00050	0.0028	0.0032	0.0244	0.0021	0.0133	<0.0050	0.128	0.0519
Ethene	N/A	N/A	N/A	N/A	<0.001	0.0556	<0.00050	<0.0010	<0.0010	<0.0010	0.00191	<0.0010	N/A	0.0114	0.0242	0.15	0.0472	0.00592	<0.0010	<0.0010	0.0354	0.0453	0.0911	0.0815	NS	<0.0010	<0.0062	<0.010	<0.0010	<0.0010	<0.0010	<0.010	N/A	N/A
1,1-Dichloroethene	<0.010	<0.015	<0.0050	<0.00050	0.0033	<0.0025	<0.00050	<0.00050	0.0016	0.00059	0.0081	<0.0040	0.011	0.019	<0.0040	0.00068	<0.0015	<0.00050	<0.00050	0.00054	<0.00050	<0.00050	0.0011	NS	<0.00050	0.0021	0.0026	0.0037	<0.00050	0.0029	<0.0050	0.0035	<0.00050	
1,1-Dichloroethane	<0.010	0.054	<0.0050	<0.00050	0.0041	<0.0025	<0.00050	0.00097	0.0015	0.00083	0.0082	<0.0040	0.0079	0.016	0.005	0.0034	0.0015	<0.00050	<0.00050	<0.00050	0.0019	0.0038	0.0008	0.0029	NS	<0.00050	0.0035	0.0026	0.0029	<0.00050	0.004	<0.0050	0.0046	<0.00050
1,2-Dichloroethane	<0.010	<0.015	<0.0050	<0.00050	<0.00050	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.0040	<0.0040	<0.0050	<0.0050	<0.0040	<0.00050	<0.0015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NS	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0012	<0.0050	<0.0017	<0.00050	
1,1,1-Trichloroethane	0.04	0.071	0.043	0.0011	0.038	0.0037	0.0032	0.0023	0.02	0.0067	0.11	0.015	0.073	0.017	<0.0040	0.00059	<0.0015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NS	<0.00050	0.0025	0.00088	0.00065	<0.00050	0.005	<0.0050	0.0025	<0.00050	
<b>Attenuation Chemistry</b>																																		
Total Organic Carbon	1.45	3.30	3.0	N/A	4.9	1.8	2.4	3.3	3.6	<0.50	1.9	3.5	560	320	89	110	77	59	64	12	42	46	35	34	NS	158	<5.0	7.5	22.6	7.5	22	1.2	N/A	N/A
<b>Field Parameters</b>																																		
Dissolved Oxygen	0.24	0.74	0.47	0.37	0.60	2.13	0.88	0.84	0.93	0.91	--	0.70	0.63	1.23	0.14	1.23	0.15	0.25	0.37	0.54	0.43	1.66	0.51	0.41	NS	2.41	1.05	2.29	0.90	--	0.36	2.72	1.61	2.00
Oxidation Reduction Potential (mV)	164.8	-174.5	68.8	-9.3	109.0	170.1	102.6	239.5	-521.6	131.7	--	115.2	907.9	-68.3	-33.6	-68.3	-29.5	3.3	67.0	158.8	-175.4	11.9	158.7	-50	NS	-52.2	18.2	-35.2	23.7	--	113.3	4.8	138.1	-24

Please refer to notes at end of table.



Table 4  
 Interim Action: Groundwater Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number:	MW-12																						
Sample Date:	6/7/2011	9/19/2011	12/7/2011	3/12/2012	6/22/2012	9/14/2012	12/13/2012	3/15/2013	6/13/2013	9/20/2013	12/16/2014	3/24/2014	6/24/2014	9/30/2014	12/11/2014	3/20/2015	6/19/2015	9/22/2015	12/8/2015	3/8/2016	6/16/2016	9/27/2016	12/14/2016
Analyte	Concentrations in mg/L (ppm)																						
<b>Volatile Organic Compounds</b>																							
Tetrachloroethene	0.053	0.86	0.52	0.77	0.27	1.1	0.038	0.76	0.61	0.51	0.15	0.18	0.042	0.68	0.025	0.58	0.514	0.343	0.0449	0.325	0.314	0.0676	0.0623
Trichloroethene	0.025	0.69	0.38	0.54	0.2	0.73	0.023	0.54	0.5	0.4	0.11	0.17	0.034	0.48	0.015	0.34	0.356	0.239	0.022	0.209	0.288	0.0454	0.0422
cis-1,2-Dichloroethene	0.059	4.7	2.9	3.8	1.7	5.4	0.062	4.3	4.8	3.4	0.8	1.9	0.31	3.5	0.034	2.11	2.57	2.25	0.0401	1.38	3.31	0.525	0.744
trans-1,2-Dichloroethene	0.001	0.055	0.033	0.045	0.039	0.073	0.00097	0.056	0.053	0.049	0.01	0.025	0.0023	0.045	0.00064	0.029	0.025	0.0234	0.00072	0.0162	0.0316	<0.010	0.0023
Vinyl chloride	<0.00050	0.063	0.04	0.046	0.022	0.084	<0.00050	0.054	0.059	0.05	0.0098	0.047	<0.0015	0.042	<0.00050	0.037	0.0311	0.0225	<0.00050	0.0213	0.0523	0.0148	0.0205
Ethene	<0.0010	NA	0.00615	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0062	<0.010	<0.0010	<0.0100	<0.010	<0.010	<0.010	<0.010
1,1-Dichloroethene	<0.00050	0.045	0.028	0.044	0.016	0.058	<0.00050	0.04	0.039	0.037	0.0076	0.018	0.0019	0.039	<0.00050	0.025	0.0282	0.0169	<0.00050	0.0154	0.0299	<0.010	0.0047
1,1-Dichloroethane	0.0018	0.24	0.13	0.21	0.1	0.27	0.001	0.2	0.24	0.17	0.036	0.11	0.014	0.19	0.00073	0.102	0.151	0.12	0.00084	0.0799	0.174	0.026	0.0165
1,2-Dichloroethane	<0.00050	0.0025	0.0013	<0.015	<0.0050	<0.015	<0.00050	0.0018	<0.015	0.0016	<0.0025	0.00077	<0.0015	<0.015	<0.00050	<0.0050	<0.010	<0.0083	<0.00050	<0.0036	<0.0084	<0.010	<0.010
1,1,1-Trichloroethane	0.0007	0.065	0.034	0.048	0.013	0.076	0.00053	0.053	0.046	0.037	0.0058	0.0086	0.0016	0.036	<0.00050	0.018	0.0236	0.0157	0.00052	0.0077	0.0128	<0.010	<0.010
<b>Attenuation Chemistry</b>																							
Total Organic Carbon	0.94	8.3	59	65	56	100	4.9	95	62	110	23	41	13	93	1.9	4	4.8	4.4	16.5	5.5	3.7	5240	1930
<b>Field Parameters</b>																							
Dissolved Oxygen	3.16	0.84	1.00	1	0.66	0.43	1.07	0.62	0.39	0.59	1.22	1.94	3.68	6.09	0.65	0.89	0.71	1.06	0.99	0.71	2.68	0.98	0.46
Oxidation Reduction Potential (mV)	110.4	906.3	109.0	45.3	117.1	140.7	128.6	117.3	205.2	-10.7	40.4	29.1	1.5	47.1	-110.0	75.7	10.2	65.3	28.1	62.2	59.7	252.5	-91.3

Please refer to notes at end of table.

Table 4  
 Interim Action: Groundwater Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number:	MW-24i																						
	Sample Date:																						
Analyte	6/7/2011	9/16/2011	12/7/2011	3/12/2012	6/22/2012	9/14/2012	12/14/2012	3/15/2013	6/14/2013	9/20/2013	12/16/2013	3/24/2014	6/23/2014	9/30/2014	12/15/2014	3/20/2015	6/18/2015	9/22/2015	12/8/2015	3/8/2016	6/17/2016	9/28/2016	12/12/2016
	Concentrations in mg/L (ppm)																						
<b>Volatile Organic Compounds</b>																							
Tetrachloroethene	0.0066	0.027	0.019	0.030	0.00085	0.031	0.0021	0.023	0.0062	0.015	0.0067	0.010	0.0013	0.020	0.0024	0.0061	<0.00050	0.0022	0.1890	0.0041	0.0115	0.0058	0.0011
Trichloroethene	0.0014	0.024	0.014	0.011	<0.00050	0.02	0.00065	0.015	0.0036	0.0059	0.0034	0.0055	0.0052	0.010	0.0011	0.0031	<0.00050	0.00080	0.03640	0.0016	0.0063	0.0031	<0.00050
cis-1,2-Dichloroethene	0.002	0.27	0.10	0.079	0.014	0.058	0.051	0.048	0.028	0.015	0.008	0.016	0.013	0.021	0.012	0.0059	0.0034	0.0047	0.018	0.0035	0.0078	0.0054	<0.00050
trans-1,2-Dichloroethene	<0.00050	0.0017	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Vinyl chloride	<0.00050	0.019	0.0075	0.0045	0.0026	<0.00050	<0.00050	<0.00050	<0.00080	<0.00080	<0.00050	<0.00080	0.00210	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethene	<0.0010	NA	0.00229	0.00203	0.00152	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0291	<0.0010	<0.0010	<0.0062	<0.010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010
1,1-Dichloroethene	<0.00050	0.0025	0.00084	<0.00050	0.00087	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1-Dichloroethane	<0.00050	0.013	0.005	0.0059	0.0018	0.0044	<0.00050	0.0028	0.0027	0.0010	0.0013	0.0013	0.0012	0.0018	0.00060	0.00058	<0.00050	0.0019	0.0007	<0.00050	0.00099	0.00053	<0.00050
1,2-Dichloroethane	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1,1-Trichloroethane	<0.00050	0.0056	0.0029	0.0023	<0.00050	0.00079	<0.00050	0.00057	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
<b>Attenuation Chemistry</b>																							
Total Organic Carbon	1.2	7.0	290	33	44	15	16	9.5	11	11	7.9	9.4	8.4	12.0	<1.0	<1.0	1.6	2.3	3.5	1.0	<1.0	5.3	1.5
<b>Field Parameters</b>																							
Dissolved Oxygen	6.40	0.61	3.50	2.11	3.50	0.40	2.11	0.79	0.39	1.92	3.08	3.16	4.70	2.01	6.27	10.28	1.08	1.85	1.36	1.75	3.12	2.58	5.64
Oxidation Reduction Potential (mV)	59.0	646.9	-147.5	-1.2	-147.5	-54.0	6.3	13.1	130.2	-31.2	16.9	-55.4	-49.7	129.7	-13.9	38.6	-158.7	99.4	99.2	47.8	14.0	123.9	2.6

Please refer to notes at end of table.

Table 4  
Interim Action: Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number:	MGMS2-40																						
	Sample Date:																						
Analyte	6/7/2011	9/12/2011	12/7/2011	3/8/2012	6/19/2012	9/12/2012	12/11/2012	3/15/2013	6/11/2013	9/17/2013	12/16/2013	3/24/2014	6/26/2014	9/23/2014	12/12/2014	3/20/2015	6/19/2015	9/25/2015	12/8/2015	3/8/2016	6/17/2016	9/29/2016	12/16/2016
	Concentrations in mg/L (ppm)																						
<b>Volatile Organic Compounds</b>																							
Tetrachloroethene	4.4	0.79	0.061	0.0099	0.0072	0.089	0.010	0.0056	0.00094	0.016	0.0024	0.0026	0.021	0.17	0.0034	0.031	0.0184	0.0674	0.004	0.0065	0.223	0.0333	0.0026
Trichloroethene	1.4	0.38	0.039	0.0054	0.0025	0.08	0.0034	0.0022	<0.00050	0.017	0.0014	0.0018	0.022	0.11	0.0023	0.022	0.0128	0.0459	0.0028	0.0062	0.146	0.0248	0.0019
cis-1,2-Dichloroethene	1.6	7.4	5.3	0.47	0.02	0.31	0.033	0.30	0.0079	0.29	0.0084	0.084	0.088	0.59	0.01	0.047	0.0538	0.105	0.0072	0.036	0.744	0.115	0.0052
trans-1,2-Dichloroethene	0.017	0.020	<0.015	0.0028	0.0013	0.0032	0.0013	0.0020	<0.00050	0.0014	<0.00050	<0.00050	0.00084	0.0024	<0.00050	<0.00050	<0.00050	0.00061	<0.00050	<0.00050	0.0028	<0.00050	<0.00050
Vinyl chloride	0.048	0.058	0.46	0.26	0.063	0.44	0.0040	0.27	0.0048	0.33	0.0034	0.27	0.09	0.8	0.018	0.017	0.0483	0.0578	0.0033	0.036	0.227	0.142	0.002
Ethene	<0.001	NA	0.0145	0.368	0.566	0.264	0.11	0.121	0.0556	0.143	0.0333	0.930	0.207	0.0121	0.034	0.0081	0.0337	<0.010	0.0228	0.0637	0.031	N/A	N/A
1,1-Dichloroethene	0.030	0.028	<0.015	0.0023	<0.00050	0.0028	<0.00050	0.0019	<0.00050	0.0048	<0.00050	0.0029	0.01	0.03	<0.00050	0.0039	0.0013	0.0042	<0.00050	0.0016	0.0264	<0.00050	<0.00050
1,1-Dichloroethane	0.065	0.044	0.035	0.038	0.053	0.039	0.0048	0.028	0.0083	0.028	0.0097	0.0450	0.031	0.03	0.035	0.0043	0.0138	0.0123	0.0135	0.0206	0.0249	0.0121	0.0103
1,2-Dichloroethane	<0.015	<0.015	<0.015	<0.0020	<0.00050	<0.0015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1,1-Trichloroethane	0.057	0.048	<0.015	0.0052	<0.00050	0.005	<0.00050	0.0025	<0.00050	0.0016	<0.00050	<0.00050	<0.00050	0.0032	<0.00050	<0.00050	<0.00050	0.00092	<0.00050	<0.00050	0.0031	<0.00050	<0.00050
<b>Attenuation Chemistry</b>																							
Total Organic Carbon	2.2	110	300	290	500	140	280	81	110	98	110	120	120	94	7.9	8	11	10.9	7.9	7.4	3.8	N/A	N/A
<b>Field Parameters</b>																							
Dissolved Oxygen	0.86	2.63	6.28	1.22	6.28	1.16	0.55	0.33	0.42	0.27	1.19	1.06	2.22	1.31	1.41	20.02	13.5	9.67	6.14	5.52	1.60	5.16	0.80
Oxidation Reduction Potential (mV)	49.5	338.9	-137.9	-73.6	-137.9	-40.1	-82.3	-24.3	-116.7	-209.9	-41.9	-126.1	-23.7	-119.0	-162.1	-83.7	-117.5	-145.1	-96.9	-161.7	-72.2	194.5	-28.1

Please refer to notes at end of table.

Table 4  
 Interim Action: Groundwater Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Well Number:	MW-13		MW-14		MW-19		MW-26		MGMS1-43		MGMS3-40	
Sample Date:	9/28/2016	12/16/2016	9/27/2016	12/13/2016	9/26/2016	12/12/2016	9/26/2016	12/13/2016	9/26/2016	12/16/2016	9/26/2016	12/16/2016
Analyte	Concentrations in mg/L (ppm)											
<b>Volatile Organic Compounds</b>												
Tetrachloroethene	4.84	1.02	0.1	0.00056	1.52	1.73	0.16	0.167	0.23	0.0641	0.0017	0.00063
Trichloroethene	0.895	0.394	0.218	0.00097	0.592	0.975	0.288	0.41	0.366	0.171	0.0013	<0.00050
cis-1,2-Dichloroethene	0.148	0.509	0.0618	0.0013	0.235	1.03	0.0611	0.0859	1.98	1.81	0.226	0.0013
trans-1,2-Dichloroethene	<0.0025	<0.005	0.00094	<0.00050	<0.005	0.0116	0.0016	0.002	0.0242	0.0201	0.0018	0.00097
Vinyl chloride	<0.0025	<0.005	<0.00050	<0.00050	0.0101	0.0319	<0.00050	<0.00050	0.052	0.239	0.0458	0.00088
Ethene	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	N/A	<0.010	<0.010	<0.010	<0.010	0.0552
1,1-Dichloroethene	<0.0025	<0.005	0.0021	<0.00050	0.011	0.0142	0.0011	0.0024	0.0135	0.0095	0.00054	<0.00050
1,1-Dichloroethane	<0.0025	<0.005	0.0072	<0.00050	0.0104	0.0787	0.0039	0.0089	0.0819	0.0926	0.0041	0.001
1,2-Dichloroethane	<0.0025	<0.005	<0.00050	<0.00050	<0.005	<0.005	<0.00050	<0.00050	<0.0083	<0.0084	<0.00050	<0.00050
1,1,1-Trichloroethane	<0.0025	<0.005	0.0017	<0.00050	0.0145	0.0155	0.0024	0.0033	<0.0083	<0.0084	<0.00050	<0.00050
<b>Attenuation Chemistry</b>												
Total Organic Carbon	33600	2220	8.8	5.1	1.9	8.1	N/A	2.4	9.0	6.2	36.2	86.9
<b>Field Parameters</b>												
Dissolved Oxygen	2.71	0.66	8.1	3.1	3.27	9.22	1.64	0.88	5.09	6.06	2.7	5.95
Oxidation Reduction Potential (mV)	158.7	-111.4	221.2	55.0	174.4	175.2	236.7	102.4	184.2	-17.5	165.3	-9.20

- Notes:
1. mg/L (ppm) = Milligrams per liter (parts per million).
  2. NA = Not analyzed.
  3. Ethene is analyzed by EPA Method RSK-175M. All other VOCs were analyzed by EPA Method 8260.
  4. **Boldface** value represents detected concentration of listed analyte.

Table 5  
North SVE System – Operation Monitoring  
NuStar Vancouver Facility  
Vancouver, Washington

Date	Branch 4		Branch 5		Post Blower		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	
10/12/2011	0.0	-13.0	0.0	-12.0	7.2	0.1	--
11/2/2011	--*	-25.0	6.7	-25.0	--	--	--
11/17/2011	0.8	-16.0	6.9	-16.0	7.0	0.1	PID complications; Routinely reported error code. Potential moisture issues.
12/5/2011	--	--	--	--	--	--	System off on arrival and would not restart. Contractor identified electrical issues. Blower removed for replacement.
12/14/2011	--	--	--	--	--	--	System not operating, pending blower replacement. Blower reinstalled January 10, 2012
1/23/2012	--	-15.0	6.5	-15.0	3.9	0.1	Water in sample port of Branch 4, could not get PID reading
2/17/2012	0.1	-11.0	0.9	-11.0	2.9	1.0	--
3/22/2012	6.8	-12.0	5.4	-12.0	1.3	0.05	--
4/26/2012	1.3	-4.2	6.4	-4.0	1.0	0.05	--
5/23/2012	0.1	-3.4	3.2	-3.4	0.4	--	--
6/20/2012	0.0	-2.8	0.0	-2.7	0.1	0.2	--
7/24/2012	3.2	-3.2	9.2	-3.2	0.2	0.4	Used Rental PID.
8/22/2012	0.4	-2.4	1.0	-2.4	0.0	0.2	--
9/25/2012	0.1	-1.7	0.5	-1.7	0.0	0.2	Used ACA PID #3.
10/29/2012	--	--	--	--	--	--	System not operating.
11/26/2012	8.4	-4.0	9.2	-4.0	3.0	0.05	Used ACA PID #3.
12/21/2012	0.1	-0.63	0.0	-0.62	0.0	0.1	Used ACA PID #3.
1/24/2013	10.4	-0.45	0.0	-0.15	0.5	0.1	Used ACA PID #3.
2/28/2013	37.1	-0.22	2.1	-0.15	1.3	0.1	Used ACA PID #3.
3/25/2013	--	--	--	--	--	--	System not operating.
4/29/2013	--	--	--	--	--	--	System not operating.
5/24/2013	0.4	-23.0	0.1	-23.0	7.9	0.1	Used APEX PID #3.
6/25/2013	--	-20.0	--	-20.0	--	0.1	--
7/25/2013	6.6	-20.0	13.3	-20.0	6.1	0.1	Used APEX PID #3.
8/27/2013	1.9	-18.0	16.9	-18.0	6.8	0.1	Used APEX PID #3.
9/30/2013	0.0	-20.0	0.0	-20.0	2.1	0.1	Used APEX PID #3.
10/24/2013	1.3	-20.0	1.2	-20.0	2.3	0.1	Used APEX PID #3.
11/25/2013	0.3	-23.0	0.2	-23.0	1.1	0.1	Used APEX PID #3.
12/27/2013	1.0	-21.0	0.6	-21.0	2.6	0.1	Used APEX PID #1
1/29/2014	0.2	-20.0	0.1	-20.0	0.0	3.0	--
2/24/2014	2.4	-20.0	2.6	-20.0	2.6	9.0	Used APEX PID #3.
3/31/2014	0.3	-20.0	1.0	-20.0	0.2	1.0	Used APEX PID #4

Please refer to notes at end of table.

Table 5  
 North SVE System – Operation Monitoring  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Branch 4		Branch 5		Post Blower		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	
4/29/2014	2.0	-20.0	1.4	-20.0	0.0	2.0	--
5/27/2014	2.0	-20.0	1.3	-20.0	0.9	2.0	--
7/3/2014	0.5	-20.0	0.3	-18.0	0.4	4.0	--
7/28/2014	4.0	-20.0	2.6	-19.0	0.1	3.0	Used APEX PID #3.
8/25/2014	--	-20.0	--	-19.0	3.7	3.5	Used APEX PID #3.
9/30/2014	2.1	-17.0	0.6	-17.0	1.7	--	--
10/27/2014	0.4	-26.0	1.4	-26.0	2.3	2.0	Used APEX PID #3.
11/25/2014	0.3	-21.0	1.5	-20.0	0.5	--	Used APEX PID #3.
12/29/2014	20.2	-25.0	32.1	-25.0	--	2.0	Used APEX PID #3.
1/26/2015	2.0	-25.0	3.2	-25.0	0.7	3.0	Used APEX PID #3. Knockout drum emptied.
2/26/2015	0.0	-22.0	0.0	-25.0	0.0	0.1	--
3/30/2015	0.0	-23.0	0.2	-27.0	0.0	0.4	Used APEX PID #3.
4/24/2015	0.0	-23.0	0.2	-27.0	0.0	0.4	--
5/28/2015	5.5	-26.0	4.8	-26.0	5.5	0.05	--
7/29/2015	7.5	-17.0	0.3	-17.0	0.5	0.10	Used APEX PID #3.
8/31/2015	0.0	-11.0	0.0	-10.0	0.9	0.05	Used APEX PID #3.
9/28/2015	0.6	-12.0	2.4	-12.0	1.8	0.00	Used APEX PID #3.
10/29/2015	0.5	-12.0	0.3	-13.0	2.9	1.00	Used APEX PID #3.
11/30/2015	0.0	-13.0	0.2	-13.0	0.0	2.00	Used APEX PID #3.
12/28/2015	0.0	-17.0	9.0	-18.0	0.0	0.10	Used APEX PID #3.
2/1/2016	30.4	-28.0	0.0	-25.0	2.6	3.00	Used APEX PID #3.
2/29/2016	0.0	-13.0	0.0	-13.0	0.0	0.10	Used APEX PID #3.
3/29/2016	0.0	-12.0	0.0	-12.0	0.0	0.20	Used APEX PID #3.
4/27/2016	0.2	-11.0	0.0	-5.0	0.0	1.00	Used APEX PID #3. North SVE system turned off.
5/25/2016	--	--	--	--	--	--	North SVE system intertionally turned off for approx . 60 days to evaluate system efficiency.
6/28/2016	20.4	-23.0	14.3	-23.0	0.9	0.10	Used APEX PID #3.
7/26/2016	0.0	-20.0	0.4	-20.0	0.6	1.20	Used APEX PID #3.
9/29/2016	1.0	-16.0	0.0	-15.0	0.0	0.10	Used APEX PID #3.
10/25/2016	0.4	-14.0	0.0	-14.0	0.0	0.10	Used APEX PID #3.
11/28/2016	0.0	-12.0	0.0	-12.0	0.0	0.10	Used APEX PID #3.
12/28/2016	0.0	-12.0	0.0	-12.0	0.0	0.10	Used APEX PID #3.

**Notes:**

1. PID readings in parts per million (ppm), calibrated to 100 ppm isobutylene.
2. Pressure readings in inches of water, measured with magnahelic gauge.
3. NM = Not measured.
4. -- = Not available; branch not in use or no measurement collected during the site visit.
5. NA = Not available; photoionization detector (PID) malfunction.
6. \* = During the 11/2/2011 monitoring event, PID malfunctioned while monitoring Branch 4. Instrument readings would not stabilize.

Table 6  
North SVE System – Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Sampling Location	Sample ID	Date	1,1,1-Trichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methylene Chloride	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride
			Concentrations in µg/m3								
System Effluent	North_EFF-20111012	10/12/2011	69	<16	160	<16	<14	9,500	16	700	<10
System Effluent	Post Blower_North_012312	1/23/2012	<170	<120	<120	<120	<110	16,000	<120	530	<79
System Effluent	North_Effluent_0121712	2/17/2012	<140	<100	<100	<100	<91	11,000	<99	300	<67
System Effluent	North_Effluent_032212	3/22/2012	<28	<54	<27	<27	<23	6,600	<25	140	<8.6
System Effluent	North_Effluent_062012	6/20/2012	<1.6	<3.2	<1.6	<1.6	5.3	250	<1.5	15	<0.51
System Effluent	North_Effluent_082212	8/22/2012	<1.6	<3.2	<1.6	<1.6	<1.4	140	<1.5	11	<0.51
System Effluent	North_Effluent_112612	11/26/2012	39	<14	52	<7.1	<6.2	22,000	<6.8	510	<4.6
System Effluent	North_Effluent_122112	12/21/2012	<31	<59	<30	<30	<26	3,500	<28	61	<19
System Effluent	North_Effluent_022813	2/28/2013	<36	<70	<35	<35	<31	4,400	<33	160	<22
System Effluent	SVE North	5/24/2013	<240	<170	280	<170	<380	23,000	<160	1,100	<110
System Effluent	SVE North	6/25/2013	76	<51	88	<51	<110	13,000	<49	730	<33
System Effluent	SVE North	8/27/2013	<150	<110	<110	<110	<230	17,000	<100	800	<69
System Effluent	SVE North Effluent	10/24/2013	<82	<60	<60	<60	<130	10,000	<57	570	<39
System Effluent	SVE North Effluent	12/27/2013	<44	<32	<32	<32	<69	7,000	<30	470	<20
System Effluent	SVE North Effluent	1/29/2014	<10	<40	22	<40	<87	1,300	<38	110	<26
System Effluent	SVE_North_Post Carbon	2/24/2014	55	<83	68	<41	<36	8,700	<39	760	<27
System Effluent	SVE North Post Carbon	3/5/2014	25	<39	29	<20	<17	4,600	<19	300	<13
System Effluent	VCP_North_Effluent	3/31/2014	19	<13	18	<13	<28	3,500	<12	200	<8.2
System Effluent	North_SVE_Effluent_042914	4/29/2014	22	<15	17	<15	<33	3,500	<14	220	<9.8
System Effluent	North_SVE_Effluent_052714	5/27/2014	<31	<23	<23	<23	<50	4,100	<22	280	<15
System Effluent	North_VCP_Effluent	7/3/2014	<23	<17	20	<17	<37	4,500	<16	290	<11
System Effluent	SVE North	7/28/2014	<120	<88	<88	<88	<190	7,200	<84	460	<22
System Effluent	North SVE	9/30/2014	<48	<35	48	<35	<76	7,300	<33	480	<22
System Effluent	SVE North Effluent	10/27/2014	<110	<80	<80	<80	<180	15,000	<76	410	<52
System Effluent	SVE North 11.25.14	11/25/2014	<39	<28	<28	<28	<62	7,100	<27	390	<18

Please refer to notes at end of table.

Table 6  
North SVE System – Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Sampling Location	Sample ID	Date	1,1,1-Trichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methylene Chloride	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Chloride
			Concentrations in µg/m <sup>3</sup>								
System Effluent	SVENorth122914	12/29/2014	<140	<99	<99	<99	<220	15,000	<94	290	<64
System Effluent	SVE North	1/26/2015	<b>16</b>	<31	<16	<16	<14	1,500	<15	130	<10
System Effluent	SVE North	2/26/2015	<1.6	<3.2	<1.6	<1.6	<1.5	32	<1.5	<2.1	<1.0
System Effluent	SVE North	3/30/2015	<b>15</b>	<9.6	<b>9.5</b>	<4.8	<4.2	1,700	<4.6	130	<3.1
System Effluent	SVE N	4/24/2015	<8.5	<16	<8.2	<8.2	<7.2	550	<7.8	50	<5.3
System Effluent	SVE North	5/14/2015	<1.6	<3.2	<1.6	<1.6	<1.4	<2.7	<1.5	<2.1	<1.0
System Effluent	SVE North	5/28/2015	<3.8	<7.3	<3.6	<3.6	<3.2	360	3.6	8.0	<2.4
System Effluent	SVE North	7/29/2015	<b>19</b>	<33	<b>21</b>	<16	<14	2,000	<16	210	<11
System Effluent	SVE North	8/31/2015	<b>65</b>	<65	<b>62</b>	<33	<28	7,100	<31	600	<21
System Effluent	SVE North	9/28/2015	<b>21</b>	<22	<11	<11	<9.7	1,400	<11	190	<7.1
System Effluent	SVE North	10/29/2015	<56	<110	<b>59</b>	<55	<48	6,300	<52	550	<35
System Effluent	SVE_North_Effluent_113015	11/30/2015	<54	<140	<72	<72	<72	2,300	<72	86	<72
System Effluent	SVE_North_Effluent_122815	12/28/2015	<32	<62	<31	<31	<27	5,600	<30	110	<20
System Effluent	North_Effluent_020116	2/1/2016	<53	<100	<51	<51	<45	11,000	<48	150	<33
System Effluent	SVE_North_Effluent_032916	3/29/2016	19	<14	<7.2	<7.2	<6.3	920	<6.9	19	<4.7
System Effluent	North_Effluent	4/27/2016	<15	<29	<14	<14	<13	1,500	<14	75	<9.2
System Effluent	North_Effluent_62816	6/28/2016	<11	<22	<11	<13	<9.6	1,800	<10	83	<7.1
System Effluent	SVE-North-Effluent 72616	7/26/2016	<1.6	<3.2	<1.6	<1.6	<1.4	84	2.0	6	<1.0
System Effluent	SVE-North-Effluent 83016	8/30/2016	<0.30	<0.80	<0.40	<0.40	<0.40	54	<0.40	2	<0.40
System Effluent	SVE_North_Effluent_092916	9/29/2016	<1.6	<3.2	<1.6	<1.6	<1.4	15	<1.5	<2.1	<1.0
System Effluent	SVE_North_Effluent_102516	10/25/2016	<1.6	<3.2	<1.6	<1.6	<1.4	7.9	3.0	<2.1	<1.0
System Effluent	SVE_North_Effluent_112816	11/28/2016	<1.6	<3.2	<1.6	<1.6	<1.4	2.8	3.9	<2.1	<1.0
System Effluent	SVE_North_Effluent_122816	12/28/2016	<1.6	<3.2	<1.6	<1.6	<1.4	<2.7	1.7	<2.1	<1.0

Notes:

1. µg/m<sup>3</sup> = Micrograms per cubic meter.
2. Samples analyzed by Modified EPA Method TO-15.
3. Only analytes detected in at least one sample are presented in this table.
4. **Bold** values represents detected concentration of listed analyte.



Table 7  
 South SVE System – Operation Monitoring  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Pre-Blower		Post Blower (Pre-Carbon)		Post Carbon 1		Post Carbon 2		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	
10/12/2011	--	-14.0	17.1	24.0	0	12.0	0.2	4.0	--
10/18/2011	--	-14.0	15.5	--	15.5	14.0	0.5	3.0	Pre-carbon, post blower tap is now covered by noise suppression panels.
11/2/2011	--	-15.0	18.2	26.0	0.0	26.0	2.0	7.0	--
11/17/2011	--	-18.0	8.9	27.0	--*	15.0	--*	6.8	--
12/5/2011	8.3	-18.0	10.7	39.0	0.0	19.0	2.2	6.1	System switch off upon arrival. System restarted. Monitoring event conducted approximately 3 hours after restart.
12/14/2011	11.8	-19.0	21.0	28.0	0.0	18.0	0.7	6.2	--
1/9/2012	7.3	-17.0	8.3	29.0	0.0	18.0	0.0	6.2	--
1/23/2012	7.0	-17.0	8.9	29.0	0.0	17.0	0.0	6.9	--
2/17/2012	6.0	-18.0	11.2	29.0	0.0	18.0	0.0	6.0	--
3/22/2012	13.3	-16.0	10.7	27.0	0.0	15.0	0.0	6.5	--
4/26/2012	10.3	-17.0	11.6	27.0	0.0	16.0	0.0	6.4	--
5/23/2012	10.4	-20.0	10.6	31.0	0.0	19.0	0.0	6.6	--
6/20/2012	7.3	-21.0	7.5	33.0	0.5	20.0	0.0	6.3	--
7/24/2012	19.8	-20.0	41.5	32.0	226.3	20.0	98.8	6.2	Used rental PID.
8/22/2012	8.0	-48.0	10.1	29.0	5.5	18.0	1.1	4.6	--
9/25/2012	10.0	-46.0	13.7	29.0	9.5	15.0	12.8	4.3	Used ACA PID #3.
10/29/2012	8.4	-34.0	18.6	47.0	0.3	28.0	12.9	4.3	Used ACA PID #3; Carbon change-out on 10/29/2012
11/26/2012	13.7	<-100	1.6	18.0	0.1	6.6	3.1	0.66	Used ACA PID #3.
12/21/2012	0.5	-107	0.5	17.0	0.0	6.1	0.0	0.49	Used ACA PID #3.
1/24/2013	5.1	-105	0.5	10.0	0.0	6.5	0.0	0.61	Used ACA PID #3.
2/28/2013	2.8	-105	0.1	18.0	0.0	7.0	0.0	0.60	Used ACA PID #3.
3/25/2013	8.4	-102	0.9	16.0	0.1	7.0	0.0	0.58	Used Apex PID #3
4/29/2013	0.2	-98	0.4	15.0	0.0	6.3	0.1	0.49	Used Apex PID #3
5/24/2013	41.0	-18	49.7	47.0	0.2	26	0.7	5.0	Used Apex PID #3
6/25/2013	--	-15	--	51.0	--	31	--	5.1	--
7/25/2013	12.3	-16	13.9	50.0	0.7	32	0.5	6.0	Used Apex PID #3
8/27/2013	13.2	-16	12.1	52.0	3.8	31	1.2	5.2	Used Apex PID #3
9/30/2013	5.2	-15	15.4	45.0	27.4	30	0.4	5.2	Used Apex PID #3
10/24/2013	3.1	-14	13.2	50.0	6.8	32	1.5	5.2	Used Apex PID #3
11/25/2013	1.4	-19	19.3	51.0	12.4	35	2.8	5.3	Used Apex PID #3
12/27/2013	0.3	-19	7.7	55.0	3.1	32	0.0	5.4	Used Apex PID #1

Please refer to notes at end of table.

Table 7  
 South SVE System – Operation Monitoring  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Pre-Blower		Post Blower (Pre-Carbon)		Post Carbon 1		Post Carbon 2		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	
1/29/2014	2.4	-19	6.7	50.0	5.7	30	0.2	10.0	--
2/24/2014	7.7	-19	19.7	50.0	2.4	30	1.4	10.0	Used Apex PID #3
3/31/2014	2.6	-15	4.6	46.0	5.4	30	0.0	8.0	Used APEX PID #4
4/29/2014	2.0	-14	3.4	48.8	9.7	30	0.0	8.0	--
5/27/2014	3.5	-14	5.0	49.0	10.2	28	0.1	7.0	--
7/3/2014	1.6	-18	2.4	50.0	1.4	30	0.1	10.0	--
7/28/2014	8.5	-19	9.0	50.0	11.0	30	8.7	8.0	Used Apex PID #3
8/25/2014	4.6	-17	7.5	49.0	15.8	26	11.0	7.0	Used Apex PID #3
9/30/2014	0.5	-14	5.2	40.0	4.0	28	2.7	5.0	--
10/27/2014	--	--	--	--	--	--	--	--	System off upon arrival. Unable to turn back on.
11/3/2014	5.0	-20	23.0	50.0	13.1	20	14.6	8.0	Used Apex PID #3
11/25/2014	--	--	--	--	--	--	--	--	System off for drum replacement.
12/29/2014	--	--	--	--	--	--	--	--	System off.
1/26/2015	27.1	-25	34.6	20.0	1.0	17	0.0	10.0	Used Apex PID #3
2/26/2015	0.8	-20	12.9	30.0	0.2	19	0.1	8.0	--
3/30/2015	0.4	-20	14.2	29.0	0.1	20	0.1	8.0	Used Apex PID #3
4/24/2015	0.4	-20	14.2	29.0	0.1	20	0.1	8.0	--
5/28/2015	1.0	-20	57.5	28.0	63.6	17	33.0	7.0	--
7/29/2015	0.0	-16	14.1	25.0	9.6	14	1.2	5.0	Used Apex PID #3
8/31/2015	0.0	-20	1.2	26.0	6.9	14	1.8	6.0	Used Apex PID #3
9/28/2015	3.0	-20	7.4	26.0	3.8	16	1.1	6.0	Used Apex PID #3
10/29/2015	9.0	-22	11.2	27.0	7.6	16	0.2	8.0	Used Apex PID #3
11/30/2015	--	-18	7.0	30.0	33.6	18	0.4	6.0	Used Apex PID #3
12/28/2015	--	-18	12.5	29.0	1.3	18	0.4	8.0	Used Apex PID #3
2/1/2016	0.1	-24	0.3	19.0	9.2	16	0.0	7.0	Used Apex PID #3
2/29/2016	0.2	-18	25.2	30.0	8.5	17	2.3	6.0	Used Apex PID #3
3/29/2016	0.0	-19	54.0	28.0	13.2	16	3.4	7.0	Used Apex PID #3
4/27/2016	5.0	-28	32.0	50.0	21.3	0.2	22.3	1.0	Used Apex PID #3
5/25/2016	0.2	-100	0.3	3.0	23.2	2	9.7	0.6	Used Apex PID #3
6/28/2016	--	--	--	--	--	--	--	--	System shut down
7/26/2016	8.1	-20	30.4	30.0	26.2	20	18.1	10.0	Used Apex PID #3
9/29/2016	26.3	-18	27.4	28.0	36.7	16	35.7	6.0	Used Apex PID #3

Please refer to notes at end of table.

Table 7  
 South SVE System – Operation Monitoring  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Pre-Blower		Post Blower (Pre-Carbon)		Post Carbon 1		Post Carbon 2		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	
10/25/2016	0.8	-18	13.3	30.0	58.0	18	7.7	8.0	Used Apex PID #3
11/28/2016	0.0	-22	70.1	30.0	78.0	18	54.2	8.0	Used Apex PID #3
12/28/2016	0.0	-100	0.0	2.0	0.4	1.0	1.0	1.0	Bleeder valve appears damaged. No sample collected. Turned system off prior to departure.

**Notes:**

1. PID readings in parts per million (ppm), calibrated to 100 ppm isobutylene.
2. Pressure readings in inches of water, measured with magnahelic gauge.
3. NM = Not measured.
4. -- = Not available or not applicable.

Table 8  
 South SVE System – Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Total Xylenes
			Concentrations in µg/m <sup>3</sup>										
Pre Carbon	INF 1006	10/6/2011	<330	<320	470	<320	<280	40,000	<300	520	5,100	<210	<350
Post Carbon	EFF 1006	10/6/2011	<16	<16	390	<16	<14	<27	<15	140	50	<10	<17
Pre Carbon	Post Blower 110211	11/2/2011	<290	<280	430	<280	<250	26,000	<270	<390	2,100	<180	<310
Pre Carbon	SOUTHSVE_PRECARBON_121411	12/14/2011	<580	<570	620	<570	<500	54,000	<540	<780	2,800	<360	<620
Post Carbon	SOUTHSVE_POSTCARBON_121411	12/14/2011	<16	35	23	<16	17	1,600	<15	78	1,300	12	<17
Post Carbon	POST CARBON_SOUTH_012312	1/23/2012	<16	<16	<16	<16	<14	<27	<15	<22	<21	<10	<17
Pre Carbon	South_PreCarbon_021712	2/17/2012	<300	<300	460	<300	<260	28,000	<280	<410	1,200	<190	<330
Post Carbon	South_PostCarbon_021712	2/17/2012	<16	<16	<16	<16	<14	<27	<15	<22	<21	<17	<10
Pre Carbon	South Influent - 032212	3/22/2012	<190	<190	310	<95	<84	30,000	<91	99	960	<31	<100
Post Carbon	South Effluent - 032212	3/22/2012	<1.2	<3.2	<1.6	<1.6	4	<2.7	<1.5	<1.6	<2.1	6.4	<3.5
Pre Carbon	South_SVE_PRECARBON	4/26/2012	<210	<560	<280	<280	<240	32,000 S	<270	<290	640 S	<90	<610
Post Carbon	South_SVE_POSTCARBON	4/26/2012	<1.2	<3.2	<1.6	<1.6	4	<2.7	<1.5	<1.6	<2.1	2.4	<3.5
Pre Carbon	SOUTH_SVE_PRECARBON	5/23/2012	<100	<260	200	<130	<120	19,000	<130	<140	780	<43	<290
Post Carbon	South_SVE_PRECARBON	5/23/2012	<1.2	<3.2	<1.6	<1.6	3	<2.7	<1.5	<1.6	<2.1	3.7	<3.5
Pre Carbon	South_PreCarbon_062012	6/20/2012	<240	<630	360	<320	<280	35,000	<300	<330	1,400	<100	<1040
Post Carbon	South_PostCarbon_062012	6/20/2012	<0.30	<0.80	<0.40	<0.40	1.0	<0.40	<0.40	<0.30	<0.40	1.2	<1.2
Pre Carbon	South_PreCarbon_072412	7/24/2012	<150	<390	240	<200	<170	33,000	<190	<200	1,100	<63	<640
Post Carbon	South_PostCarbon_072412	7/24/2012	<1.2	11	<1.6	<1.6	3.0	<2.7	2.2	<1.6	<2.1	3.9	<5.2
Pre Carbon	South_PreCarbon_082212	8/22/2012	<250	<660	760	<330	<290	47,000	<310	<340	2,000	<110	1,080
Post Carbon	South_PostCarbon_082212	8/22/2012	<21	<55	<27	<27	<24	<47	<26	<28	<37	<8.8	<90
Pre Carbon	South_PreCarbon_092512	9/25/2012	<270	<700	500	<400	<310	50,000	<330	<360	1,900	<230	<770
Post Carbon	South_PostCarbon_092512	9/25/2012	13	18	1,200	11	5.7	<2.7	<1.5	<1.6	<2.1	6.2	<3.5
Pre Carbon	South_PreCarbon_102912	10/29/2012	<320	<850	440	<480	<370	60,000	<400	<440	2,200	<270	<930
Post Carbon	South_PostCarbon_102912	10/29/2012	<5.3	<14	<7	<7	<7	<7	<7	<7	<7	<7	<14
Pre Carbon	South_PreCarbon_112612	11/26/2012	<95	<250	<120	<120	<110	10,000	<120	<130	530	<80	<410
Post Carbon	South_PostCarbon_112612	11/26/2012	<2.7	<7.2	<3.6	<3.6	<3.6	<3.6	<3.6	<2.7	<3.6	<3.6	<10.8
Pre Carbon	South_PreCarbon_122112	12/21/2012	<71	<190	110	<93	<82	14,000	<89	<96	600	<60	<300
Post Carbon	South_PostCarbon_122112	12/21/2012	<1.2	<3.2	<1.6	<1.6	1.6	<2.7	<1.5	<1.6	<2.1	3.0	<5.2
Pre Carbon	South_PreCarbon_012413	1/24/2013	<9.2	<24	14	<12	<11	1,700	<11	<12	100	<7.8	<39
Post Carbon	South_PostCarbon_012413	1/24/2013	<1.2	<3.2	<1.6	<1.6	3.3	<2.7	<1.5	<1.6	<2.1	3.7	<5.2
Pre Carbon	South_PreCarbon_022813	2/28/2013	<5.9	<15	8.5	<7.7	<6.7	940	<7.3	<7.9	84	<5.0	<25.4
Post Carbon	South_PostCarbon_022813	2/28/2013	<1.2	<3.2	<1.6	<1.6	8.1	<2.7	<1.5	<1.6	<2.1	<1.0	<5.2
Pre Carbon	South_PreCarbon_032513	3/25/2013	<29	<75	<38	<38	<33	3,700	<36	<39	160	<24	<123
Post Carbon	South_PostCarbon_032513	3/25/2013	<1.2	<3.2	<1.6	<1.6	2.0	<2.7	<1.5	<1.6	<2.1	2.0	<5.2

Please refer to notes at end of table.

Table 8  
 South SVE System – Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Total Xylenes
			Concentrations in µg/m <sup>3</sup>										
Pre Carbon	SVE South Pre Carbon	4/29/2013	<6.3	<16	10	<8.2	<7.2	950	<7.8	<8.4	48	<5.3	<26.9
Post Carbon	SVE South Post Carbon	4/29/2013	<0.30	<0.80	<0.40	<0.40	<0.40	<0.40	<0.40	<0.30	<0.40	0.93	<1.2
Pre Carbon	SVE South Pre Carbon	5/24/2013	<1,100	<1,100	2,400	<1,100	<2,400	240,000	<1,100	<1,500	8,400	<720	<4,300
Post Carbon	SVE South Post Carbon	5/24/2013	<0.81	<0.79	<0.79	<0.79	<1.7	<1.4	<0.75	<1.1	<1.1	<0.51	<3.1
Pre Carbon	SVE South Pre Carbon	6/25/2013	<150	<150	630	<150	<330	39,000	<140	<210	1,800	<97	<570
Post Carbon	SVE South Post Carbon	6/25/2013	<0.81	8.1	3.8	<0.79	5.6	<1.4	<0.75	<1.1	<1.1	3.1	<3.1
Pre Carbon	SVE South Pre Carbon	7/25/2013	<120	<120	380	<120	<260	22,000	<110	<160	1,200	<77	<460
Post Carbon	SVE South Post Carbon	7/25/2013	<0.81	17	65	2.1	3.4	<1.4	1.2	<1.1	<1.1	2.6	1.4
Pre Carbon	SVE South Pre Carbon	8/27/2013	<150	<150	520	<150	<330	28,000	<140	<210	1,500	<97	<580
Post Carbon	SVE South Post Carbon	8/27/2013	3.3	13	270	7.0	4.7	<2.7	<1.5	<2.2	<2.1	3.7	<6.0
Pre Carbon	SVE South Precarbon	9/30/2013	<110	<110	450	<110	<240	26,000	<110	<150	1,400	<72	<420
Pre Carbon	SVE South Pre Carbon	10/24/2013	<140	<140	430	<140	<310	27,000	<130	<190	1,100	<90	<530
Post Carbon	SVE South Post Carbon	10/24/2013	3.8	4.9	390	3.3	<5.2	4.3	<2.3	5.4	<3.2	2.6	<5.1
Pre Carbon	SVE South Pre Carbon	11/25/2013	<100	<98	250	<98	<220	21,000	<93	<140	840	<63	<380
Post Carbon	SVE South Post Carbon	11/25/2013	<2.8	4.1	250	<2.8	7.3	<4.8	<2.6	17	56	<1.8	<10.6
Pre Carbon	SVE South Pre Carbon	12/27/2013	<110	<110	270	<110	<240	20,000	<100	<150	900	<70	<420
Post Carbon	SVE South Post Carbon	12/27/2013	2.5	4.5	220	2.4	3.8	3.5	<1.1	6.8	62	<0.77	<4.6
Pre Carbon	SVE South Pre-Carbon	1/29/2014	<80	<79	260	<79	<170	20,000	<75	<110	800	<51	<306
Post Carbon	SVE South Post-Carbon	1/29/2014	4.5	7.2	330	4.8	<8.7	7.9	<3.8	13	98	3.1	<15.3
Pre Carbon	SVE_South_Pre_Carbon	2/24/2014	<190	<490	430	<240	240.0	34,000	600	<250	1,500	<160	<800
Post Carbon	SVE_South_Effluent	2/24/2014	<1.2	<3.2	41	<1.6	<1.4	<2.7	<1.5	<1.6	<2.1	<1.0	<5.2
Pre Carbon	SVE South Pre Carbon	3/5/2014	<110	<280	270	<140	<120	16,000	660	<140	660	<90	1,090
Post Carbon	SVE South Effluent	3/5/2014	3.7	<8.3	310	4.2	4.4	<7.1	<4.0	<4.3	21	<2.7	<13.7
Pre Carbon	VCP_South_Post_Blower	3/31/2014	<83	<82	260	<82	<180	20,000	<78	<110	630	<53	<309
Post Carbon	VCP_South_Effluent	3/31/2014	3.3	4.9	290	4.2	<4.3	<3.4	<1.9	3.3	21	1.4	<7.6
Pre Carbon	South_SVE_Postblower_042914	4/29/2014	<47	<46	180	<46	<100	13,000	<44	<63	550	<30	<180
Post Carbon	South_SVE_Effluent_042914	4/29/2014	5.1	5.0	540	<4.8	<11	<8.2	<4.6	<6.6	37	<3.1	<18.3
Pre Carbon	South_SVE_Postblower_052714	5/27/2014	<57	<55	160	<55	<120	12,000	<53	<76	490	<36	<201
Post Carbon	South_SVE_PostCarbon_052714	5/27/2014	5.0	<4.8	530	<4.8	<11	<8.2	<4.6	14	8.1	<3.1	<18.3
Pre Carbon	South_VCP_Post Blower	7/3/2014	<18	<18	56	<18	<45	2,800	<18	<18	150	<18	<63
Post Carbon	South_VCP_Post Carbon	7/3/2014	<16	<16	760	<16	<35	55	<15	430	3,200	<10	<60
Pre Carbon	SVE Pre Carbon	7/28/2014	<69	<67	200	<67	<150	15,000	<64	<93	750	<43	<254
Post Carbon	SVE Post Carbon	7/28/2014	<68	<67	270	<67	<150	13,000	<63	530	12,000	<43	<253

Please refer to notes at end of table.

Table 8  
 South SVE System – Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Total Xylenes
			Concentrations in µg/m <sup>3</sup>										
Pre Carbon	South SVE Pre Carbon	8/25/2014	<140	<130	340	<130	<290	20,000	<130	<180	1,100	<86	<520
Post Carbon	South SVE Post Carbon	8/25/2014	<140	<130	270	<130	<290	9,600	<130	<180	2,700	<86	<520
Pre Carbon	South SVE_Pre Carbon	9/30/2014	<110	<110	250	<110	<230	17,000	<100	<150	930	<69	<410
Post Carbon	South SVE_Post Carbon	9/30/2014	<130	<120	280	<120	<270	23,000	<120	<170	620	<80	<480
Pre Carbon	SVE South Post Blower	11/3/2014	<130	<130	320	<130	<280	24,000	<120	<170	1,100	<81	<490
Post Carbon	SVE South Post Carbon	11/3/2014	<81	<81	130	<81	<180	12,000	<77	<110	290	<52	<309
Pre Carbon	SVE South Pre Carbon	1/26/2015	<190	<500	420	<250	<220	21,000	240	<260	860	<160	<820
Post Carbon	SVE South Post Carbon	1/26/2015	<78	<200	<100	<100	<90	<170	190	<110	<140	<66	<330
Pre Carbon	SVE South Pre Carbon	2/26/2015	<150	<390	260	<200	<170	18,000	280	<200	660	<130	<650
Post Carbon	SVE South Post Carbon	2/26/2015	<1.2	<3.2	<1.6	<1.6	3.2	<2.7	<1.5	<1.6	<2.1	2.5	<5.2
Pre Carbon	SVE South Pre Carbon	3/30/2015	<61	<160	200	<79	160	17,000	180	<82	570	<51	<257
Post Carbon	SVE South Post Carbon	3/30/2015	<1.2	<3.2	<1.6	<1.6	2.8	<2.7	2.7	<1.6	51	2.5	<5.2
Pre Carbon	SVE S Pre Carbon	4/24/2015	<37	<97	170	<49	<43	5,400	<46	<50	410	<31	<163
Post Carbon	SVE S Post Carbon	4/24/2015	<6.2	<16	<8.1	<8.1	<7.1	660	<7.7	<8.3	19	<5.2	18
Pre Carbon	SVE South Pre Carbon	5/28/2015	<60	<160	140	<79	92	8,000	240	<81	460	<51	<256
Post Carbon	SVE South Post Carbon	5/28/2015	<4.9	<13	<6.3	<6.3	<5.6	650	<6.0	<6.5	16	<4.1	22.1
Pre Carbon	SVE South Pre Carbon	7/29/2015	<65	<170	190	<85	<75	12,000	<81	<88	790	<55	<183
Post Carbon	SVE South Post Carbon	7/29/2015	10	<27	960	16	<12	440	<13	<14	<18	<8.7	<45
Pre Carbon	SVE South Pre Carbon	8/31/2015	<64	<170	160	<83	<73	12,000	<79	<86	780	<54	<171
Post Carbon	SVE South Post Carbon	8/31/2015	<21	<55	530	<27	<24	3,400	<26	<28	94	<18	<90
Pre Carbon	SVE South Pre Carbon	9/28/2015	<83	<220	170	<110	<94	9,900	<100	<110	660	<70	<360
Post Carbon	SVE South Post Carbon	9/28/2015	3.4	<6.0	340	3.6	<2.6	300	<2.8	39	59	<1.9	<9.8
Pre Carbon	SVE South Pre Carbon	10/29/2015	<130	<350	230	<170	<150	18,000	<170	<180	790	<110	<570
Post Carbon	SVE South Post Carbon	10/29/2015	4.2	5.2	340	4.5	2.6	26	<1.5	67	310	1.7	<5.2
Pre Carbon	SVE_South_Precarbon_113015	11/30/2015	<29	<77	54	<38	<38	3,000	<38	<29	300	<38	<77
Post Carbon	SVE_South_Postcarbon_113015	11/30/2015	<0.80	<0.80	27	0.60	<0.40	<0.40	<0.40	6	11	<0.40	<0.80
Pre Carbon	SVE_SOUTH_PRE CARBON_12/28/15	12/28/2015	<120	<320	180	<160	<140	35,000	<150	<170	1,200	<100	<530
Post Carbon	SVE_SOUTH_POST CARBON_12/28/15	12/28/2015	<1.2	<3.2	28	<1.6	<1.4	<2.7	1.5	2	6.5	<1.0	<4.2
Pre Carbon	SVE_SOUTH_PRE CARBON	2/1/2016	<8.6	<22	20	<11	<9.8	2,900	<11	14	120	<7.2	<37
Post Carbon	SVE_SOUTH_POST CARBON	2/1/2016	2.2	<3.2	160	2.90	<1.4	<2.7	<1.5	92	260	<1.0	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON	3/29/2016	<230	<610	710	<300	<270	71,000	<290	520	2,800	<200	<670
Post Carbon	SVE_SOUTH_POST CARBON	3/29/2016	<69	<180	490	<23	<79	9,300	<86	1500	9,300	<58	<200

Please refer to notes at end of table.

Table 8  
 South SVE System – Analytical Results  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloroethane	1,1-Dichloroethane	cis-1,2-Dichloroethane	trans-1,2-Dichloroethane	Methylene Chloride	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Total Xylenes
			Concentrations in $\mu\text{g}/\text{m}^3$										
Pre Carbon	SVE_SOUTH_PRE CARBON	4/27/2016	<6.4	<17	12	<8.4	<7.4	910	<8.0	<8.7	23	<5.4	<18
Post Carbon	SVE_SOUTH_POST CARBON	4/27/2016	<63	<160	180	<82	<72	11,000	<78	110	2,200	<53	<180
Pre Carbon	SVE_SOUTH_PRE CARBON	5/25/2016	<1.2	<3.2	4	<1.6	<1.4	550	2.9	3	22	<1.0	3.9
Post Carbon	SVE_SOUTH_POST CARBON	5/25/2016	<16	<41	2300	30.00	<18	14,000	<19	130	3,300	<13	<45
Pre Carbon	SVE_SOUTH_PRE CARBON	7/26/2016	<98	<260	340	<130	<110	18,000	<120	<130	970	<83	<420
Post Carbon	SVE_SOUTH_POST CARBON	7/26/2016	<78	<200	760	<120	<89	15,000	<97	220	1,400	<66	<330
Pre Carbon	SVE_SOUTH_PRE CARBON	8/30/2016	<86	<230	340	<110	<99	28,000	<110	<120	1,400	<73	<370
Post Carbon	SVE_SOUTH_POST CARBON	8/30/2016	<81	<210	370	<110	<93	19,000	<100	210	910	<68	<350
Pre Carbon	SVE_SOUTH_PRE CARBON	9/29/2016	<73	<190	340	<95	<83	25,000	<90	110	1,300	<61	<310
Post Carbon	SVE_SOUTH_POST CARBON	9/29/2016	<46	<120	410	<60	<53	14,000	<57	140	1,900	<39	<196
Pre Carbon	SVE_SOUTH_PRE CARBON_102516	10/25/2016	<150	<390	380	<190	<170	32,000	<180	<200	1,500	<120	<630
Post Carbon	SVE_SOUTH_POST CARBON_102516	10/25/2016	<100	<260	530	<130	<120	19,000	<130	180	2,700	<85	<430
Pre Carbon	SVE_SOUTH_PRE CARBON_112816	11/28/2016	<260	<670	420	<340	<290	52,000	<320	<350	2,100	<220	<1110
Post Carbon	SVE_SOUTH_POST CARBON_112816	11/28/2016	<79	<210	<100	<100	<90	18,000	<98	360	3,200	<66	<340

Notes:

1.  $\mu\text{g}/\text{m}^3$  = Micrograms per cubic meter.
2. Samples analyzed by Modified EPA Method TO-15.
3. Only analytes detected in at least one sample are presented in this table.
4. S= Surrogate recoveries were above acceptable recovery limits. Results may be biased high.
5. **Bold** values represents detected concentration of listed analyte.

13,717 = average PCE post carbon last 6 months ( $\mu\text{g}/\text{m}^3$ ).  
 16,981 = average PCE pre carbon since January 2015 ( $\mu\text{g}/\text{m}^3$ ).

Table 9  
 North SVE System – VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sample Date	Post-Blower Pressure (in H <sub>2</sub> O)	Air Flow Rate <sup>(1)</sup> (cfm)	Total VOCs (mg/m <sup>3</sup> )	VOC Removal (lb/day)
10/12/2011	0.1	250	10.5	0.2
1/23/2012	0.1	361	16.5	0.5
2/17/2012	0.05	215	11.3	0.2
3/22/2012	--	210	6.7	0.1
6/20/2012	0.2	217.8	0.3	0.005
8/22/2012	0.2	216	0.2	0.003
11/26/2012	0.05	215	22.6	0.436
12/21/2012	0.1	215	3.6	0.069
2/28/2013	0.1	215	4.6	0.088
5/24/2013	0.1	215	24.4	0.471
6/25/2013	0.1	215	13.8	0.267
8/27/2013	0.1	215	17.8	0.344
10/24/2013	0.1	215	10.6	0.204
12/27/2013	0.1	215	7.5	0.144
1/29/2014	3.0	215	1.4	0.028
2/24/2014	9.0	215	9.5	0.184
3/31/2014	1.0	215	3.7	0.072
4/29/2014	2.0	215	3.7	0.072
5/27/2014	2.0	215	4.4	0.085
7/3/2014	4.0	215	4.8	0.093
7/28/2014	3.0	215	7.7	0.148
9/30/2014	--	215	7.8	0.151
10/27/2014	2.0	215	15.4	0.298
11/25/2014	--	215	7.5	0.145
12/29/2014	2.0	215	15.3	0.296
1/26/2015	3.0	215	1.6	0.032
2/26/2015	0.1	215	0.0	0.001
3/30/2015	0.4	215	1.8	0.036
4/24/2015	0.4	215	0.6	0.012
5/14/2015	--	215	0.0	0.000
5/28/2015	0.05	215	0.4	0.007
7/29/2015	0.10	215	2.2	0.043
8/31/2015	0.05	215	7.8	0.150
9/28/2015	0.00	215	1.6	0.031
10/29/2015	1.00	215	6.9	0.134
11/30/2015	2.00	215	2.4	0.046
12/28/2015	0.10	215	5.7	0.110
2/1/2016	3.00	215	11.2	0.215
2/29/2016	0.10	215	0.9	0.018
3/29/2016	0.20	215	1.6	0.030
4/27/2016	1.00	215	1.9	0.036
5/25/2016	--*	--*	--*	--*
6/28/2016	0.10	215	1.9	0.036
7/26/2016	1.20	215	0.092	0.002
9/29/2016	0.10	215	0.056	0.001
10/25/2016	0.10	215	0.015	0.0003
11/28/2016	0.10	215	0.011	0.0002
12/28/2016	0.10	215	0.007	0.0001

Please refer to notes at end of table.



Table 9  
 North SVE System – VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Activity	VOC Removal Rate (lb/day)	Days of Operation	Approximate VOCs Removed (lbs)	Approximate Cumulative VOCs Removed (lbs)
10/10/2011	Startup	--	--	--	--
10/12/2011	Sample	0.2	37	9	9
1/23/2012	Sample	0.5	31	17	26
2/17/2012	Sample	0.2	25	6	32
3/22/2012	Sample	0.1	34	5	37
6/20/2012	Sample	0.005	90	1	38
8/22/2012	Sample	0.003	63	1	39
11/26/2012	Sample	0.436	66	29	68
12/21/2012	Sample	0.069	25	2	70
2/28/2013	Sample	0.088	69	7	77
5/24/2013	Sample	0.471	--	--	77
6/25/2013	Sample	0.267	32	9	86
8/27/2013	Sample	0.344	63	22	108
10/24/2013	Sample	0.204	58	12	120
12/27/2013	Sample	0.144	64	10	130
1/29/2014	Sample	0.028	33	1	131
2/24/2014	Sample	0.184	--	--	131
3/31/2014	Sample	0.072	35	3	134
4/29/2014	Sample	0.072	29	3	137
5/27/2014	Sample	0.085	28	3	140
7/3/2014	Sample	0.093	37	4	144
7/28/2014	Sample	0.148	25	4	148
9/30/2014	Sample	0.151	64	10	158
10/27/2014	Sample	0.298	27	9	167
11/25/2014	Sample	0.145	29	5	172
12/29/2014	Sample	0.296	34	11	183
1/26/2015	Sample	0.032	28	1	184
2/26/2015	Sample	0.001	31	1	185
3/30/2015	Sample	0.036	32	2	187
4/24/2015	Sample	0.012	25	1	188
5/14/2015	Sample	0.000	20	0	188
5/28/2015	Sample	0.007	14	1	189
6/30/2015	Estimate	0.007	33	1	190
6/30/2015	Estimate	0.000	0	0	190
7/29/2015	Sample	0.043	29	2	192
8/31/2015	Sample	0.150	33	5	197
9/28/2015	Sample	0.031	28	1	198
10/29/2015	Sample	0.134	31	5	203
11/30/2015	Sample	0.046	32	2	205
12/28/2015	Sample	0.110	28	4	209
2/1/2016	Sample	0.215	35	8	217
2/29/2016	Sample	0.018	28	1	218
3/29/2016	Sample	0.030	29	1	219
4/27/2016	Sample	0.036	29	2	221
5/25/2016	Sample	--*	28	--*	221
6/28/2016	Sample	0.0364	34	2	223
7/26/2016	Sample	0.0018	28	1	224
9/29/2016	Sample	0.0011	65	1	225
10/25/2016	Sample	0.0003	26	1	226
11/28/2016	Sample	0.0002	34	1	227
12/28/2016	Sample	0.0001	30	1	228

Notes:

- Air flow rate read from system gauge.
- cfm = Cubic feet per minute.
- mg/m<sup>3</sup> = Milligrams per cubic meter.
- lb/day = Pounds per day.
- lbs = Pounds.
- \* = Not sampled. System intentionally shut down to evaluate system efficiency.

Table 10  
 South SVE System – VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Sample Date	Post-Blower Pressure (in H <sub>2</sub> O)	Air Flow Rate <sup>(1)</sup> (cfm)	Total VOCs (mg/m <sup>3</sup> )	VOC Removal (lb/day)
10/6/2011	33.0	590	46	2.4
11/2/2011	27.0	590	29	1.5
12/14/2011	27.0	590	57	3.0
2/17/2012	29.0	-- <sup>6</sup>	30	1.6
3/22/2012	27.0	658	31	1.9
4/26/2012	27.0	--	0	0.0
5/23/2012	31.0	--	20	1.2
6/20/2012	33.0	--	37	2.2
7/24/2012	32.0	--	34	2.0
8/22/2012	29.0	--	51	3.0
9/25/2012	29.0	--	52	3.1
10/29/2012	47.0	--	63	3.7
11/26/2012	18.0	--	11	0.6
12/21/2012	17.0	--	15	0.9
1/24/2013	10.0	--	2	0.1
2/28/2013	18.0	--	1	0.1
3/25/2013	16.0	--	4	0.2
4/29/2013	15.0	--	1	0.1
5/24/2013	47.0	--	251	14.8
6/25/2013	51.0	--	41	2.5
7/25/2013	50.0	--	24	1.4
8/27/2013	52.0	--	30	1.8
9/30/2013	45.0	--	28	1.6
10/24/2013	50.0	--	29	1.7
11/25/2013	51.0	--	22	1.3
12/27/2013	55.0	--	21	1.3
1/29/2014	50.0	--	21	1.2
2/24/2014	50.0	--	37	2.2
3/31/2014	46.0	--	21	1.2
4/29/2014	48.8	--	14	0.8
5/27/2014	49.0	--	13	0.7
7/3/2014	50.0	--	3	0.2
7/28/2014	50.0	--	16	0.9
8/25/2014	49.0	--	21	1.2
9/30/2014	40.0	--	18	1.1
11/3/2014	50.0	--	25	1.5
1/26/2015	20.0	--	23	1.3
2/26/2015	30.0	--	19	1.1
3/30/2015	29.0	--	18	1.1
4/24/2015	29.0	--	6	0.4
5/28/2015	28.0	--	9	0.5
7/29/2015	25.0	--	13	0.8
8/31/2015	26.0	--	13	0.8
9/28/2015	26.0	--	11	0.6
10/29/2015	27.0	--	19	1.1
11/30/2015	30.0	--	3	0.2
12/28/2015	29.0	--	36	2.2
2/1/2016	19.0	--	3	0.2
2/29/2016	30.0	--	3	0.2
3/29/2016	28.0	--	75	4.4
4/27/2016	5.0	--	1	0.1
5/25/2016	3.0	--	1	0.03
6/28/2016	-- *	--	20	1.2
7/26/2016	30.0	--	19	1.1
9/29/2016	28.0	--	27	1.6
10/25/2016	30.0	--	34	2.0
11/28/2016	30.0	--	55	3.3
12/28/2016	2.0	--	0	0.0

Please refer to notes at end of table.

Table 10  
 South SVE System – VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Activity	VOC Removal Rate (lb/day)	Days of Operation	Approximate VOCs Removed (lbs)	Approximate Cumulative VOCs Removed (lbs)
10/6/2011	Startup	2.4	0.5	2	2
11/2/2011	Sample	1.5	27	41	43
12/14/2011	Sample	3.0	42	96	139
2/17/2012	Sample	1.6	65	151	290
3/22/2012	Sample	1.9	34	59	349
4/26/2012	Sample	0.0	35	33	382
5/23/2012	Sample	1.2	29	18	400
6/20/2012	Sample	2.2	28	47	447
7/24/2012	Sample	2.0	34	72	519
8/22/2012	Sample	3.0	29	74	593
9/25/2012	Sample	3.1	34	104	697
10/29/2012	Sample	3.7	34	116	813
11/26/2012	Sample	0.6	28	61	874
12/21/2012	Sample	0.9	25	19	893
1/24/2013	Sample	0.1	34	17	910
2/28/2013	Sample	0.1	35	3	913
3/25/2013	Sample	0.2	25	4	917
4/29/2013	Sample	0.1	35	6	923
5/24/2013	Sample	14.8	--	--	996
6/25/2013	Sample	2.5	32	277	1273
7/25/2013	Sample	1.4	30	58	1331
8/27/2013	Sample	1.8	33	53	1384
9/30/2013	Sample	1.6	34	59	1443
10/24/2013	Sample	1.7	24	41	1484
11/25/2013	Sample	1.3	32	48	1532
12/27/2013	Sample	1.2	32	41	1573
1/29/2014	Sample	1.2	33	41	1614
2/24/2014	Sample	2.2	--	--	1614
3/31/2014	Sample	1.2	35	60	1674
4/29/2014	Sample	0.8	29	30	1704
5/27/2014	Sample	0.7	28	22	1726
7/3/2014	Sample	0.2	37	18	1744
7/28/2014	Sample	0.9	25	15	1759
8/25/2014	Sample	1.2	28	31	1790
9/30/2014	Sample	1.1	36	42	1832
11/3/2014	Sample	1.5	30	39	1871
12/31/2014	Estimated	1.5	22	33	1904
1/26/2015	Sample	1.3	26	37	1941
2/26/2015	Sample	1.1	31	39	1980
3/30/2015	Sample	1.1	32	36	2016
4/24/2015	Sample	0.4	25	18	2034
5/28/2015	Sample	0.5	34	15	2049
7/29/2015	Sample	0.8	62	41	2090
8/31/2015	Sample	0.8	33	26	2116
9/28/2015	Sample	0.6	28	20	2136
10/29/2015	Sample	1.1	31	28	2164
11/30/2015	Sample	0.2	32	22	2186
12/28/2015	Sample	2.2	28	33	2219
2/1/2016	Sample	0.2	35	41	2260
2/29/2016	Sample	0.2	28	6	2266
3/29/2016	Sample	4.4	29	67	2333
4/27/2016	Sample	0.1	29	66	2399
5/25/2016	Sample	0.0	28	2	2401
6/28/2016	Sample	1.2	34	21	2422

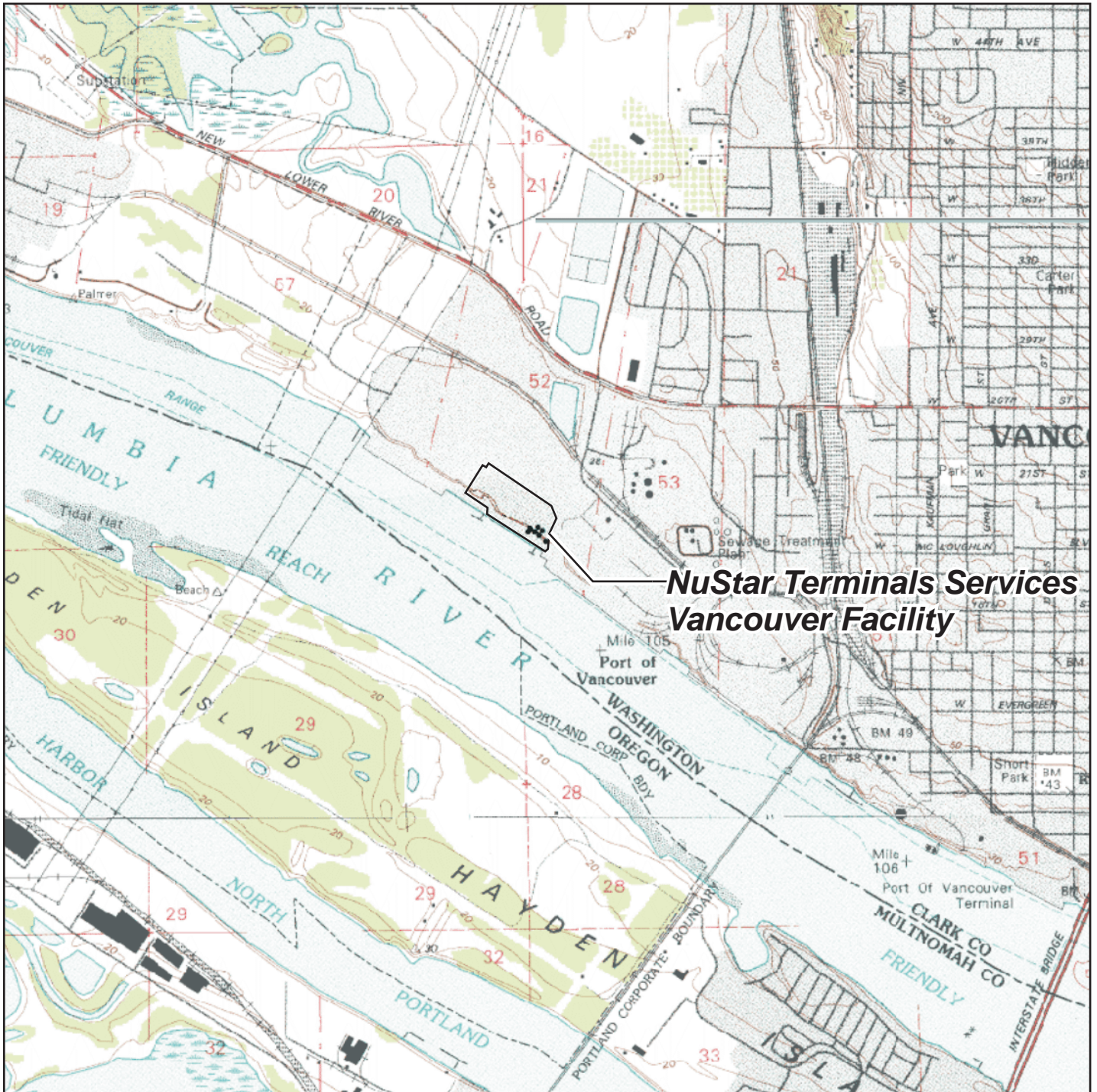
Please refer to notes at end of table.

Table 10  
 South SVE System – VOC Mass Removal  
 NuStar Vancouver Facility  
 Vancouver, Washington

Date	Activity	VOC Removal Rate (lb/day)	Days of Operation	Approximate VOCs Removed (lbs)	Approximate Cumulative VOCs Removed (lbs)
7/26/2016	Sample	1.1	28	33	2455
9/29/2016	Sample	1.6	65	89	2544
10/25/2016	Sample	2.0	26	47	2591
11/28/2016	Sample	3.3	34	90	2681
12/28/2016	Sample	0.0	0	0	2681

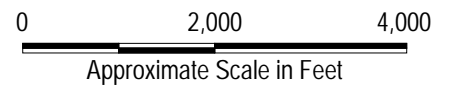
**Notes:**

1. Air flow rate read from system gauge.
2. cfm = cubic feet per minute.
3. mg/m<sup>3</sup> = Milligrams per cubic meter.
4. lb/day = Pounds per day.
5. lbs = Pounds.
6. Flow rate was not measured on dates with dashes. For calculations, rate is assumed to be the same as measured the date before.
7. System was down during the October 27, 2014 monitoring event and was restarted on October 29, 2014. It is assumed that the system was down for a total of four days, although the exact duration of shutdown is unknown.
8. \* = system was off for part replacement.



**NuStar Terminals Services  
Vancouver Facility**

Base map prepared from USGS 7.5-minute quadrangles as provided by Topozone.




Vancouver



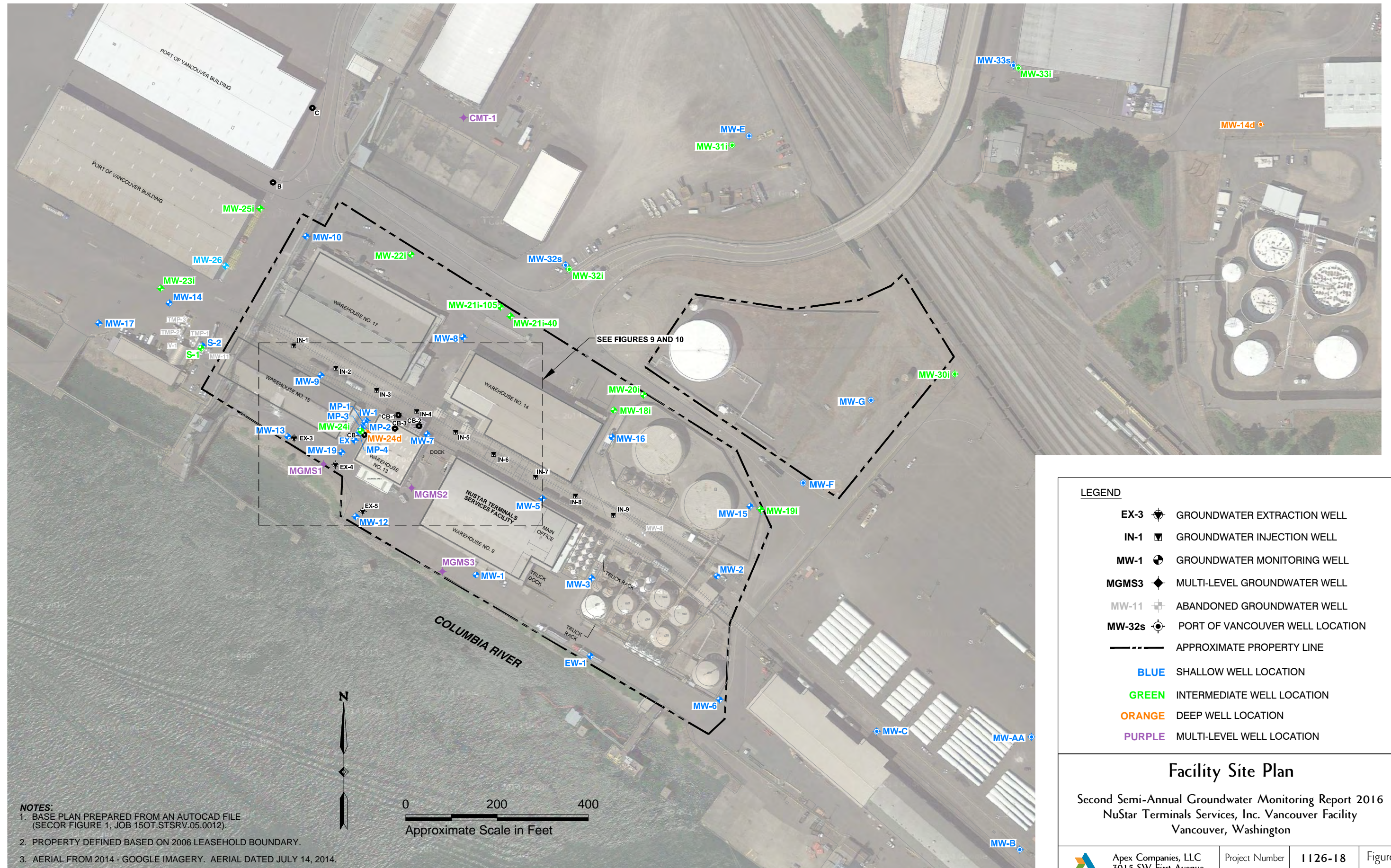
### Facility Location Map

Second Semi-Annual Groundwater Monitoring Report 2016  
NuStar Terminals Services, Inc. Vancouver Facility  
Vancouver, Washington

 Apex Companies, LLC  
3015 SW First Avenue  
Portland, Oregon 97201

Project Number	1126-18
January 2017	

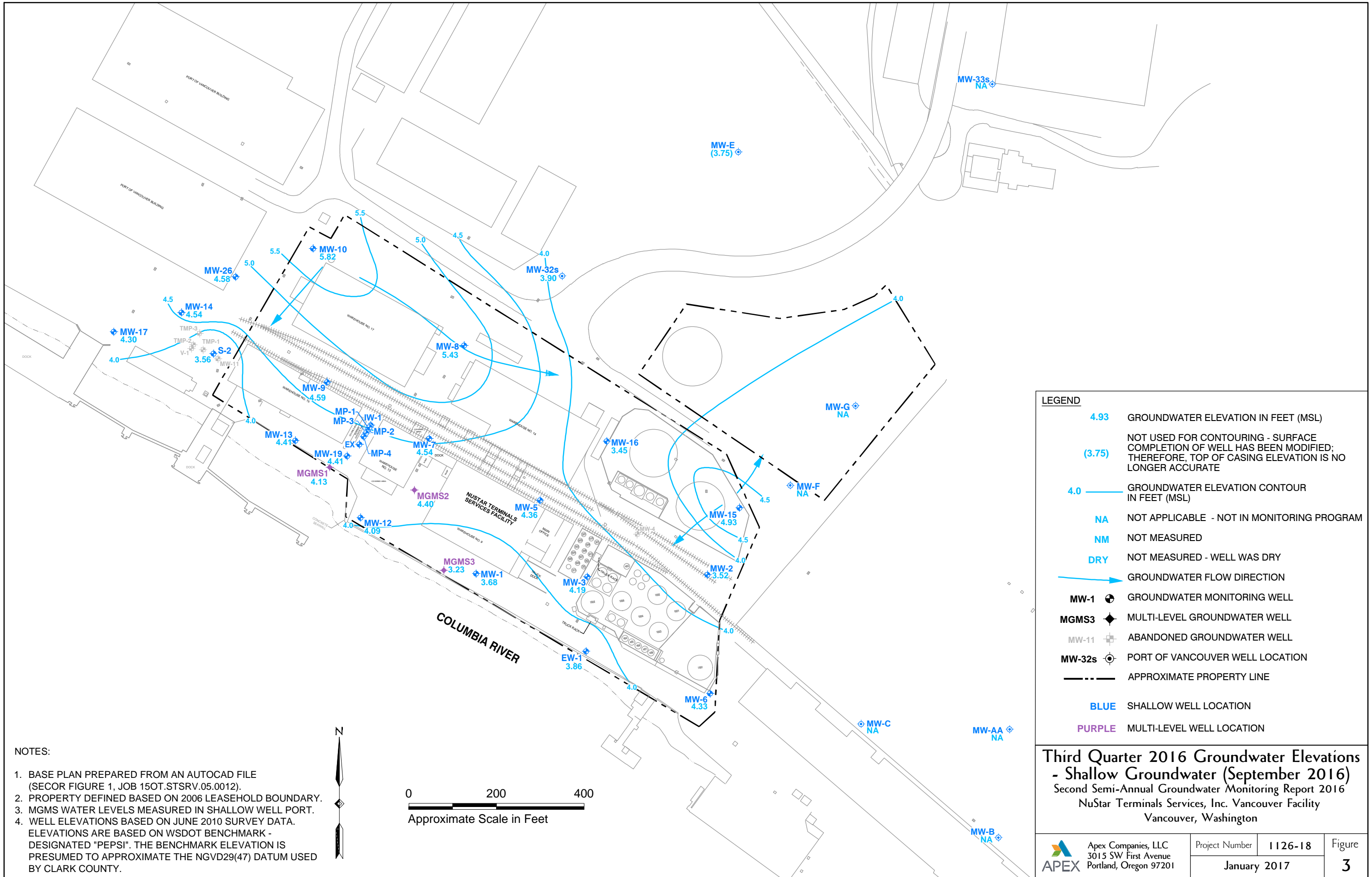
Figure	1
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**NOTES:**  
 1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).  
 2. PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.  
 3. AERIAL FROM 2014 - GOOGLE IMAGERY. AERIAL DATED JULY 14, 2014.

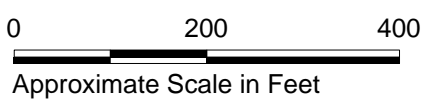
LEGEND	
EX-3	GROUNDWATER EXTRACTION WELL
IN-1	GROUNDWATER INJECTION WELL
MW-1	GROUNDWATER MONITORING WELL
MGMS3	MULTI-LEVEL GROUNDWATER WELL
MW-11	ABANDONED GROUNDWATER WELL
MW-32s	PORT OF VANCOUVER WELL LOCATION
- - -	APPROXIMATE PROPERTY LINE
BLUE	SHALLOW WELL LOCATION
GREEN	INTERMEDIATE WELL LOCATION
ORANGE	DEEP WELL LOCATION
PURPLE	MULTI-LEVEL WELL LOCATION

**Facility Site Plan**  
 Second Semi-Annual Groundwater Monitoring Report 2016  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington



NOTES:

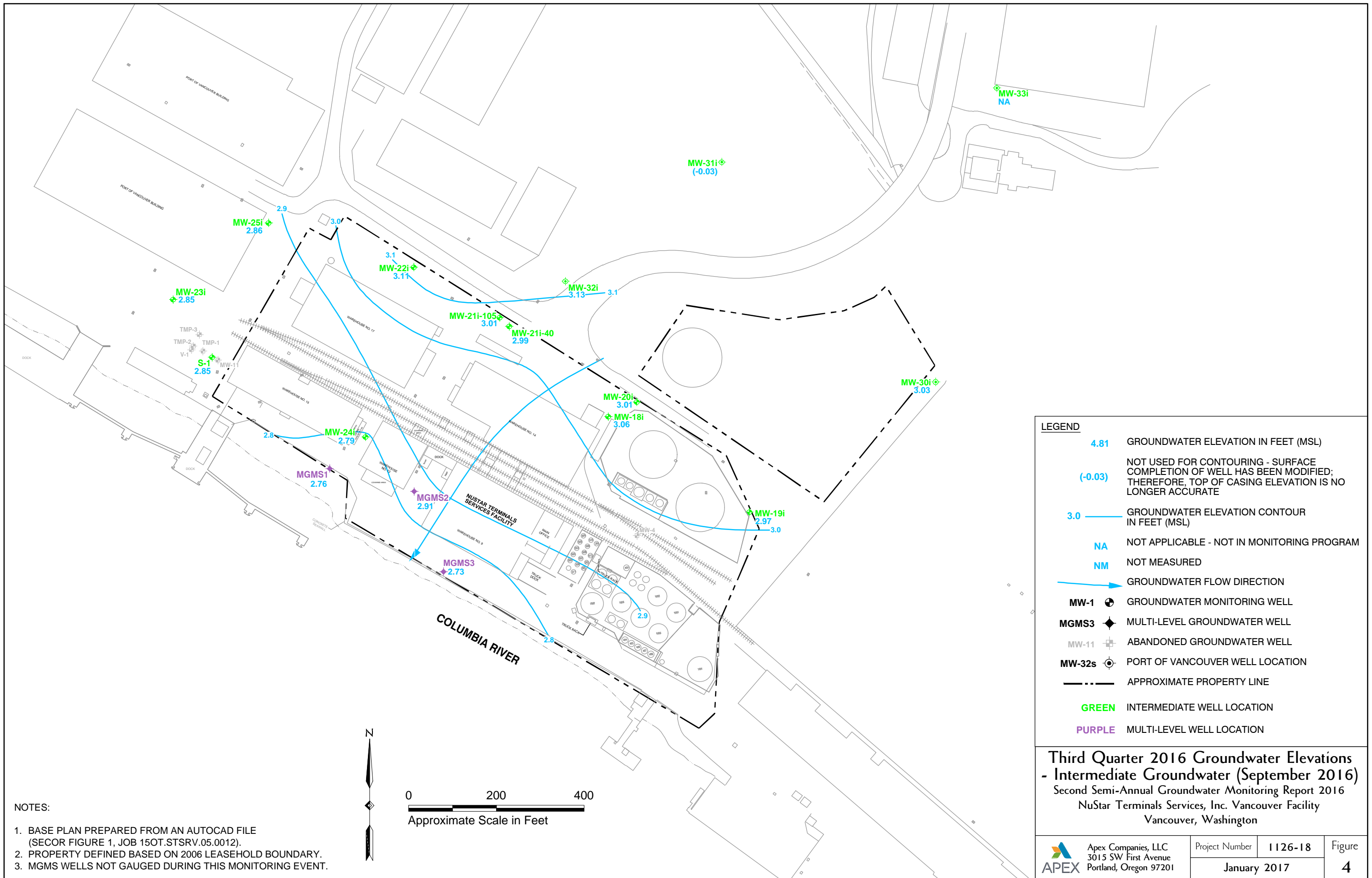
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
2. PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.
3. MGMS WATER LEVELS MEASURED IN SHALLOW WELL PORT.
4. WELL ELEVATIONS BASED ON JUNE 2010 SURVEY DATA. ELEVATIONS ARE BASED ON WSDOT BENCHMARK - DESIGNATED "PEPSI". THE BENCHMARK ELEVATION IS PRESUMED TO APPROXIMATE THE NGVD29(47) DATUM USED BY CLARK COUNTY.



**LEGEND**

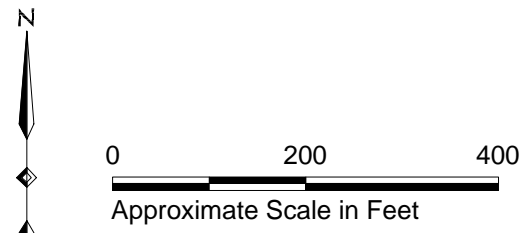
4.93	GROUNDWATER ELEVATION IN FEET (MSL)
(3.75)	NOT USED FOR CONTOURING - SURFACE COMPLETION OF WELL HAS BEEN MODIFIED; THEREFORE, TOP OF CASING ELEVATION IS NO LONGER ACCURATE
4.0	GROUNDWATER ELEVATION CONTOUR IN FEET (MSL)
NA	NOT APPLICABLE - NOT IN MONITORING PROGRAM
NM	NOT MEASURED
DRY	NOT MEASURED - WELL WAS DRY
→	GROUNDWATER FLOW DIRECTION
MW-1	GROUNDWATER MONITORING WELL
MGMS3	MULTI-LEVEL GROUNDWATER WELL
MW-11	ABANDONED GROUNDWATER WELL
MW-32s	PORT OF VANCOUVER WELL LOCATION
---	APPROXIMATE PROPERTY LINE
BLUE	SHALLOW WELL LOCATION
PURPLE	MULTI-LEVEL WELL LOCATION

**Third Quarter 2016 Groundwater Elevations - Shallow Groundwater (September 2016)**  
 Second Semi-Annual Groundwater Monitoring Report 2016  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

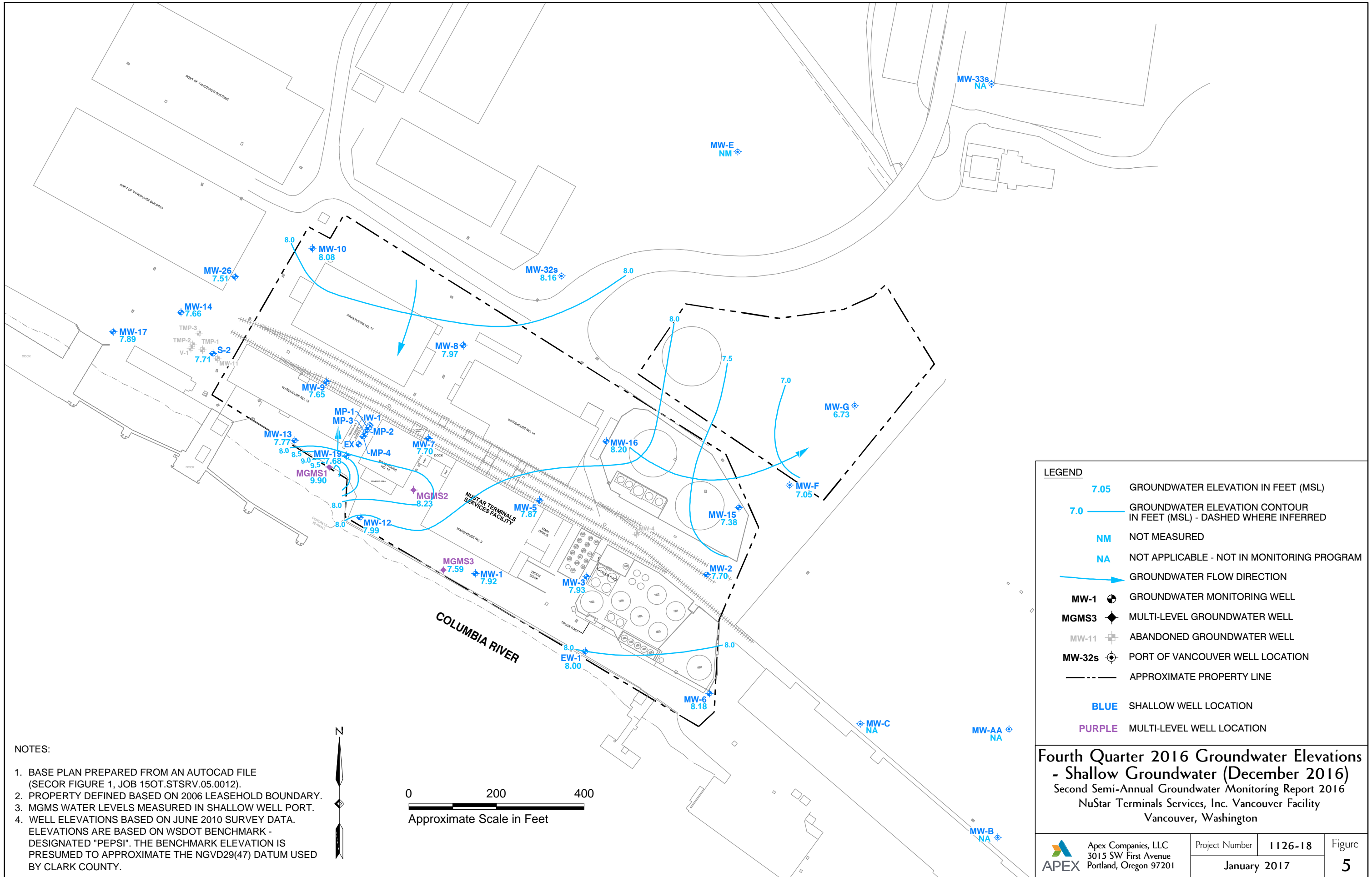


NOTES:

1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
2. PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.
3. MGMS WELLS NOT GAUGED DURING THIS MONITORING EVENT.





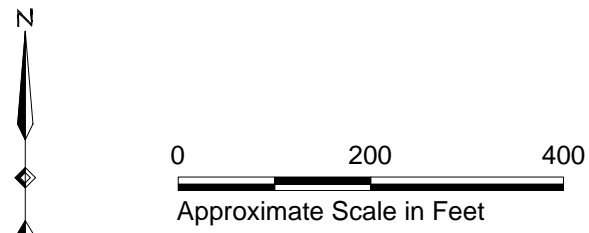


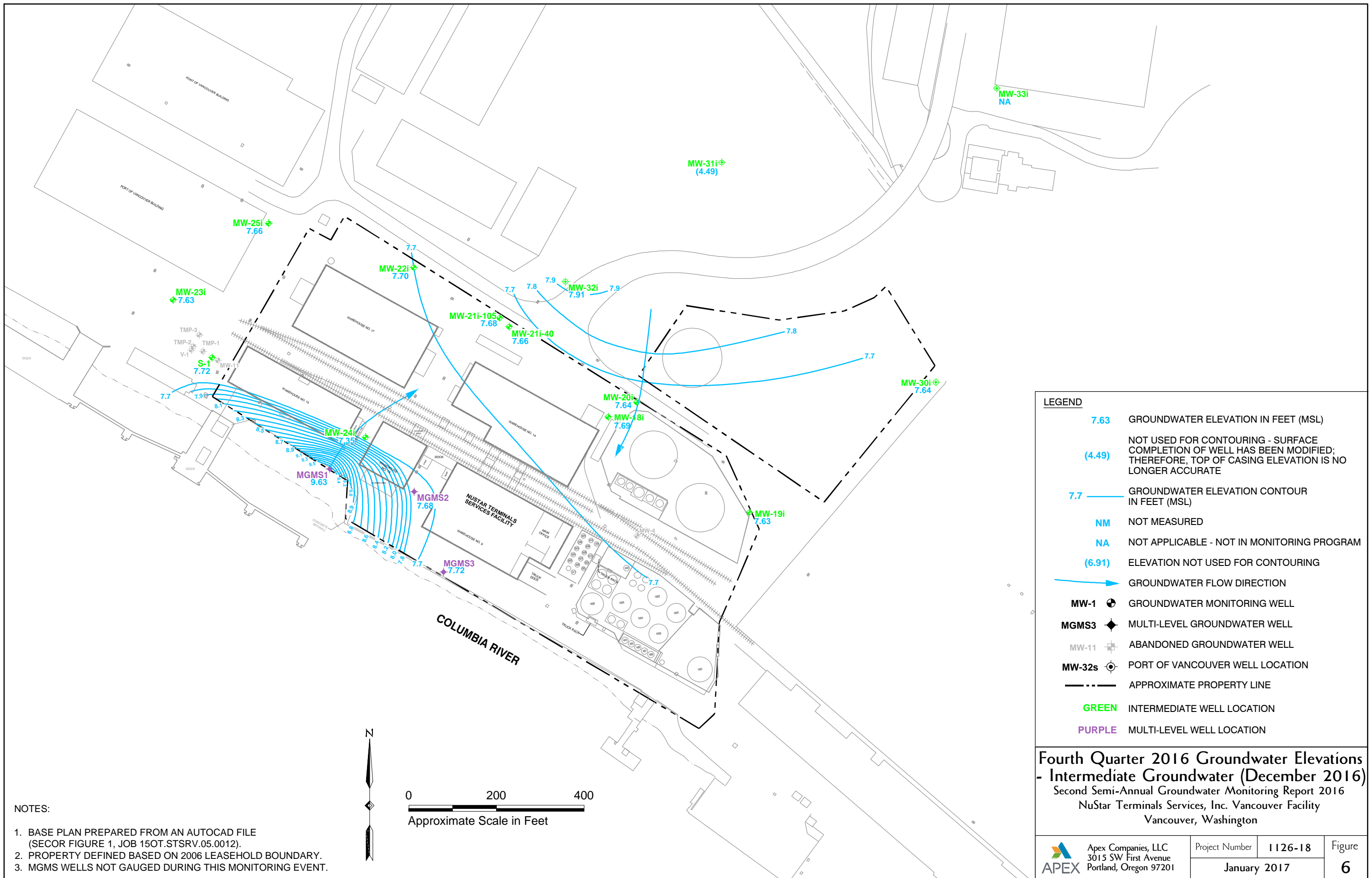
**LEGEND**

- 7.05 GROUNDWATER ELEVATION IN FEET (MSL)
- 7.0 GROUNDWATER ELEVATION CONTOUR IN FEET (MSL) - DASHED WHERE INFERRED
- NM NOT MEASURED
- NA NOT APPLICABLE - NOT IN MONITORING PROGRAM
- GROUNDWATER FLOW DIRECTION
- MW-1 GROUNDWATER MONITORING WELL
- MGMS3 MULTI-LEVEL GROUNDWATER WELL
- MW-11 ABANDONED GROUNDWATER WELL
- MW-32s PORT OF VANCOUVER WELL LOCATION
- APPROXIMATE PROPERTY LINE
- BLUE SHALLOW WELL LOCATION
- PURPLE MULTI-LEVEL WELL LOCATION

**Fourth Quarter 2016 Groundwater Elevations - Shallow Groundwater (December 2016)**  
 Second Semi-Annual Groundwater Monitoring Report 2016  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

- NOTES:**
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
  2. PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.
  3. MGMS WATER LEVELS MEASURED IN SHALLOW WELL PORT.
  4. WELL ELEVATIONS BASED ON JUNE 2010 SURVEY DATA. ELEVATIONS ARE BASED ON WSDOT BENCHMARK - DESIGNATED "PEPSI". THE BENCHMARK ELEVATION IS PRESUMED TO APPROXIMATE THE NGVD29(47) DATUM USED BY CLARK COUNTY.

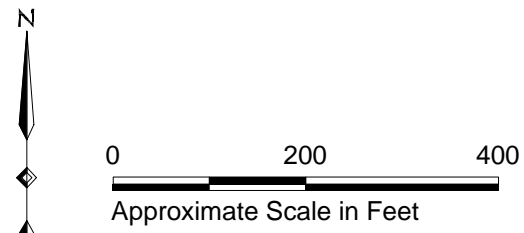


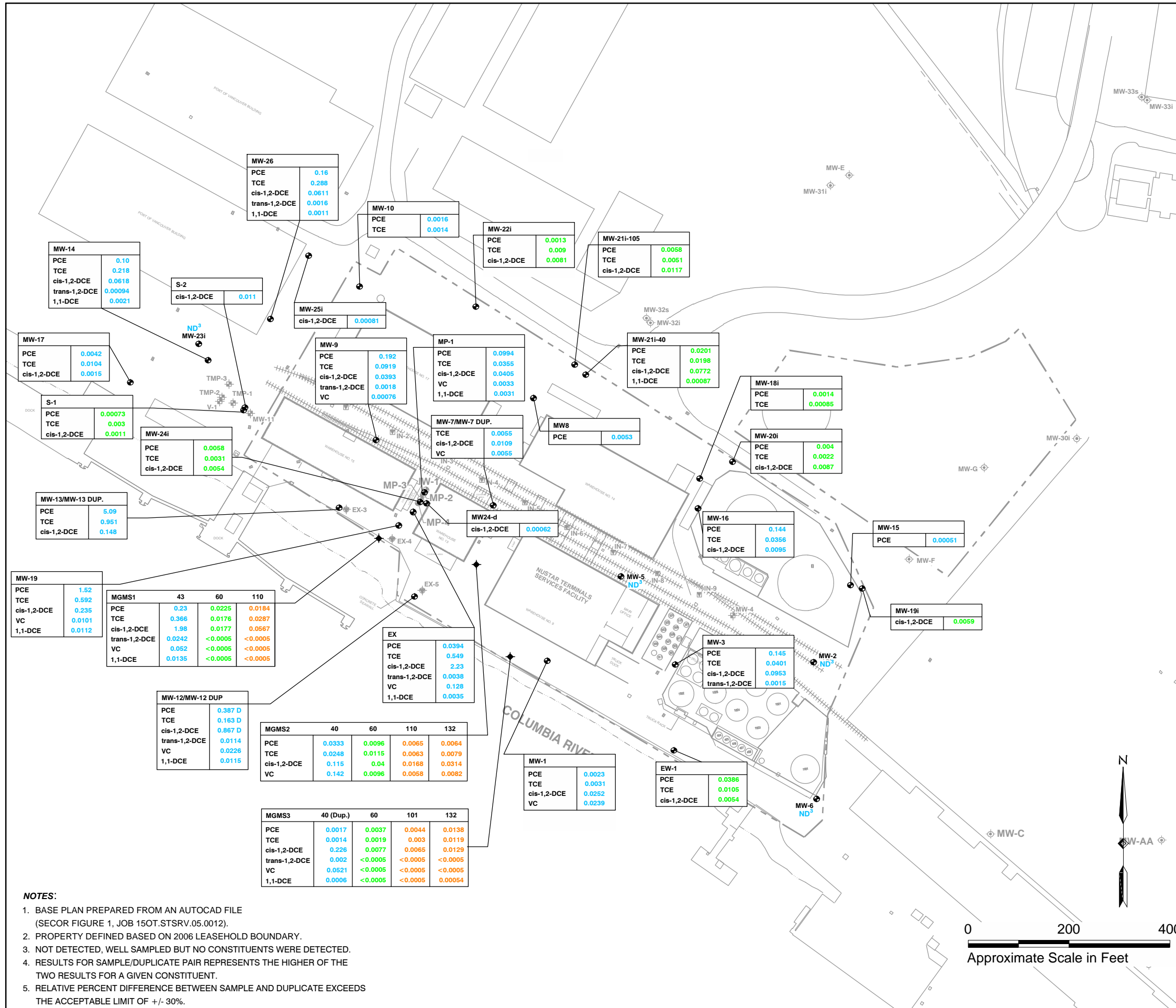


LEGEND	
7.63	GROUNDWATER ELEVATION IN FEET (MSL)
(4.49)	NOT USED FOR CONTOURING - SURFACE COMPLETION OF WELL HAS BEEN MODIFIED; THEREFORE, TOP OF CASING ELEVATION IS NO LONGER ACCURATE
7.7	GROUNDWATER ELEVATION CONTOUR IN FEET (MSL)
NM	NOT MEASURED
NA	NOT APPLICABLE - NOT IN MONITORING PROGRAM
(6.91)	ELEVATION NOT USED FOR CONTOURING
	GROUNDWATER FLOW DIRECTION
MW-1	GROUNDWATER MONITORING WELL
MGMS3	MULTI-LEVEL GROUNDWATER WELL
MW-11	ABANDONED GROUNDWATER WELL
MW-32s	PORT OF VANCOUVER WELL LOCATION
---	APPROXIMATE PROPERTY LINE
GREEN	INTERMEDIATE WELL LOCATION
PURPLE	MULTI-LEVEL WELL LOCATION

**Fourth Quarter 2016 Groundwater Elevations - Intermediate Groundwater (December 2016)**  
 Second Semi-Annual Groundwater Monitoring Report 2016  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

- NOTES:
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
  2. PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.
  3. MGMS WELLS NOT GAUGED DURING THIS MONITORING EVENT.





**LEGEND**

**WELL IDENTIFICATION**

**DEPTH OF PORT SAMPLED (IF NOT SPECIFIED - SINGLE PORT WELL)**

**CHEMICAL CONCENTRATION IN mg/L (ONLY DETECTED COMPOUNDS ARE SHOWN)**

MGMS1	60
PCE	0.0225
TCE	0.0176
cis-1,2-DCE	0.0177
trans-1,2-DCE	<0.0005
VC	<0.0005
1,1-DCE	<0.0005

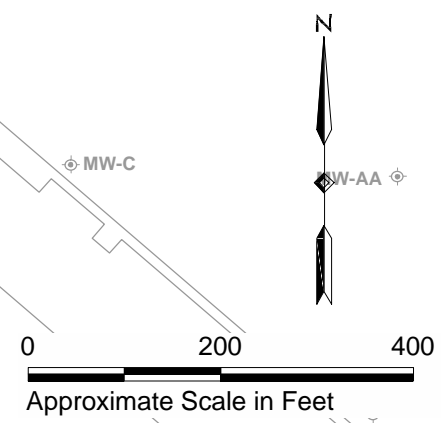
**ANALYTE SAMPLED**

- EX-3** GROUNDWATER EXTRACTION WELL
- IN-1** GROUNDWATER INJECTION WELL
- MW-1** GROUNDWATER MONITORING WELL
- MGMS3** MULTI-LEVEL GROUNDWATER WELL
- MW-11** ABANDONED GROUNDWATER WELL
- MW-32s** PORT OF VANCOUVER WELL LOCATION
- APPROXIMATE PROPERTY LINE
- BLUE** SHALLOW ZONE CONCENTRATION DATA (DEPTHS OF 0 TO 45 FEET)
- GREEN** INTERMEDIATE ZONE CONCENTRATION DATA (DEPTHS OF 45 TO 100 FEET)
- ORANGE** DEEP ZONE CONCENTRATION DATA (DEPTHS OVER 100 FEET)

**ABBREVIATIONS**

PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
cis-1,2-DCE	CIS-1,2-DICHLOROETHENE
trans-1,2-DCE	TRANS-1,2-DICHLOROETHENE
VC	VINYL CHLORIDE
1,1-DCE	1,1-DICHLOROETHENE

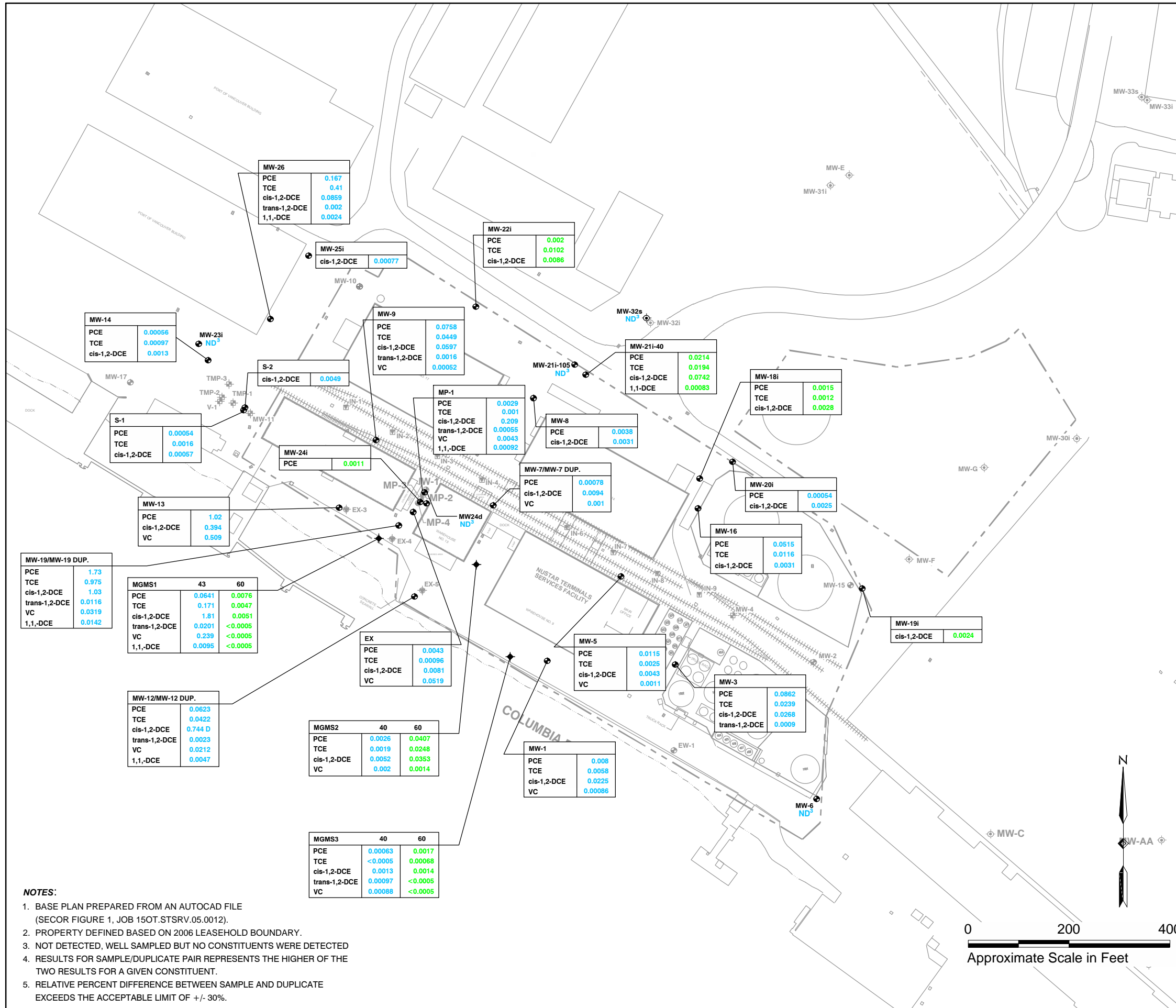
- NOTES:**
- BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
  - PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.
  - NOT DETECTED, WELL SAMPLED BUT NO CONSTITUENTS WERE DETECTED.
  - RESULTS FOR SAMPLE/DUPLICATE PAIR REPRESENTS THE HIGHER OF THE TWO RESULTS FOR A GIVEN CONSTITUENT.
  - RELATIVE PERCENT DIFFERENCE BETWEEN SAMPLE AND DUPLICATE EXCEEDS THE ACCEPTABLE LIMIT OF +/- 30%.



**Third Quarter 2016  
Groundwater Concentrations**

Second Semi-Annual Groundwater Monitoring Report 2016  
NuStar Terminals Services, Inc. Vancouver Facility  
Vancouver, Washington

Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1126-18	Figure
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**LEGEND**

**WELL IDENTIFICATION**

**DEPTH OF PORT SAMPLED (IF NOT SPECIFIED - SINGLE PORT WELL)**

**CHEMICAL CONCENTRATION IN mg/L (ONLY DETECTED COMPOUNDS ARE SHOWN)**

MGMS1	60
PCE	0.0076
TCE	0.0047
cis-1,2-DCE	0.0051
trans-1,2-DCE	<0.0005
VC	<0.0005
1,1,-DCE	<0.0005

**ANALYTE SAMPLED**

- EX-3** GROUNDWATER EXTRACTION WELL
- IN-1** GROUNDWATER INJECTION WELL
- MW-1** GROUNDWATER MONITORING WELL
- MGMS3** MULTI-LEVEL GROUNDWATER WELL
- MW-11** ABANDONED GROUNDWATER WELL
- MW-32s** PORT OF VANCOUVER WELL LOCATION

**BLUE** SHALLOW ZONE CONCENTRATION DATA (DEPTHS OF 0 TO 45 FEET)

**GREEN** INTERMEDIATE ZONE CONCENTRATION DATA (DEPTHS OF 45 TO 100 FEET)

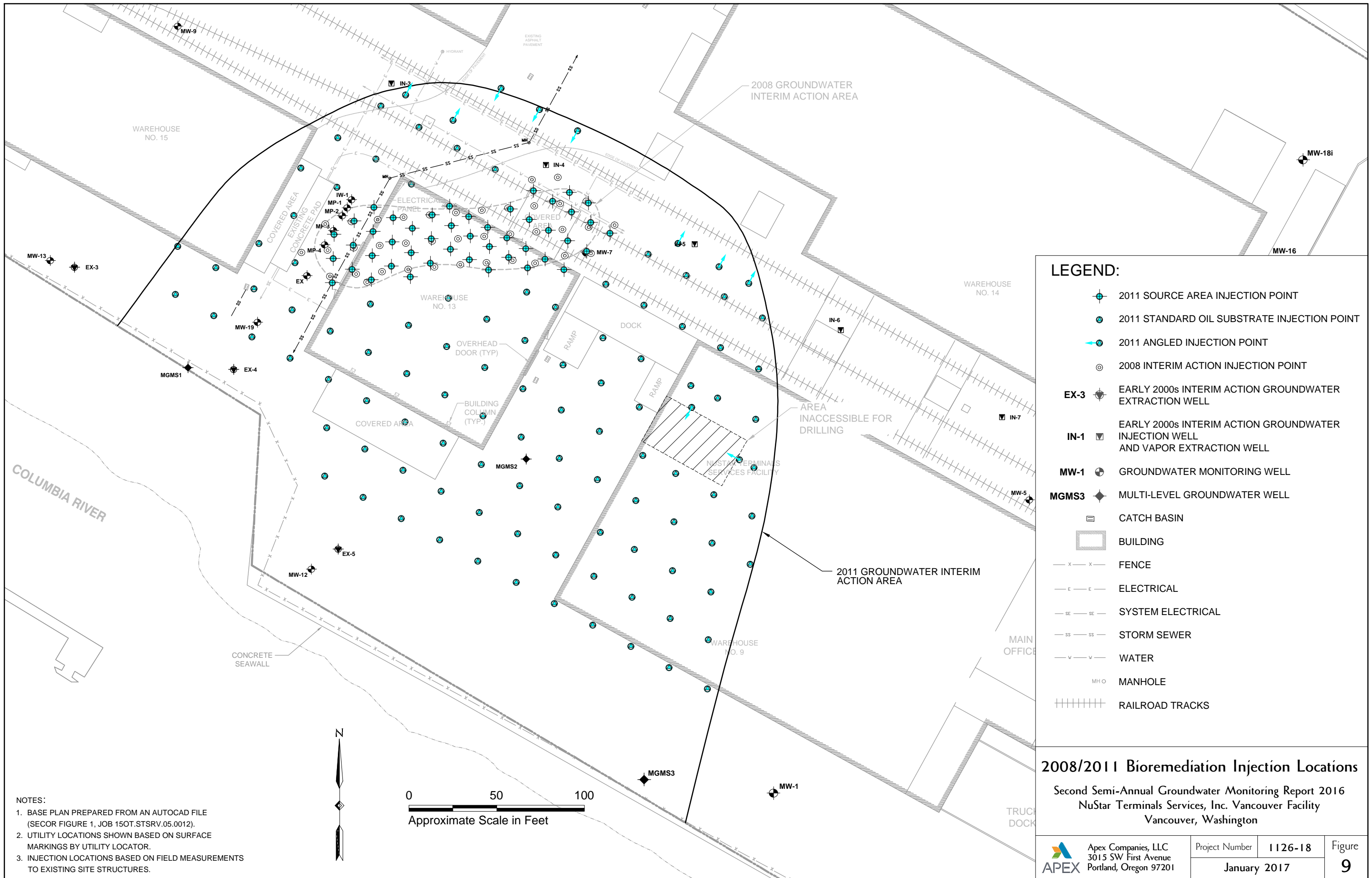
**ABBREVIATIONS**

PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
cis-1,2-DCE	CIS-1,2-DICHLOROETHENE
trans-1,2-DCE	TRANS-1,2-DICHLOROETHENE
VC	VINYL CHLORIDE
1,1,-DCE	1,1-DICHLOROETHENE

- NOTES:**
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
  2. PROPERTY DEFINED BASED ON 2006 LEASEHOLD BOUNDARY.
  3. NOT DETECTED, WELL SAMPLED BUT NO CONSTITUENTS WERE DETECTED
  4. RESULTS FOR SAMPLE/DUPLICATE PAIR REPRESENTS THE HIGHER OF THE TWO RESULTS FOR A GIVEN CONSTITUENT.
  5. RELATIVE PERCENT DIFFERENCE BETWEEN SAMPLE AND DUPLICATE EXCEEDS THE ACCEPTABLE LIMIT OF +/- 30%.

**Fourth Quarter 2016  
Groundwater Concentrations**  
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NuStar Terminals Services, Inc. Vancouver Facility  
Vancouver, Washington

Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number	1126-18	Figure
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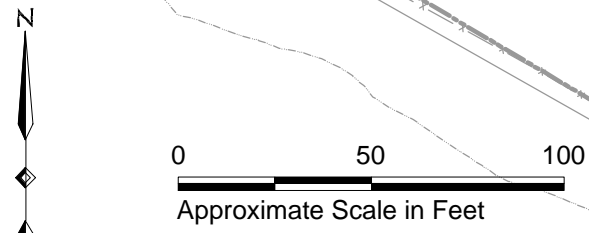


**LEGEND:**

- 2011 SOURCE AREA INJECTION POINT
- 2011 STANDARD OIL SUBSTRATE INJECTION POINT
- 2011 ANGLED INJECTION POINT
- 2008 INTERIM ACTION INJECTION POINT
- EX-3 EARLY 2000s INTERIM ACTION GROUNDWATER EXTRACTION WELL
- IN-1 EARLY 2000s INTERIM ACTION GROUNDWATER INJECTION WELL AND VAPOR EXTRACTION WELL
- MW-1 GROUNDWATER MONITORING WELL
- MGMS3 MULTI-LEVEL GROUNDWATER WELL
- CATCH BASIN
- BUILDING
- FENCE
- ELECTRICAL
- SYSTEM ELECTRICAL
- STORM SEWER
- WATER
- MANHOLE
- RAILROAD TRACKS

**2008/2011 Bioremediation Injection Locations**  
 Second Semi-Annual Groundwater Monitoring Report 2016  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

**NOTES:**  
 1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).  
 2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.  
 3. INJECTION LOCATIONS BASED ON FIELD MEASUREMENTS TO EXISTING SITE STRUCTURES.



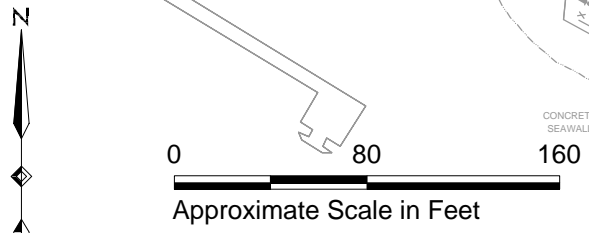


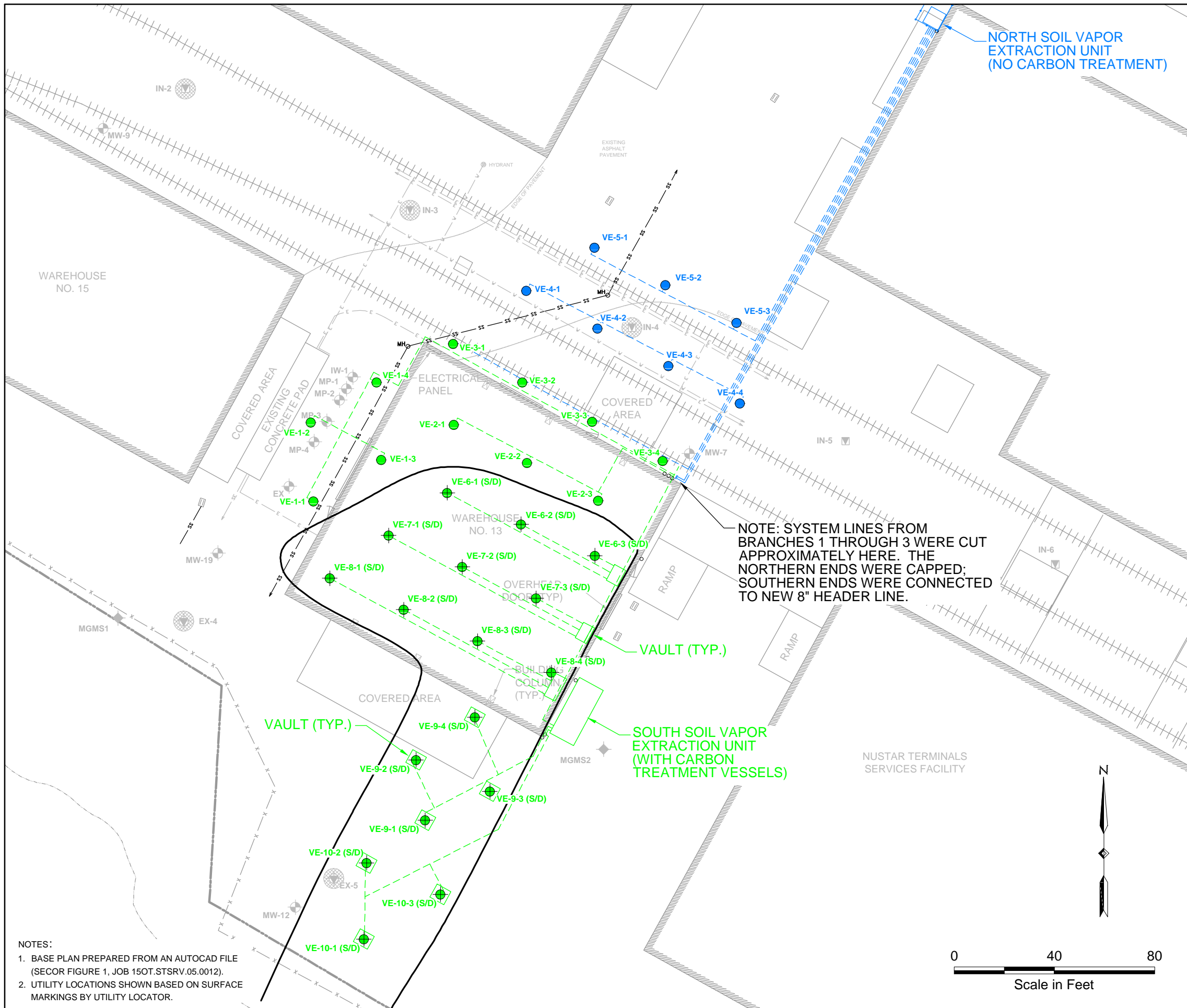
**LEGEND:**

- ENHANCED BIOREMEDIATION INJECTION POINT
- EARLY 2000s INTERIM ACTION GROUNDWATER EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- MULTI-LEVEL GROUNDWATER WELL
- CATCH BASIN
- BUILDING
- FENCE
- ELECTRICAL
- SYSTEM ELECTRICAL
- STORM SEWER
- WATER
- MANHOLE
- RAILROAD TRACKS

**2016 Bioremediation Injection Locations**  
 Second Semi-Annual Groundwater Monitoring Report 2016  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

- NOTES:**
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
  2. INJECTION LOCATIONS BASED ON FIELD MEASUREMENTS TO EXISTING SITE STRUCTURES.
  3. NORTHWEST AREA INJECTION POINT LOCATIONS ARE APPROXIMATE. NUSTAR SOURCE AREA LOCATIONS ARE BASED ON GPS COORDINATES AND HAVE BEEN MODIFIED SLIGHTLY FROM THE INTERIM ACTION WORK PLAN TO AVOID ENCOUNTERING BURIED INFRASTRUCTURE.





NOTES:  
 1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).  
 2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.

NOTE: SYSTEM LINES FROM BRANCHES 1 THROUGH 3 WERE CUT APPROXIMATELY HERE. THE NORTHERN ENDS WERE CAPPED; SOUTHERN ENDS WERE CONNECTED TO NEW 8" HEADER LINE.

**LEGEND:**

- VE-6-2 (S/D) 2011 WELL PAIR LOCATION (SHALLOW SCREENED FROM 5-15 FEET BGS) (DEEP SCREENED 15-25 FEET BGS)
- VE-1-2 2008 INTERIM ACTION VAPOR EXTRACTION WELL LOCATION
- VAPOR EXTRACTION WELL (2000-2005)
- EX-3 EARLY 2000s INTERIM ACTION GROUNDWATER EXTRACTION WELL
- IN-1 EARLY 2000s INTERIM ACTION GROUNDWATER INJECTION WELL AND VAPOR EXTRACTION WELL
- MW-1 GROUNDWATER MONITORING WELL
- MGMS3 MULTI-LEVEL GROUNDWATER WELL
- CATCH BASIN
- BUILDING
- FENCE
- ELECTRICAL
- SYSTEM ELECTRICAL
- STORM SEWER
- WATER
- MHO MANHOLE
- RAILROAD TRACKS
- UNDERGROUND SOIL VAPOR EXTRACTION (SVE) PIPING
- BLUE** NORTH VAPOR EXTRACTION UNIT
- GREEN** SOUTH VAPOR EXTRACTION UNIT

N

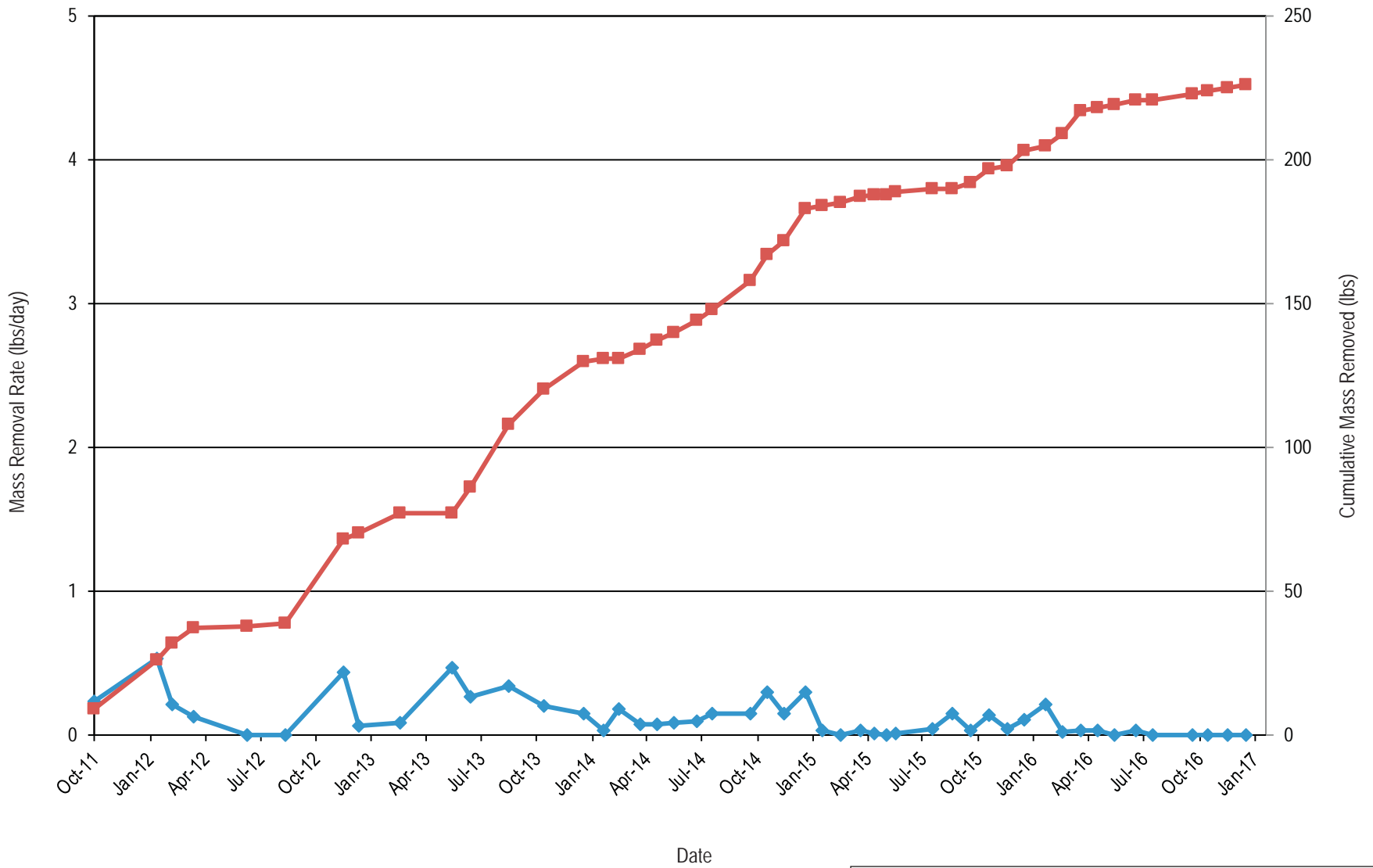
0      40      80

Scale in Feet

**2011 SVE Layout**

Second Semi-Annual Groundwater Monitoring Report 2016  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201	Project Number <b>1126-18</b> January 2017	Figure <b>11</b>
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**Legend:**

- ◆ Volatile Organic Compound (VOC) Removal Rate (lbs/day)
- Approximate Cumulative VOCs Removed (lbs/day)

**North SVE System - VOC Mass Removal**

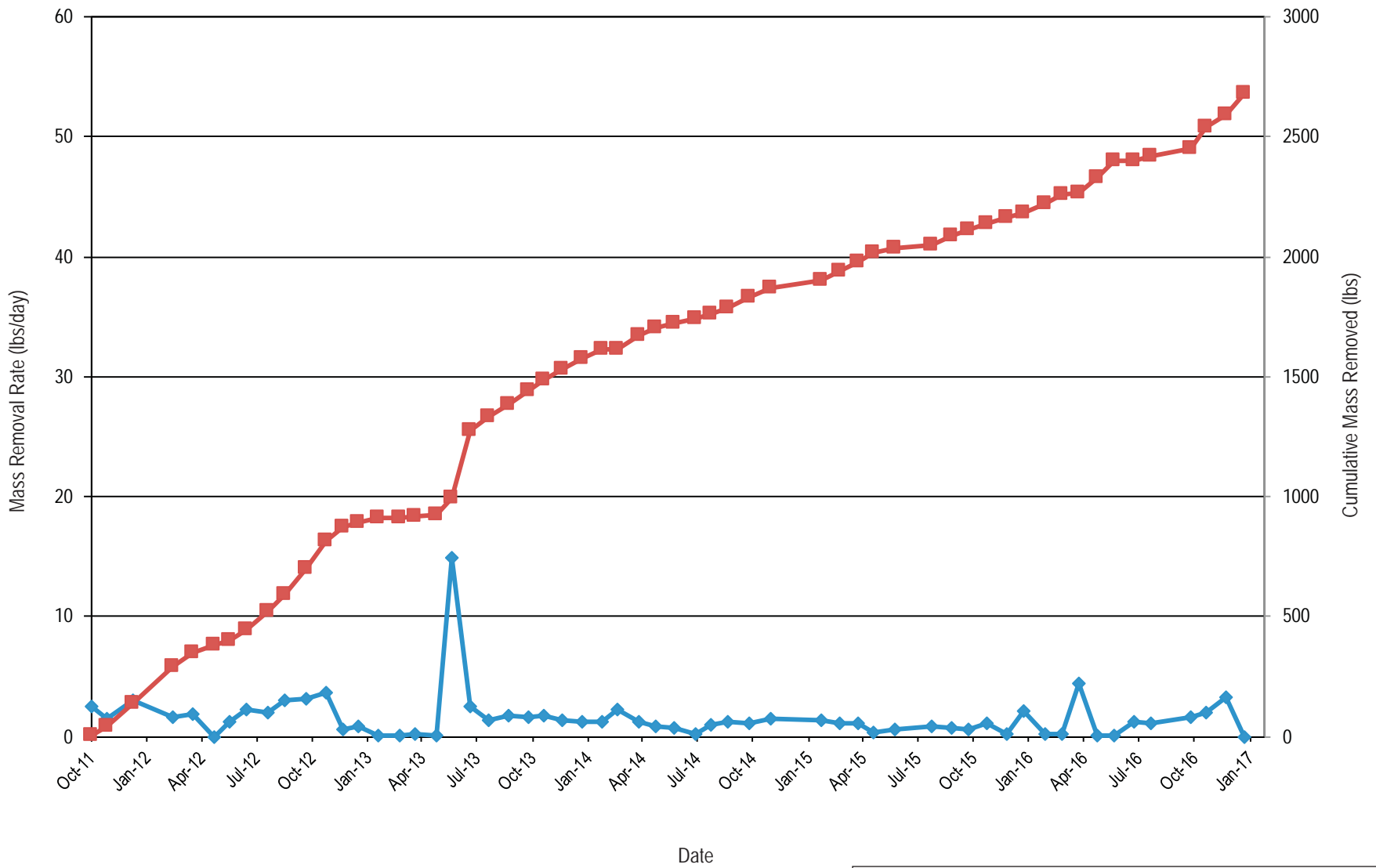
Second Semi-Annual Groundwater Monitoring Report 2016  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

 Apex Companies, LLC  
 3015 SW First Avenue  
 Portland, Oregon 97201

Project Number	1126-18
January 2017	

Figure  
**12**





**Legend:**

- ◆ Volatile Organic Compound (VOC) Removal Rate (lbs/day)
- Approximate Cumulative VOCs Removed (lbs/day)

**South SVE System - VOC Mass Removal**

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 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington

 Apex Companies, LLC  
 3015 SW First Avenue  
 Portland, Oregon 97201

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Figure  
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***Appendix A***

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**Field Sampling Data Sheets**



3015 SW First Avenue  
 Portland, Oregon 97201-4707  
 (503) 924-4704 Phone  
 (503) 943-6357 Fax

PROJECT NUMBER 11200-18  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF 1  
 DATE 9/30/10

PROJECT	<u>3rd Q GWM</u>	ARRIVAL TIME	<u>0650</u>
LOCATION	<u>Vancouver, wa</u>	DEPARTURE TIME	<u>1550</u>
CLIENT	<u>Nustar Van</u>	WEATHER	<u>Fog</u>
PURPOSE OF OBSERVATIONS	<u>GWM</u>		
APEX REPRESENTATIVE	<u>Kyle Kline</u>	APEX PROJECT MANAGER	<u>S. Salisbury</u>
CONTRACTOR	<u>—</u>	PERMIT NO.	<u>246380</u>
CONTRACTOR REP.	<u>—</u>	H&S REVIEW	<u>yes</u>

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

0650	- On site, sign in, safety meeting, get permit, H&S review
0720	- Prep truck for sampling, cal YSI
0735	- Set up on MW-3
0754	- Sample MW-3
0833	Sample MW-15
1015	Sample MW-24d
1112	Sample MGMS2-60
1143	sample MGMS 1-40
1215	sample MGMS 1-60
1245	sample MGMS 1-132
1325	sample MGMS 3-40
1354	sample MGMS 3-60
1425	sample MGMS 3-110
1445	sample MGMS 3-132
1515	- Empty purge Buckets Drum 100% Full
1525	- Equipment + Blank Field Blank
1548	- Sign out turn in permit
1550	OFF site

BY

REVIEWED BY

\_\_\_\_\_  
 APEX REPRESENTATIVE

\_\_\_\_\_  
 APEX PROJECT MANAGER

**WELL MONITORING DATA SHEET**



Well I.D.	MGMS3-132	Job Number:	1126-18
Client:	Nustar Van	Date:	9/30/16
Project:	3rd @ GWM	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height:	—
Depth to Water:	28.90	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B. Pump	Pump Intake Depth:	ms	Comments:	
Sampling Method:	LF	Tubing Type:	Dedicated		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1435	—	—	29.21	0.20	7.46	18.98	179	2.43	140.7	—	C
1438	—	—	29.23		7.03	17.83	179	1.16	152.7	—	C
1441	—	—	29.23		7.00	17.76	178	0.92	155.4	—	C
1443	—	—	29.21	∇	6.98	17.71	177	0.85	158.6	—	C


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMS3-132	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	1445	Final Depth to Water:	28.82	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40ml	HCl	HUOC	yes no	—	—
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**

**WELL MONITORING DATA SHEET**

	Well I.D.	MGMS 3-110	Job Number:	1126-18
	Client:	Nustar Van	Date:	9/30/16
	Project:	3rd Q GWM	Sampler:	KK
	Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	28.92	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	B Pump LF			Pump Intake Depth:	ms			Comments			
Sampling Method:	LF			Tubing Type:	Dedicated						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1413	—	—	28.95	0.15	7.32	21.89	175	1.86	156.1	—	C
1416	—	—	28.96		7.33	21.40	157	1.13	154.1	—	C
1419	—	—	28.93		7.31	21.38	156	1.06	155.4	—	C
1422	—	—	28.91	↓	7.29	21.39	158	0.95	155.9	—	C


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMS 3-110	Sampling Flow Rate	0.15	Analytical Laboratory:	POCC	
Sample Time:	1425	Final Depth to Water:	28.92	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MGMS3-60	Job Number:	1126-18
	Client:	Nustar Van	Date:	9/30/16
	Project:	3rd @ GWM	Sampler:	KK
	Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	28.91	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:		B. Pump			Pump Intake Depth:		MS			Comments		
Sampling Method:		LF			Tubing Type:		Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria	
1342	—	—	29.00	0.20	7.61	19.99	129	1.71	142.4	—	C	
1345	—	—	28.98	↓	7.27	19.64	112	1.69	154.2	—	C	
1348	—	—	28.97	↓	7.25	19.53	112	1.65	160.2	—	C	
1351	—	—	28.97	↓	7.23	19.41	111	1.64	163.6	—	C	

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMS3-60	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	1354	Final Depth to Water:	28.96	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x40ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MGMS3-40	Job Number:	1126-18
Client:	Nustar Van	Date:	9/30/16
Project:	3rd Q GWM	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height:	—
Depth to Water:	28.20	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:		B. Pump		Pump Intake Depth:		MS		Comments			
Sampling Method:		LF		Tubing Type:		Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1313	—	—	28.20	0.20	7.16	19.16	440	2.83	168.9	—	C
1316	—	—	28.22	↓	7.10	17.74	433	2.78	169.0	—	C
1319	—	—	28.21	↓	7.05	17.68	428	2.72	167.3	—	C
1322	—	—	28.22	↓	7.03	17.52	427	2.70	165.3	—	C

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMS3-40	Sampling Flow Rate:	0.20	Analytical Laboratory:	Face	
Sample Time:	1325	Final Depth to Water:	28.18	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 x 40 ml	HCl	HUOC	yes (no)	—	—	MGMS3-40 Dup
3 x 40 ml	HCl	Ethane, Ethene	yes (no)	—	—	—
1 x 250	H <sub>2</sub> SO <sub>4</sub>	TOC	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MGMSI-132	Job Number:	1126-18
Client:	MuStar Van	Date:	9/30/16
Project:	3rd Q GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height:	—
Depth to Water:	29.75	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				B. Pump		Pump Intake Depth:				MS		Comments	
Sampling Method:				LP		Tubing Type:				Dedicated			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria		
1232	—	—	30.16	0.20	7.58	20.71	155	3.21	142.5	—	C		
1235	—	—	30.06		7.36	20.52	147	1.37	159.6	—	C		
1238	—	—	30.11		7.33	20.36	145	1.28	162.0	—	C		
1241	—	—	30.10	√	7.33	20.27	143	1.22	166.7	—	C		

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMSI-132	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace		
Sample Time:	1245	Final Depth to Water:	29.78	Did Well Dewater?	NO		
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
3 X 40 ml	HCl	HVOC	yes no	—	—	—	
			yes no				
			yes no				
			yes no				
			yes no				
			yes no				

**COMMENTS**




**WELL MONITORING DATA SHEET**



Well I.D.	MGM51-60	Job Number:	1126-18
Client:	NuStar Van	Date:	9/30/16
Project:	3rd & GWM	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:		Water Height:	
Depth to Water:	29.64	Screened Interval:		x Multiplier:	
Water Column Length:		Depth to Free Product:		x Casing Volumes:	
Purge Volume:		Free Product Thickness:		= Purge Volume:	
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:		R Pump			Pump Intake Depth:		MS			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated				
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1204	—	—	29.60	0.20	7.95	19.60	203	4.12	141.0	—	C
1207	—	—	29.69		7.65	19.39	186	1.70	152.2	—	C
1210	—	—	29.70		7.63	19.46	184	1.67	154.5	—	C
1213	—	—	29.70	√	7.62	19.53	183	1.68	155.3	—	C

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGM51-60	Sampling Flow Rate:	0.20	Analytical Laboratory:	PACE	
Sample Time:	1215	Final Depth to Water:	29.68	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MGMS 1-40	Job Number:	1126-18
Client:	Nustar Van	Date:	9/30/16
Project:	3rd Q GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	28.50	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:		B. Pump		Pump Intake Depth:		MS		Comments			
Sampling Method:		LF		Tubing Type:		Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1130	—	—	28.78	0.25	6.41	17.84	2128	4.58	191.6	—	C
1133	—	—	28.64		6.83	17.31	2058	4.95	187.4	—	C
1136	—	—	28.81		6.86	17.19	2255	4.99	185.4	—	C
1139	—	—	28.88	√	6.90	17.12	2255	5.09	184.2	—	C

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMS1-40	Sampling Flow Rate:	0.25	Analytical Laboratory:	Pace	
Sample Time:	1143	Final Depth to Water:	28.50	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—	—
3 x 40 ml	HCl	Ethane, Ethene	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—	—
1 x 250	H <sub>2</sub> SO <sub>4</sub>	TOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—	—
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			

**COMMENTS**

**WELL MONITORING DATA SHEET**



Well I.D.:	MGMS2-60	Job Number:	1126-18
Client:	Nustar Van	Date:	9/30/16
Project:	3rd Q GWM	Sampler:	KK
Weather:	Overcast	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height:	—
Depth to Water:	28.90	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:	B. Pump	Pump Intake Depth:	MS	Comments:	
Sampling Method:	LF	Tubing Type:	Dedicated		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
1100	—	—	28.95	0.15	6.95	16.78	144	2.64	127.7	—	C
1103	—	—	28.96	↓	6.91	16.89	148	1.61	130.9	—	C
1106	—	—	28.99	↓	6.89	16.91	149	1.47	131.6	—	C
1109	—	—	28.99	↓	6.86	16.93	149	1.37	133.0	—	C


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMS2-60	Sampling Flow Rate:	0.15	Analytical Laboratory:	Pace	
Sample Time:	11/2	Final Depth to Water:	29.01	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MW-24d	Job Number:	1126-18
	Client:	Nustar van	Date:	9/30/16
	Project:	3rd @ Gum	Sampler:	KK
	Weather:	Fog	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	29.34	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:		B. Pump		Pump Intake Depth:		MS		Comments			
Sampling Method:		LF		Tubing Type:		Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	-- Stabilization Criteria
1000	—	—	30.31	0.20	6.98	14.16	235	5.89	134.9	—	C
1003	—	—	30.28	↓	7.23	14.39	233	2.46	130.2	—	C
1006	—	—	30.29	↓	7.22	14.28	232	1.18	122.4	—	C
1009	—	—	30.29	↓	7.18	14.04	232	1.07	121.3	—	C
1012	—	—	30.30	↓	7.16	13.92	235		122.5	—	C


Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-24d	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	1015	Final Depth to Water:	30.00	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes no	—	—
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MW-15	Job Number:	1126-18
	Client:	NuStar Van	Date:	9/30/16
	Project:	3rd Q GWH	Sampler:	KK
	Weather:	Fog	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	33.91	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:				B. Pump				Pump Intake Depth:			MS		Comments	
Sampling Method:				LF				Tubing Type:			Dedicated			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks		
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria			
0820	—	—	34.20	0.20	7.19	13.22	458	4.13	148.8	—	C			
0823	—	—	34.63	↓	6.81	13.55	467	1.98	151.2	—	C			
0826	—	—	35.03	↓	6.78	13.53	467	1.96	153.2	—	C			
0829	—	—	35.42	↓	6.76	13.45	466	1.89	154.7	—	C			


Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-15	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	0833	Final Depth to Water:	35.85	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MW-3	Job Number:	1126-18
	Client:	Nustar van	Date:	9/30/16
	Project:	3rd Q GWM	Sampler:	KK
	Weather:	Fog	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	29.90	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:		B. Pump			Pump Intake Depth:		MS			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated				
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0742	—	—	30.36	0.20	7.25	13.81	546	3.23	156.0	—	C
0745	—	—	30.52	↓	6.84	13.68	490	1.62	160.3	—	C
0748	—	—	30.76	↓	6.81	13.64	488	1.42	164.8	—	C
0751	—	—	30.90	↓	6.79	13.63	485	1.31	167.1	—	C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-3	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	0754	Final Depth to Water:	31.06	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**




3015 SW First Avenue  
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PROJECT NUMBER 1126-18  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF 1  
 DATE 9/29/16

PROJECT	<u>3rd Q Gwm</u>	ARRIVAL TIME	<u>0650</u>
LOCATION	<u>vanouver, wa</u>	DEPARTURE TIME	_____
CLIENT	<u>Nustar vanouver</u>	WEATHER	<u>Sunny</u>
PURPOSE OF OBSERVATIONS	<u>Gwm</u>		
APEX REPRESENTATIVE	<u>KK</u>	APEX PROJECT MANAGER	<u>S. Salisbury</u>
CONTRACTOR	<u>—</u>	PERMIT NO.	<u>246376</u>
CONTRACTOR REP.	<u>—</u>	H&S REVIEW	<u>yes</u>


Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

0650	On site, sign in, Safety meeting get permit, H+S Review, sign HASP
0700	Organize Truck for sampling, cal YSI
0740	Set up on MW-25:
0800	Sample MW-25:
0905	Sample MW-2
0955	Sample EW-1
1126	Sample MW-5
1210	Sample MW-7
1258	Sample MW-9
1315	Try to open well covers in railroad
1345	Start monthly O+M
1525	Sample MGMS2-40
1607	Sample MGMS2-110
1625	Sample MGMS2-130
1645	Empty purge buckets
1650	Sign out, turn in permit OFF SITE

BY \_\_\_\_\_  
 APEX REPRESENTATIVE

REVIEWED BY \_\_\_\_\_  
 APEX PROJECT MANAGER

**WELL MONITORING DATA SHEET**

	Well I.D.	MGMS2-132	Job Number:	1126-18
	Client:	Mustar Van	Date:	9/29/16
	Project:	3rd @ GWM	Sampler:	KK
	Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height:	—
Depth to Water:	28.31	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:				B Pump		Pump Intake Depth:				ms		Comments	
Sampling Method:				LF		Tubing Type:				Dedicated			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria		
1616	—	—	28.21	0.20	6.67	19.84	184	3.84	158	—	C		
1619	—	—	28.38	↓	6.65	19.63	181	0.94	163.0	—	C		
1622	—	—	28.30	↓	6.64	19.43	180	0.76	165.1	—	C		
1625	—	—	28.20	↓	6.62	19.31	178	0.63	167.0	—	C		

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMS2-132	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1625	Final Depth to Water:	28.18	Did Well Dewater?:	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCL	HUOC	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**




**WELL MONITORING DATA SHEET**



Well I.D.	MGMSD-110	Job Number:	1126-18
Client:	Nustor Van	Date:	9/29/16
Project:	3rd Q GWM	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	28.44	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B. Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1556	—	—	28.61	0.20	7.16	19.45	260	2.44	170.5	—	C
1559	—	—	28.31	↓	7.13	18.30	173	1.69	168.5	—	C
1602	—	—	28.48	↓	7.08	17.95	171	1.89	175.5	—	C
1605	—	—	28.35	↓	7.04	17.88	168	2.01	176.8	—	C


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MGMSD-110	Sampling Flow Rate	0.20	Analytical Laboratory:	Face	
Sample Time:	1607	Final Depth to Water:	28.31	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

**WELL MONITORING DATA SHEET**

	Well I.D.	M6MSD-40	Job Number:	1126-18
	Client:	Nustar van	Date:	9/29/16
	Project:	3rd @ GWM	Sampler:	KK
	Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	28.12	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:		B. Pump			Pump Intake Depth:		MS			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated				
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1515	—	—	27.65	0.20	6.94	19.66	1637	4.64	192.3	—	C
1518	—	—	27.52	↓	6.97	18.86	1619	5.07	193.2	—	C
1521	—	—	27.32	↓	6.94	18.60	1608	5.11	194.2	—	C
1524	—	—	27.61	↓	6.96	18.48	1595	5.16	194.5	—	C


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	M6MSD-40	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1525	Final Depth to Water:	28.00	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes no		
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.: <u>MW-9</u>	Job Number: <u>1126-18</u>
	Client: <u>Nustar UAN</u>	Date: <u>9/29/16</u>
	Project: <u>3rd Q GuM</u>	Sampler: <u>KK</u>
	Weather: <u>Sunny</u>	Time In/Out:

**WELL DATA**

Well Depth: <u>—</u>	Well Diameter: <u>4"</u>	Water Height: <u>—</u>
Depth to Water: <u>29.31</u>	Screened Interval: <u>—</u>	x Multiplier: <u>—</u>
Water Column Length: <u>—</u>	Depth to Free Product: <u>—</u>	x Casing Volumes: <u>—</u>
Purge Volume: <u>—</u>	Free Product Thickness: <u>—</u>	= Purge Volume: <u>—</u>
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162
		4-inch = 0.653
		1 gallon = 3.785 liters

**PURGING DATA**

Purge Method: <u>B. Pump</u>	Pump Intake Depth: <u>MS</u>	Comments:									
Sampling Method: <u>LF</u>	Tubing Type: <u>Dedicated</u>										
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
<u>1245</u>	<u>—</u>	<u>—</u>	<u>21.35</u>	<u>0.20</u>	<u>6.92</u>	<u>15.71</u>	<u>1245</u>	<u>3.11</u>	<u>148.3</u>	<u>—</u>	<u>C</u>
<u>1248</u>	<u>—</u>	<u>—</u>	<u>21.35</u>	<u> </u>	<u>6.76</u>	<u>14.38</u>	<u>1319</u>	<u>1.20</u>	<u>165.2</u>	<u>—</u>	<u>C</u>
<u>1251</u>	<u>—</u>	<u>—</u>	<u>21.35</u>	<u> </u>	<u>6.71</u>	<u>14.29</u>	<u>1298</u>	<u>1.02</u>	<u>165.6</u>	<u>—</u>	<u>C</u>
<u>1254</u>	<u>—</u>	<u>—</u>	<u>21.35</u>	<u>∇</u>	<u>6.69</u>	<u>14.24</u>	<u>1278</u>	<u>0.86</u>	<u>165.5</u>	<u>—</u>	<u>C</u>

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID: <u>MW-9</u>	Sampling Flow Rate: <u>0.20</u>	Analytical Laboratory: <u>Pace</u>				
Sample Time: <u>1258</u>	Final Depth to Water: <u>29.33</u>	Did Well Dewater?: <u>NO</u>				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<u>3 x 40 ml</u>	<u>HCl</u>	<u>HVOC</u>	yes <u>(no)</u>	<u>—</u>	<u>—</u>	<u>—</u>
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	<u>MW-7</u>	Job Number:	<u>1126-18</u>
Client:	<u>Nustar Van</u>	Date:	<u>9/29/16</u>
Project:	<u>3rd Q GWM</u>	Sampler:	<u>KK</u>
Weather:	<u>Sunny</u>	Time In/Out:	

**WELL DATA**

Well Depth:	<u>—</u>	Well Diameter:	<u>4"</u>	Water Height	<u>—</u>
Depth to Water:	<u>29.18</u>	Screened Interval:	<u>—</u>	x Multiplier	<u>—</u>
Water Column Length:	<u>—</u>	Depth to Free Product:	<u>—</u>	x Casing Volumes	<u>—</u>
Purge Volume:	<u>—</u>	Free Product Thickness:	<u>—</u>	= Purge Volume	<u>—</u>
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	<u>—</u>

**PURGING DATA**

Purge Method:	<u>B. Pump</u>	Pump Intake Depth:	<u>MS</u>	Comments	
Sampling Method:	<u>LF</u>	Tubing Type:	<u>Dedicated</u>		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
<u>1156</u>	<u>—</u>	<u>—</u>	<u>29.29</u>	<u>0.20</u>	<u>6.76</u>	<u>17.86</u>	<u>480</u>	<u>2.89</u>	<u>151.2</u>	<u>—</u>	<u>C</u>
<u>1159</u>	<u>—</u>	<u>—</u>	<u>29.48</u>	<u>↓</u>	<u>6.53</u>	<u>16.88</u>	<u>494</u>	<u>1.27</u>	<u>159.2</u>	<u>—</u>	<u>C</u>
<u>1202</u>	<u>—</u>	<u>—</u>	<u>29.71</u>	<u>↓</u>	<u>6.50</u>	<u>16.86</u>	<u>498</u>	<u>1.10</u>	<u>162.2</u>	<u>—</u>	<u>C</u>
<u>1205</u>	<u>—</u>	<u>—</u>	<u>27.72</u>	<u>↓</u>	<u>6.48</u>	<u>16.81</u>	<u>499</u>	<u>0.96</u>	<u>164.1</u>	<u>—</u>	<u>C</u>


Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	<u>MW-7</u>	Sampling Flow Rate:	<u>0.20</u>	Analytical Laboratory:	<u>POCE</u>
Sample Time:	<u>1210</u>	Final Depth to Water:	<u>30.18</u>	Did Well Dewater?	<u>NO</u>
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
<u>6 x 40ml</u>	<u>HCl</u>	<u>HVOC</u>	yes <u>no</u>	<u>—</u>	<u>MW-7 Dup</u>
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MW-5	Job Number:	1126-18
	Client:	Mustar van	Date:	9/29/16
	Project:	3rd Q GWM	Sampler:	KK
	Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	29.41	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B. Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1115	—	—	29.46	0.20	6.91	17.92	761	3.52	166.3	—	C
1118	—	—	29.48	↓	6.73	17.56	800	1.64	168.4	—	C
1121	—	—	29.49	↓	6.70	17.42	800	1.49	169.7	—	C
1124	—	—	29.50	↓	6.68	17.37	802	1.33	170.4	—	C

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-5	Sampling Flow Rate	0.20	Analytical Laboratory:	Page	
Sample Time:	1126	Final Depth to Water:	29.52	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	H00C	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	EW-1	Job Number:	1126-18
Client:	Nustar Van.	Date:	9/29/16
Project:	3rd @ Gwm	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	26.98	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				B. Pump		Pump Intake Depth:				MS		Comments	
Sampling Method:				LF		Tubing Type:				Dedicated			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria		
0941	—	—	26.98	0.20	7.01	17.92	212	3.21	132.8	—	C		
0944	—	—	26.98		6.59	17.11	208	1.52	157.2	—	C		
0947	—	—	26.98		6.55	17.01	206	1.38	163.6	—	C		
0950	—	—	26.98		6.52	16.87	203	1.19	147.3	—	C		

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	EW-1	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	0955	Final Depth to Water:	26.98	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40m	HCl	HVOC	yes <input checked="" type="radio"/> no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

### WELL MONITORING DATA SHEET



Well I.D.:	mw-2	Job Number:	1126-18
Client:	Nustar Van.	Date:	9/29/16
Project:	3rd @ GWM	Sampler:	KK
Weather:	Sunny	Time In/Out:	

#### WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	29.28	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

#### PURGING DATA

Purge Method:				B. Pump				Pump Intake Depth:			MS		Comments
Sampling Method:				LF				Tubing Type:			Dedicated		
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria		
0852	—	—	29.38	0.2	6.55	15.23	563	3.73	140.3	—		C	
0855	—	—	29.64		6.17	14.66	575	2.04	158.2	—		C	
0858	—	—	29.78		6.14	14.61	577	1.92	159.8	—		C	
0901	—	—	29.91	↓	6.12	14.58	577	1.86	160.1	—		C	

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

#### SAMPLING DATA

Sample ID:	mw-2	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	0905	Final Depth to Water:	30.06	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40m	HCl	HVOC	yes (no)	—	—
			yes no		
			yes no		
			yes no		
			yes no		

#### COMMENTS


**WELL MONITORING DATA SHEET**



Well I.D.:	MW-25i	Job Number:	1126-18
Client:	Nustar Van.	Date:	9/29/16
Project:	3rd Q Gwm	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height:	—
Depth to Water:	29.14	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B. Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0747	—	—	29.09	0.20	7.90	14.76	148	4.50	146.1	—	SC
0750	—	—	29.09	↓	7.04	14.71	174	2.05	158.4	—	SC
0753	—	—	29.09	↓	7.05	14.72	176	1.94	164.2	—	SC
0756	—	—	29.09	↓	7.	14.76	177	1.86	168.2	—	SC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-25i	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	0800	Final Depth to Water:	29.21	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes no	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**






3015 SW First Avenue  
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PROJECT NUMBER \_\_\_\_\_  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF \_\_\_\_\_  
 DATE 9/28/16

PROJECT	<u>3rd Q Gwm</u>	ARRIVAL TIME	<u>0650</u>
LOCATION	<u>Vancouver WA</u>	DEPARTURE TIME	_____
CLIENT	<u>Nustar Vancouver</u>	WEATHER	<u>Sunny</u>
PURPOSE OF OBSERVATIONS	<u>Gwm</u>	APEX PROJECT MANAGER	<u>J. Salisbury</u>
APEX REPRESENTATIVE	<u>KK</u>	PERMIT NO.	<u>246350</u>
CONTRACTOR	<u>—</u>	H&S REVIEW	<u>yes</u>
CONTRACTOR REP.	<u>—</u>		


Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

0650 - on site, sign in, Safety Meeting, Get permit, H&S Review  
 0725 - organize Truck for sampling, call USI  
 0810 - Set up on MW-13  
 0833 - sample MW-13  
 0930 - sample Ex-1  
 1030 - sample MP-1  
 1115 - sample MW-24;  
 1210 - sample MW-22.  
 1250 - sample MW-16  
 1330 - sample MW-18;  
 1438 - sample MW-20.  
 1518 - sample MW-19;  
 1608 - sample MW-6  
 1620 - Empty buckets into Drum  
 1635 - sign out Turn in Permit  
 1640 - OFF site

BY \_\_\_\_\_  
 APEX REPRESENTATIVE

REVIEWED BY \_\_\_\_\_  
 APEX PROJECT MANAGER

**WELL MONITORING DATA SHEET**

	Well I.D.	MW-6	Job Number:	1126-18
	Client:	Nustar van	Date:	9/28/16
	Project:	3rd Q GWM	Sampler:	KK
	Weather:	SUNNY	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	28.35	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B, Pump				Pump Intake Depth:	ms				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1552	—	—	28.42	0.20	6.98	19.12	519	3.33	124.6	—	
1555	—	—	28.52	↓	6.35	16.92	480	1.52	136.2	—	
1558	—	—	28.56	↓	6.05	16.20	440	0.96	137.2	—	
1601	—	—	28.61	↓	6.04	16.18	436	0.87	134.1	—	
1604	—	—	28.59	↓	6.03	16.12	428	0.72	132.1	—	

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-6	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1608	Final Depth to Water:	28.38	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 X 40 ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.:	MW-19i	Job Number:	1126-18
Client:	Nustar Van	Date:	9/28/10
Project:	3rd Q Gwm	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height:	—
Depth to Water:	29.85	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:				B. Pump		Pump Intake Depth:				MS		Comments
Sampling Method:				LF		Tubing Type:				Dedicated		
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria	
1502	—	—	29.84	0.20	7.06	19.87	180	2.21	112.4	—	C	
1505	—	—	29.81	↓	6.48	19.61	180	1.95	133.7	—	C	
1508	—	—	29.81	↓	6.27	19.27	181	1.51	140.9	—	C	
1511	—	—	29.80	↓	6.24	19.21	181	1.42	141.6	—	C	
1514	—	—	29.80	↓	6.21	19.15	181	1.34	142.9	—	C	


Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-19i	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1518	Final Depth to Water:	29.75	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	HVOC	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


### WELL MONITORING DATA SHEET

	Well I.D.:	MW-20i	Job Number:	1126-18
	Client:	NuStar Van	Date:	9/28/16
	Project:	3rd Q GWM	Sampler:	KK
	Weather:	Sunny	Time In/Out:	

#### WELL DATA

Well Depth:	—	Well Diameter:	2"	Water Height:	—
Depth to Water:	29.66	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

#### PURGING DATA

Purge Method:	B. Pump	Pump Intake Depth:	MS	Comments:	
Sampling Method:	LF	Tubing Type:	Dedicated		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1426	—	—	29.65	0.20	7.11	19.23	133	2.68	99.8	—	C
1429	—	—	29.65	↓	6.08	16.53	130	2.12	145.2	—	C
1432	—	—	29.65	↓	6.05	16.42	128	2.10	147.3	—	C
1435	—	—	29.65	↓	6.03	16.25	129	2.11	147.9	—	C

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


#### SAMPLING DATA

Sample ID:	MW-20i	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1438	Final Depth to Water:	29.65	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">no</span>	—	—	—
			yes	no		
			yes	no		
			yes	no		
			yes	no		
			yes	no		

#### COMMENTS

--

**WELL MONITORING DATA SHEET**

	Well I.D.	MW-18i	Job Number:	1126-18
	Client:	Nuster van	Date:	9/28/16
	Project:	3rd Q GWM	Sampler:	KK
	Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	30.06	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B. Pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1317	—	—	30.08	0.20	6.94	18.76	119	3.25	101.8	—	C
1320	—	—	30.08		6.48	17.81	116	2.77	124.6	—	C
1323	—	—	30.10		6.35	16.84	112	2.45	137.1	—	C
1326	—	—	30.08		6.33	16.74	110	2.40	139.0	—	C
1329	—	—	30.08	√	6.31	16.60	110	2.35	140.2	—	C

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-18i	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1330	Final Depth to Water:	30.08	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes (no)	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MW-16	Job Number:	1126-18
Client:	Mustar Van	Date:	9/28/16
Project:	3rd Q GWM	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	29.24	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B. Pump	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	Dedicated	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1239	—	—	29.37	0.20	7.05	17.64	304	3.48	116.5	—	AC
1242	—	—	29.50	↓	6.46	15.88	293	2.11	129.9	—	AC
1245	—	—	29.50	↓	6.45	15.85	291	2.01	131.6	—	AC
1248	—	—	29.51	↓	6.42	15.80	288	1.92	131.9	—	AC


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-16	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1250	Final Depth to Water:	29.45	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**

**WELL MONITORING DATA SHEET**

	Well I.D.	<i>mw-22i</i>	Job Number:	<i>1126-18</i>
	Client:	<i>Nustar van</i>	Date:	<i>7/28/16</i>
	Project:	<i>3rd @ GWM</i>	Sampler:	<i>KK</i>
	Weather:		Time In/Out:	

WELL DATA					
Well Depth:	<i>—</i>	Well Diameter:	<i>2"</i>	Water Height	<i>—</i>
Depth to Water:	<i>30.92</i>	Screened Interval:	<i>—</i>	x Multiplier	<i>—</i>
Water Column Length:	<i>—</i>	Depth to Free Product:	<i>—</i>	x Casing Volumes	<i>—</i>
Purge Volume:	<i>—</i>	Free Product Thickness:	<i>—</i>	= Purge Volume	<i>—</i>
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	<i>—</i>

PURGING DATA													
Purge Method:				<i>B Pump</i>			Pump Intake Depth:			<i>MS</i>			Comments
Sampling Method:				<i>LF</i>			Tubing Type:			<i>Dedicated</i>			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%		<- Stabilization Criteria	
<i>1156</i>	<i>—</i>	<i>—</i>	<i>30.98</i>	<i>0.20</i>	<i>7.15</i>	<i>17.60</i>	<i>288</i>	<i>3.33</i>	<i>114.2</i>	<i>—</i>	<i>AC</i>		
<i>1159</i>	<i>—</i>	<i>—</i>	<i>30.96</i>	<i>—</i>	<i>6.66</i>	<i>16.42</i>	<i>294</i>	<i>1.37</i>	<i>128.2</i>	<i>—</i>	<i>AC</i>		
<i>1202</i>	<i>—</i>	<i>—</i>	<i>30.95</i>	<i>—</i>	<i>6.62</i>	<i>16.48</i>	<i>291</i>	<i>1.19</i>	<i>128.6</i>	<i>—</i>	<i>AC</i>		
<i>1205</i>	<i>—</i>	<i>—</i>	<i>30.96</i>	<i>—</i>	<i>6.60</i>	<i>16.56</i>	<i>289</i>	<i>1.04</i>	<i>129.4</i>	<i>—</i>	<i>AC</i>		

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA						
Sample ID:	<i>mw-22i</i>	Sampling Flow Rate	<i>0.20</i>	Analytical Laboratory:	<i>Pace</i>	
Sample Time:	<i>1210</i>	Final Depth to Water:	<i>30.97</i>	Did Well Dewater?	<i>NO</i>	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<i>3 x 40 ml</i>	<i>HCl</i>	<i>HVOC</i>	yes <u>no</u>	<i>—</i>	<i>—</i>	<i>—</i>
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MW-24i	Job Number:	1126-18
Client:	Nustar Van.	Date:	9/28/16
Project:	3rd Q GWM	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	29.91	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:				B. Pump				Pump Intake Depth:			MS		Comments
Sampling Method:				LF				Tubing Type:			Dedicated		
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks		
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<< Stabilization Criteria		
1103	—	—	29.90	0.20	7.64	16.22	134	4.64	114.6	—	SC		
1106	—	—	29.90		7.29	15.72	127	2.78	116.9	—	SC		
1109	—	—	29.90		7.27	15.61	125	2.64	121.9	—	SC		
1112	—	—	29.91	∇	7.24	15.54	122	2.58	123.9	—	SC		

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


**SAMPLING DATA**

Sample ID:	MW-24i	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1115	Final Depth to Water:	29.94	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	HCl	HVOC	yes (no)	—	—	—
3 X 40 ml	HCl	Ethene, Ethane	yes (no)	—	—	—
1 X 250	H <sub>2</sub> SO <sub>4</sub>	TOC	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			

**COMMENTS**



**WELL MONITORING DATA SHEET**

	Well I.D.	MP-1	Job Number:	1126-18
	Client:	Nustar Van	Date:	9/28/16
	Project:	3rd Q Gwm	Sampler:	KK
	Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	29.44	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:	B. Pump	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	Dedicated	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1013	—	—	29.57	0.20	6.67	15.68	609	5.23	126.2	—	SC
1016	—	—	29.61	↓	6.57	15.25	595	2.60	133.3	—	SC
1019	—	—	29.62	↓	6.55	15.05	578	1.31	136.2	—	SC
1022	—	—	29.62	↓	6.58	15.04	574	1.34	136.0	—	SC
1025	—	—	29.63	↓	6.60	15.04	571	1.32	135.2	—	SC

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MP-1	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1030	Final Depth to Water:	29.45	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—
3 x 40 ml	HCl	Ethane, Ethene	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—
1 x 250	H <sub>2</sub> SO <sub>4</sub>	TOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—
			yes <input type="radio"/> no <input type="radio"/>		
			yes <input type="radio"/> no <input type="radio"/>		
			yes <input type="radio"/> no <input type="radio"/>		

**COMMENTS**

**WELL MONITORING DATA SHEET**



Well I.D.	EX-1	Job Number:	1126-18
Client:	Nuster Van	Date:	9/28/16
Project:	3rd Q GWM	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	29.23	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B Pump			Pump Intake Depth:	MS			Comments			
Sampling Method:	LF			Tubing Type:	Dedicated						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
0919	—	—	29.41	0.20	5.76	16.76	922	4.28	142.2	—	SC
0922	—	—	29.53	↓	5.94	16.74	924	1.74	140.2	—	SC
0925	—	—	29.68	↓	5.96	16.71	928	1.68	139.0	—	SC
0928	—	—	29.74	↓	5.97	16.72	930	1.61	138.1	—	SC

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	EX-1	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	0930	Final Depth to Water:	29.68	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**

**WELL MONITORING DATA SHEET**



Well I.D.	MW-13	Job Number:	1126-18
Client:	Nustar Van.	Date:	9/28/16
Project:	3rd @ 0wm	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	4"	Water Height:	—
Depth to Water:	28.90	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:		B, Pump		Pump Intake Depth:		m S		Comments			
Sampling Method:		LF		Tubing Type:		Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
0820	—	—	29.00	0.20	4.66	17.80	591	4.81	166.7	—	VC
0823	—	—	29.14		4.65	16.83	455	2.63	160.1	—	VC
0826	—	—	29.28		4.61	16.90	451	2.66	159.1	—	VC
0829	—	—	29.45	✓	4.60	16.90	448	2.71	158.7	—	VC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-13	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	0833	Final Depth to Water:	29.49	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
6 x 40 ml	HCl	HUOC	yes <input type="radio"/> no <input type="radio"/>	—	— MW-13 DUP
3 x 40 ml	HCl	Ethane, Ethane	yes <input type="radio"/> no <input type="radio"/>	—	—
1 x 250	H2SO4	TOC	yes <input type="radio"/> no <input type="radio"/>	—	—
			yes <input type="radio"/> no <input type="radio"/>		
			yes <input type="radio"/> no <input type="radio"/>		
			yes <input type="radio"/> no <input type="radio"/>		

**COMMENTS**

\* white water



3015 SW First Avenue  
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PROJECT NUMBER 1126-18  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF 1  
 DATE 9/27/16

PROJECT	<u>3rd Quarter GWM</u>	ARRIVAL TIME	<u>0650</u>
LOCATION	<u>Vancouver WA</u>	DEPARTURE TIME	_____
CLIENT	<u>NuStar</u>	WEATHER	<u>overcast</u>
PURPOSE OF OBSERVATIONS	<u>GWM</u>		
APEX REPRESENTATIVE	<u>KK</u>	APEX PROJECT MANAGER	<u>Stephanie Salisbury</u>
CONTRACTOR	_____	PERMIT NO.	<u>246347</u>
CONTRACTOR REP.	_____	H&S REVIEW	<u>YES</u>

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

0650 - On site, sign in, get permit, H+S Review  
 0725 - organize truck for sampling, cal yst.  
 0750 - Setup on MW-14. Issues with bladder pump, have to figure out problem  
 0900 - sample MW-14  
 1008 - sample MW-23i  
 1050 - sample MW-17  
 1150 - sample S-1  
 1240 - sample MW-26  
 1330 - sample MW-10  
 1415 - sample MW-1  
 1500 - sample MW-12  
 1530 - Empty purge buckets and start a new purge drum  
 1625 - sample MW-8  
 1645 - Sign out, turn in Permit  
 1650 OFF site

BY \_\_\_\_\_

REVIEWED BY \_\_\_\_\_

\_\_\_\_\_  
 APEX REPRESENTATIVE

\_\_\_\_\_  
 APEX PROJECT MANAGER

**WELL MONITORING DATA SHEET**



Well I.D.	MW-8	Job Number:	126-18
Client:	Nustar Van.	Date:	9/27/16
Project:	3rd Q GWM	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	28.60	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:				B Pump		Pump Intake Depth:				MS		Comments
Sampling Method:				LF		Tubing Type:				Dedicated		
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria	
1611	—	—	28.65	0.20	5.78	19.75	1183	4.92	213.7	—	C	
1614	—	—	28.69		4.86	19.11	1104	1.84	208.1	—	C	
1617	—	—	28.72		4.84	19.08	1100	1.76	203.4	—	C	
1620	—	—	28.75	∨	4.82	19.01	1101	1.71	202.7	—	C	

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-8	Sampling Flow Rate:	0.2	Analytical Laboratory:	Pace	
Sample Time:	1625	Final Depth to Water:	28.80	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

**WELL MONITORING DATA SHEET**



Well I.D.	MW-12	Job Number:	1126-18
Client:	Nustar Vancouver	Date:	9/27/16
Project:	3rd & Gwm	Sampler:	KK
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	4"	Water Height:	—
Depth to Water:	27.28	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B Pump			Pump Intake Depth:	ms			Comments			
Sampling Method:	LF			Tubing Type:	Dedicated						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1442	—	—	27.55	0.20	5.26	19.56	1264	6.30	240.2	—	VC
1445	—	—	27.75	1	5.13	19.23	1256	2.64	256.3	—	VC
1448	—	—	27.82	1	3.60	19.17	1253	1.32	255.7	—	VC
1451	—	—	27.95	1	3.56	19.15	1253	1.22	254.5	—	VC
1454	—	—	28.00	1	3.53	19.16	1250	0.98	253.5	—	VC

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


**SAMPLING DATA**

Sample ID:	MW-12	Sampling Flow Rate:	0.20	Analytical Laboratory:	PACE	
Sample Time:	1500	Final Depth to Water:	28.19	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
6 x 40 ml	HCl	HVOC	yes (no)	—	—	MW-12 Duf
3 x 40 ml	HCl	Ethane, Ethene	yes (no)			
1 x 250	H2SO4	TOC	yes (no)			
3 x 40 ml	HCl		yes (no)		X	
			yes no			
			yes no			

**COMMENTS**

\* White water

**WELL MONITORING DATA SHEET**

	Well I.D.	MW-1	Job Number:	1126-18
	Client:	Nustar Vancouver	Date:	9/27/16
	Project:	3rd Qrt. GWM	Sampler:	KK
	Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	28.69	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				B. Pump		Pump Intake Depth:				MS		Comments	
Sampling Method:				LF		Tubing Type:				Dedicated			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria		
1401	—	—	28.69	0.20	6.64	19.79	360	1.71	221.2	—	C		
1404	—	—	28.68	↓	6.23	18.61	333	1.02	234.0	—	C		
1407	—	—	28.68	↓	6.18	18.53	330	0.98	237.1	—	C		
1410	—	—	28.67	↓	6.16	18.45	326	0.96	237.7	—	C		

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-1	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1415	Final Depth to Water:	28.64	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—	—
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MW-10	Job Number:	1126-18
Client:	NuStar Vancouver	Date:	9/27/16
Project:	3rd Quarter GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	29.15	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:	B. pump	Pump Intake Depth:	MS	Comments	
Sampling Method:	LF	Tubing Type:	Dedicated		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1315	—	—	29.18	0.2	6.12	19.37	1988	3.24	246.1	—	C
1318	—	—	29.22	↓	5.99	18.32	1930	2.36	246.5	—	C
1321	—	—	29.24	↓	5.97	18.26	1921	2.29	246.1	—	C
1324	—	—	29.27	↓	5.95	18.21	1919	2.26	245.4	—	C

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


**SAMPLING DATA**

Sample ID:	MW-10	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace
Sample Time:	1330	Final Depth to Water:	29.32	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <input checked="" type="checkbox"/> no	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**




**WELL MONITORING DATA SHEET**

	Well I.D.	MW-26	Job Number:	1126-18
	Client:	Nustar Vancouver	Date:	9/27/16
	Project:	3rd Qrt Gwm	Sampler:	KK
	Weather:	overcast	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"
Depth to Water:	29.21	Screened Interval:	—
Water Column Length:	—	Depth to Free Product:	—
Purge Volume:	—	Free Product Thickness:	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162
		4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:		B. Pump			Pump Intake Depth:		MS			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated				
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1228	—	—	29.21	0.20	6.68	18.64	3307	1.42	224.3	—	C
1231	—	—	29.21	↓	6.38	17.67	3305	1.53	239.9	—	C
1234	—	—	29.21	↓	6.35	17.65	3201	1.61	237.0	—	C
1237	—	—	29.20	√	6.33	17.58	3208	1.64	236.7	—	C

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-26	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	1240	Final Depth to Water:	29.19	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40 ml	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—
			yes <input type="radio"/> no <input type="radio"/>		
			yes <input type="radio"/> no <input type="radio"/>		
			yes <input type="radio"/> no <input type="radio"/>		
			yes <input type="radio"/> no <input type="radio"/>		
			yes <input type="radio"/> no <input type="radio"/>		

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	S-1	Job Number:	1126-18
Client:	NuStar van	Date:	9/27/19
Project:	3rd Ort Gwm	Sampler:	KK
Weather:	overcast	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height:	—
Depth to Water:	29.92	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:		B Pump			Pump Intake Depth:		MS			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated				
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1134	—	—	29.80	0.20	7.45	18.18	175	2.09	200.3	—	C
1137	—	—	29.74		7.29	17.64	164	1.58	205.6	—	C
1140	—	—	29.72		7.11	17.04	153	1.26	215.5	—	C
1143	—	—	29.72		7.07	16.98	151	1.24	218.3	—	C
1146	—	—	29.72	✓	7.04	16.94	151	1.20	219.1	—	C


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	S-1	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1150	Final Depth to Water:	29.81	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	mw-17	Job Number:	1126-18
	Client:	NuStar Van.	Date:	9/27/16
	Project:	3rd Qrt. GWM	Sampler:	KK
	Weather:	overcast	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	4"	Water Height:	—
Depth to Water:	28.14	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:		B, Pump			Pump Intake Depth:		MS			Comments		
Sampling Method:		LF			Tubing Type:		Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria	
1038	—	—	28.40	0.20	7.03	16.34	855	3.75	218.7	—		C
1041	—	—	28.40	↓	6.80	16.13	857	2.09	219.6	—		C
1044	—	—	28.40	↓	6.78	16.09	863	1.97	218.4	—		C
1047	—	—	28.40	↓	6.75	16.01	863	1.86	218.0	—		C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-17	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace		
Sample Time:	1050	Final Depth to Water:	28.42	Did Well Dewater?	NO		
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
3 x 40 ml	HCl	HVOC	yes (no)	—	—	—	—
			yes no				
			yes no				
			yes no				
			yes no				
			yes no				

**COMMENTS**

**WELL MONITORING DATA SHEET**



Well I.D.	MW-23	Job Number:	1126-18
Client:	Nustar Vancouver	Date:	9/27/16
Project:	3rd Qrt. GWM	Sampler:	KK
Weather:	overcast	Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height:	
Depth to Water:	30.10	Screened Interval:		x Multiplier:	
Water Column Length:		Depth to Free Product:		x Casing Volumes:	
Purge Volume:		Free Product Thickness:		= Purge Volume:	
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:	B. Pump	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	Dedicated	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
0955	—	—	29.70	0.20	8.05	18.26	228	5.64	179.5	—	AC
0958	—	—	29.75	↓	7.51	16.29	121	4.21	202.4	—	AC
1001	—	—	29.80	↓	7.49	16.38	119	4.10	207.7	—	AC
1004	—	—	29.86	↓	7.46	16.44	116	3.92	212.2	—	AC


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-23	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace
Sample Time:	1008	Final Depth to Water:	30.10	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3 x 40ml	HCl	HVOC	yes no	—	—
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**

**WELL MONITORING DATA SHEET**

	Well I.D.	MW-14	Job Number:	1126-18
	Client:	Nustar	Date:	9/27/16
	Project:	3rd Quarter GWM	Sampler:	KK
	Weather:	overcast	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	29.30	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				B. Pump		Pump Intake Depth:				MS		Comments	
Sampling Method:				LF		Tubing Type:				Dedicated			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria		
0848	—	—	29.35	0.20	7.21	18.18	2764	8.57	220.1	—	AC		
0851	—	—	29.37		7.21	16.79	2749	8.83	220.1	—	AC		
0854	—	—	29.41		7.22	16.62	2761	8.11	220.7	—	AC		
0857	—	—	29.43	✓	7.22	16.57	2770	8.08	221.2	—	AC		

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-14	Sampling Flow Rate	0.20	Analytical Laboratory:	Pace	
Sample Time:	0900	Final Depth to Water:	29.30	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—	—
3 x 40 ml	HCl	Ethanol, Ethene	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—	—
1 x 250	H <sub>2</sub> SO <sub>4</sub>	TOC	yes <input type="radio"/> no <input checked="" type="radio"/>	—	—	—
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			
			yes <input type="radio"/> no <input type="radio"/>			

**COMMENTS**




3015 SW First Avenue  
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PROJECT NUMBER \_\_\_\_\_  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF 1  
 DATE 9/26/16

PROJECT	<u>Quarterly GWM</u>	ARRIVAL TIME	<u>0720</u>
LOCATION	<u>Vancouver WA</u>	DEPARTURE TIME	_____
CLIENT	<u>NuStar</u>	WEATHER	<u>Sunny</u>
PURPOSE OF OBSERVATIONS	<u>Gauging + GWM</u>		
APEX REPRESENTATIVE	<u>KK/JM</u>	APEX PROJECT MANAGER	_____
CONTRACTOR	_____	PERMIT NO.	<u>246345</u>
CONTRACTOR REP.	_____	H&S REVIEW	_____

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

0720 - on site, sign in, Get permit, H + S Review  
 0740 - Start to pop well caps  
 0907 - Finish popping well caps and finding ores in construction site  
 0908 - start gauging wells  
 1219 - Finish gauging wells  
 1225 - Get gear organized to sample wells  
 1326 - Sample S-2  
 1358 - Sample mw-21-105  
 1422 - Sample mw-21-40  
 1523 - Sample mw-19  
 1530 - Turn in permit, sign out  
 1540 OFF site

BY \_\_\_\_\_

REVIEWED BY \_\_\_\_\_

\_\_\_\_\_  
 APEX REPRESENTATIVE

\_\_\_\_\_  
 APEX PROJECT MANAGER

**WELL MONITORING DATA SHEET**



Well I.D.	MW-19	Job Number:	
Client:	NuStar	Date:	9/26/16
Project:	Quarterly GWM	Sampler:	KK/JM
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:	2"	Water Height:	
Depth to Water:	29.01	Screened Interval:		x Multiplier:	
Water Column Length:		Depth to Free Product:		x Casing Volumes:	
Purge Volume:		Free Product Thickness:		= Purge Volume:	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	B. pump				Pump Intake Depth:	MS				Comments	
Sampling Method:	LF				Tubing Type:	Dedicated					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1511	-	-	29.15	0.20	7.65	20.85	2154	5.32	171.5	-	C
1514	-	-	29.21	↓	7.36	20.21	1731	3.54	173.6	-	C
1517	-	-	29.21	↓	7.33	20.14	1721	3.31	174.6	-	C
1520	-	-	29.22	↓	7.30	20.08	1704	3.27	174.4	-	C

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-19	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1523	Final Depth to Water:	29.18	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40 ml	HCl	HVOC	yes (no)			
3 X 40 ml	HCl	Ethene, Ethane	yes (no)			
1 X 250	H2SO4	TOC	yes (no)			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MW-21;-40	Job Number:	1128-18
Client:	NuStar	Date:	9/26/16
Project:	Quarterly GWM	Sampler:	KE/JM
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height:	—
Depth to Water:	30.30	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B. Pump	Pump Intake Depth:	115	Comments:	
Sampling Method:	LF	Tubing Type:	Dedicated		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria	
1404	.6	0.60	30.30	0.20	7.37	17.72	197	2.80	152.7	—	Clear	
1407	1.2	0.60	30.33	.20	7.38	17.30	197	1.45	153.6	—	Clear	
1410	1.8	0.60	30.33	.20	7.35	17.26	197	1.35	157.5	—	clear	
1413	2.4	0.60	30.33	.20	7.13	16.99	196	.92	159.8	—	clear	
1416	3.0	.60	30.33	.20	7.10	16.95	195	.85	160.1	—	clear	
1419	3.6	.60	30.33	.20	7.09	16.94	195	0.80	160.6	—	clear	
1422	4.2	.60	30.33	S A M P L E								

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-21;-40	Sampling Flow Rate:	0.20	Analytical Laboratory:	Trace	
Sample Time:	1422	Final Depth to Water:	30.33	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HVOC	yes <u>no</u>	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**



**WELL MONITORING DATA SHEET**



Well I.D.	MW-21i-105	Job Number:	1126-18
Client:	Nustar	Date:	9/26/16
Project:	Quarterly GWM	Sampler:	KK/JM
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height:	—
Depth to Water:	30.52	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:	B. Pump			Pump Intake Depth:	MS			Comments			
Sampling Method:	LF			Tubing Type:	Dedicated						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1346	.6	.6	30.52	.20	7.94	23.00	140	5.40	124.5	—	Clear
1349	1.2	.6	30.52	.20	7.69	20.97	133	4.01	142.4	—	Clear
1352	1.8	.6	30.52	.20	7.38	19.11	152	5.51	150.1	—	Clear
1355	2.4	.6	30.52	.20	7.30	19.10	153	5.40	156.1	—	Clear
1358	3.0	.6	30.52	.20	7.35	19.09	155	5.38	154.8	—	Clear
					SAMPLE @						1358

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-21i-105	Sampling Flow Rate	.20	Analytical Laboratory:	PACE	
Sample Time:	1358	Final Depth to Water:	30.52	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCl	HUOC	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

**WELL MONITORING DATA SHEET**



Well I.D.	S-2	Job Number:	1126-18
Client:	Mustart	Date:	9/26/16
Project:	Quarterly GWM	Sampler:	KK/JM
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	30.1	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:		B. Pump			Pump Intake Depth:		MS			Comments	
Sampling Method:		LF			Tubing Type:		Dedicated				
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1311	.6	30.20	.20	8.47	20.56	1702	6.00	138.9	-	Clear	
1314	.6	30.23	.20	7.35	18.82	1632	4.46	158.5	-	Clear	
1317	.6	30.23	.20	7.20	18.59	1620	4.61	160.3	-	Clear	
1320	.6	30.23	.20	7.15	18.50	1621	4.68	165.1	-	Clear	
1323	.6	30.23	.20	7.15	18.48	1619	4.75	164.0	-	Clear	
1326	.6			SAMPLE							

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	S-2	Sampling Flow Rate	.20	Analytical Laboratory:	Pace
Sample Time:	1326	Final Depth to Water:	30.20	Did Well Dewater?	NO
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3x40 mL	HCL	HVOC	yes <del>no</del>	—	—
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**


WELL GAGING DATA SHEET



Client:	NuStar	Job Number:	1126-18
Project:	Quartermaster Gwm	Date:	9/26/16
Weather:	Sunny	Sampler:	KK/JM
		Time In/Out:	

WATER LEVEL DATA

Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
MW-12	0908	-	27.34	-	-	-	milky water 0/3
MW-19	0911	-	29.18	-	-	-	3/3
EX-1	0913	-	29.16	-	-	-	0/3
MP-4	0915	-	29.29	-	-	-	milky water 0/3
MW-24i	1124	-	30.68	-	-	-	0/3
MP-3	0923	-	29.29	-	-	-	3/3
MW-24d	0926	-	30.58	-	-	-	0/3
MP-2	0928	-	29.46	-	-	-	milky chunks 0/3
MP-1	0930	-	29.40	-	-	-	0/3
MW-7	0932	-	29.20	-	-	-	0/3
MW-5	0934	-	29.50	-	-	-	2/3
MW-9	0939	-	29.27	-	-	-	3/3
MW-13	0945	-	28.74	-	-	-	milky water 1/3
S-2	0949	-	29.59	-	-	-	0/3
MW-14	0953	-	29.27	-	-	-	0/3
MW-17	0955	-	28.35	-	-	-	0/3
MW-26	0958	-	29.15	-	-	-	3/3
MW-10	1003	-	29.01	-	-	-	0
MW-8	1006	-	28.54	-	-	-	2/3
MW-22i	1013	-	31.28	-	-	-	0/2
MW-32S	1016	-	30.35	-	-	-	3/3
MW-32i	1019	-	31.28	-	-	-	2/3
MW-31i	1024	-	31.36	-	-	-	2/2
MW-E	1031	-	26.89	-	-	-	0/3
MW-18i	1037	-	30.34	-	-	-	2/2
MW-16	1040	-	29.60	-	-	-	0/3
MW-20i	1043	-	30.13	-	-	-	0/2
MW-19i	1047	-	30.65	-	-	-	1/2
W-15	1049	-	34.20	-	-	-	-
MW-F	1052	-	31.02	-	-	-	3/3
MW-6	1057	-	29.37	-	-	-	3/3
MW-30i	1101	-	26.74	-	-	-	0/3





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PROJECT NUMBER 1126-18  
 FIELD REPORT NUMBER \_\_\_\_\_  
 PAGE 1 OF 1  
 DATE 12-18-16 → 12-16-16

PROJECT	<u>MUSTAK Vancouver</u>	ARRIVAL TIME	<u>0700</u>
LOCATION	<u>Vancouver</u>	DEPARTURE TIME	_____
CLIENT	<u>MUSTAK</u>	WEATHER	_____
PURPOSE OF OBSERVATIONS	<u>GW M</u>		
APEX REPRESENTATIVE	<u>Jake Munsey</u>	APEX PROJECT MANAGER	<u>Stephanie S.</u>
CONTRACTOR	_____	PERMIT NO.	<u>X</u>
CONTRACTOR REP.	_____	H&S REVIEW	<u>X</u>

Our firm's professionals are represented on site solely to observe operations of the contractor identified, to form opinions about the adequacy of those operations, and to report those opinions to our client. The presence and activities of our field representative do not relieve any contractor from its obligation to meet contractual requirements. The contractor retains sole responsibility for site safety and the methods, operations, and sequence of construction. Unless signed by the Ash Creek Associates Project Manager, this report is preliminary. A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those included in a preliminary report.

\* MON → Gauge all wells with Chris  
 EXCEPT; (MW-16 under truck)  
 (MW-325 & MW 321 under low rider)  
 MW-E Missing/paved over when  
 shop was constructed. Gauged EXCLUDED  
 wells later. Sampled 4 wells

TUES → Sampled 10 wells, Brought New IDW  
 Drum & Label

Wed → Sampled 10 wells

Thursday → NO site visit, SNOW DAY

FRIDAY → Sampled 9 wells

MGM52-40 & 60 DO NOT WORK WELL

1 IDW DRUM LEFT on site 9/10 Full  
 in Hazardous waste storage & in water house

BY  
  
 APEX REPRESENTATIVE


REVIEWED BY  
 \_\_\_\_\_  
 APEX PROJECT MANAGER

WELL GAGING DATA SHEET

APEX		Job Number: 1126					
		Client: Mustak Vard	Date: 12-12-16				
		Project: GWM	Sampler: JGM				
		Weather: Rainy	Time In/Out: 0700				
WATER LEVEL DATA							
Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
MW-1	1010	—	24.68	—	—	—	Chris & JM
MW-12	1015	—	23.44	—	—	—	
MW-19	1016	—	25.91	—	—	—	
EX-1	1018	—	26.01	—	—	—	
MP-4	1019	—	26.61	—	—	—	
MP-3	1022	—	25.42	—	—	—	
MW-24i	1024	—	26.12	—	—	—	
MW-24n	1025	—	26.04	—	—	—	
MP-2	1026	—	26.34	—	—	—	
MP-1	1027	—	26.26	—	—	—	
MW-7	1028	—	26.04	—	—	—	
MW-9	1030	—	26.21	—	—	—	
MW-13	1032	—	25.38	—	—	—	
S-1	1033	—	25.52	—	—	—	
S-2	1034	—	25.44	—	—	—	
MW-14	1036	—	26.15	—	—	—	Broken magnet
MW-23i	1038	—	26.17	—	—	—	
MW-17	1040	—	24.76	—	—	—	
MW-26	1042	—	26.22	—	—	—	
MW-25i	1044	—	25.92	—	—	—	
MW-10	1046	—	26.75	—	—	—	
MW-22i	1048	—	26.69	—	—	—	
MW-8	1049	—	26.00	—	—	—	
MW-21i-105	1050	—	26.31	—	—	—	
MW-21i-40	1050	—	26.44	—	—	—	
MW-31i	1056	—	26.84	—	—	—	
MW-32s	—						COULD NOT GAUGE DUE TO VEHICLE PACKED.
MW-32i	—						
MW-18i	1105	—	25.71	—	—	—	
MW-20i	1110	—	25.50	—	—	—	
MW-19i	1112	—	25.99	—	—	—	Broken magnet in well
MW-15	1114	—	31.75	—	—	—	

JGM

WELL GAGING DATA SHEET

	Client:	Mustaf van	Job Number:	1126
	Project:	607	Date:	12-12-16
	Weather:	Rain	Sampler:	567
			Time In/Out:	

WATER LEVEL DATA

Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
MW-6	1116	~	24.77	~	~		
MW-30i	1118	~	22.13	~	~		Missing Bolts
MW-F	1120	~	26.43	~	~		
MW-2	1127	~	26.37	~	~		26.34 sensitivity adjust
MW-5	1130	~	25.99	~	~		
MW-6	1138	~	24.65	~	~		
EW-1	1139	~	23.40	~	~		
MW-3	1144	~	26.48	~	~		
M6751-40	1155	~	22.96	~	~		
M6751-60	1156	~	23.23	~	~		
M6751-132	1157	~	23.12	~	~		
M6752-40	1200	~	24.36	~	~		
M6752-60	1201	~	24.91	~	~		
M6752-110	1202	~	24.71	~	~		
M6752-132	1203	~	24.91	~	~		
M6753-40	1205	~	24.06	~	~		
M6753-60	1206	~	23.93	~	~		
M6753-110	1207	~	24.05	~	~		
M6753-132	1208	~	24.11	~	~		
MW-16							Under Trucks/under asphalt
MW-E							
Data for MW 16, 32S, 32i is ok GWM sheets							

**WELL MONITORING DATA SHEET**



Well I.D.	EX-1	Job Number:	1126
Client:	Mustar	Date:	12-12-16
Project:	GWM	Sampler:	JG
Weather:	Rainy	Time In/Out:	

**WELL DATA**

Well Depth:	~	Well Diameter:	4"	Water Height:	~
Depth to Water:	26.00	Screened Interval:	~	x Multiplier:	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes:	~
Purge Volume:	~	Free Product Thickness:	~	= Purge Volume:	~
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:	BP	Pump Intake Depth:	MS	Comments:	
Sampling Method:	LC	Tubing Type:	HDPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1355			26.00	.25	7.80	15.77	974	8.07	-23.5	-	Clear
1358			26.50	.25	7.65	16.12	919	1.98	-20.1	-	Clear
1401			26.53	.25	7.77	16.22	840	1.60	-18.3	-	Clear
1404			26.57	.25	7.77	16.23	700	1.83	-23.6	-	Clear
1407			26.60	.25	7.73	16.12	685	2.00	-24.0	-	Clear

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


**SAMPLING DATA**

Sample ID:	EX-1	Sampling Flow Rate:	0.25	Analytical Laboratory:	Pace	
Sample Time:	1407	Final Depth to Water:	26.60	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40ml	HCL	HVOL	yes no	-	-	-
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**



**WELL MONITORING DATA SHEET**

	Well I.D.: <i>MW-241</i>	Job Number: <i>1126</i>
	Client: <i>Mustaf</i>	Date: <i>12-17-16</i>
	Project: <i>GW M</i>	Sampler: <i>JG</i>
	Weather: <i>partly sunny</i>	Time In/Out: <i>—</i>

**WELL DATA**

Well Depth: <i>— 46m</i>	Well Diameter: <i>2"</i>	Water Height: <i>—</i>
Depth to Water: <i>26.12 24.90</i>	Screened Interval: <i>—</i>	x Multiplier: <i>—</i>
Water Column Length: <i>—</i>	Depth to Free Product: <i>—</i>	x Casing Volumes: <i>—</i>
Purge Volume: <i>—</i>	Free Product Thickness: <i>—</i>	= Purge Volume: <i>—</i>
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162
		4-inch = 0.653
		1 gallon = 3.785 liters

**PURGING DATA**

Purge Method: <i>BP</i>	Pump Intake Depth: <i>MS</i>	Comments									
Sampling Method: <i>LE</i>	Tubing Type: <i>HDPE</i>										
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
<i>1435</i>			<i>24.90</i>	<i>.25</i>	<i>8.38</i>	<i>15.06</i>	<i>93</i>	<i>11.70</i>	<i>-5.3</i>	<i>—</i>	<i>Clear</i>
<i>1438</i>			<i>24.90</i>	<i>.25</i>	<i>8.42</i>	<i>15.01</i>	<i>89</i>	<i>5.66</i>	<i>-5.2</i>	<i>—</i>	<i>Clear</i>
<i>1441</i>			<i>24.90</i>	<i>.25</i>	<i>8.42</i>	<i>15.00</i>	<i>89</i>	<i>5.66</i>	<i>-5.3</i>	<i>—</i>	<i>Clear</i>
<i>1444</i>			<i>24.90</i>	<i>.25</i>	<i>8.35</i>	<i>14.98</i>	<i>89</i>	<i>5.64</i>	<i>2.6</i>	<i>—</i>	<i>Clear</i>


Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID: <i>MW241</i>	Sampling Flow Rate: <i>.25</i>	Analytical Laboratory: <i>Pate</i>				
Sample Time: <i>1444</i>	Final Depth to Water: <i>24.90</i>	Did Well Dewater?: <i>NO</i>				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<i>3 40 mL</i>	<i>VOA</i>	<i>HVOC</i>	<i>yes no</i>	<i>—</i>	<i>—</i>	<i>—</i>
<i>2 40 mL</i>	<i>H2SO4</i>	<i>TOC</i>	<i>yes no</i>	<i>—</i>	<i>—</i>	<i>—</i>
<i>2 40 mL</i>	<i>NONE</i>	<i>Methoxy Ethoxy</i>	<i>yes no</i>	<i>—</i>	<i>—</i>	<i>—</i>
			<i>yes no</i>			
			<i>yes no</i>			
			<i>yes no</i>			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.: <i>MP-1</i>	Job Number: <i>1126</i>
	Client: <i>Muskrat Vapors</i>	Date: <i>12-13-16</i>
	Project: <i>GWM</i>	Sampler: <i>J67</i>
	Weather: <i>Fog</i>	Time In/Out:

**WELL DATA**

Well Depth: <i>—</i>	Well Diameter: <i>2"</i>	Water Height: <i>—</i>
Depth to Water: <i>26.12</i>	Screened Interval: <i>—</i>	x Multiplier: <i>—</i>
Water Column Length: <i>—</i>	Depth to Free Product: <i>—</i>	x Casing Volumes: <i>—</i>
Purge Volume: <i>—</i>	Free Product Thickness: <i>—</i>	= Purge Volume: <i>—</i>
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162
		4-inch = 0.653
		1 gallon = 3.785 liters

**PURGING DATA**

Purge Method: <i>BP</i>				Pump Intake Depth: <i>MS</i>				Comments			
Sampling Method: <i>LF</i>				Tubing Type: <i>HDPE</i>							
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
<i>0805</i>			<i>26.12</i>	<i>.20</i>	<i>8.68</i>	<i>13.46</i>	<i>294</i>	<i>6.60</i>	<i>79.2</i>	<i>—</i>	<i>Clear</i>
<i>0808</i>			<i>26.12</i>	<i>.20</i>	<i>8.53</i>	<i>15.05</i>	<i>338</i>	<i>3.26</i>	<i>26.1</i>	<i>—</i>	<i>Clear</i>
<i>0811</i>			<i>26.12</i>	<i>.20</i>	<i>8.50</i>	<i>15.13</i>	<i>345</i>	<i>3.38</i>	<i>16.6</i>	<i>—</i>	<i>Clear</i>
<i>0814</i>			<i>26.12</i>	<i>.20</i>	<i>8.45</i>	<i>15.13</i>	<i>348</i>	<i>3.57</i>	<i>12.1</i>	<i>—</i>	<i>Clear</i>


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID: <i>MP-1</i>	Sampling Flow Rate: <i>.20</i>	Analytical Laboratory: <i>Pale</i>				
Sample Time: <i>0814</i>	Final Depth to Water: <i>26.12</i>	Did Well Dewater?: <i>no</i>				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<i>3x 40ml</i>	<i>HCl</i>	<i>HVOC</i>	yes <del>no</del>	<i>—</i>	<i>—</i>	<i>—</i>
<i>2x 40ml</i>	<i>H2SO4</i>	<i>TOC</i>	yes <del>no</del>			
<i>2x 40 ml</i>	<i>none</i>	<i>Methane/Ethane</i>	yes <del>no</del>			
		<i>Ethane</i>	yes <del>no</del>			
			yes <del>no</del>			
			yes <del>no</del>			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.: <i>MW-26</i>	Job Number: <i>1126</i>
	Client: <i>MUSTAR vabc</i>	Date: <i>12-13-16</i>
	Project: <i>gwm</i>	Sampler: <i>JGM</i>
	Weather: <i>Partly Sunny</i>	Time In/Out:

**WELL DATA**

Well Depth: <i>—</i>	Well Diameter: <i>2"</i>	Water Height: <i>—</i>
Depth to Water: <i>26.10</i>	Screened Interval: <i>—</i>	x Multiplier: <i>—</i>
Water Column Length: <i>—</i>	Depth to Free Product: <i>—</i>	x Casing Volumes: <i>—</i>
Purge Volume: <i>—</i>	Free Product Thickness: <i>—</i>	= Purge Volume: <i>—</i>
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162
		4-inch = 0.653
		1 gallon = 3.785 liters

**PURGING DATA**

Purge Method: <i>BP</i>				Pump Intake Depth: <i>MS</i>				Comments			
Sampling Method: <i>LF</i>				Tubing Type: <i>HDPE</i>							
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
<i>1155</i>			<i>26.10</i>	<i>.25</i>	<i>7.08</i>	<i>12.59</i>	<i>2511</i>	<i>6.40</i>	<i>114.8</i>	<i>—</i>	<i>Clear</i>
<i>1158</i>			<i>26.00</i>	<i>.25</i>	<i>7.16</i>	<i>12.66</i>	<i>2589</i>	<i>6.30</i>	<i>110.4</i>	<i>—</i>	<i>Clear</i>
<i>1201</i>			<i>25.90</i>	<i>.25</i>	<i>7.55</i>	<i>13.81</i>	<i>3041</i>	<i>1.26</i>	<i>108.5</i>	<i>—</i>	<i>Clear</i>
<i>1204</i>			<i>26.00</i>	<i>.25</i>	<i>7.58</i>	<i>13.95</i>	<i>3079</i>	<i>0.90</i>	<i>104.2</i>	<i>—</i>	<i>Clear</i>
<i>1207</i>			<i>25.90</i>	<i>.25</i>	<i>7.60</i>	<i>14.02</i>	<i>3087</i>	<i>0.88</i>	<i>102.4</i>	<i>—</i>	<i>Clear</i>
			<i>? ↑</i>								

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


**SAMPLING DATA**

Sample ID: <i>MW-26</i>	Sampling Flow Rate: <i>.25</i>	Analytical Laboratory: <i>Pate</i>				
Sample Time: <i>1207</i>	Final Depth to Water: <i>25.90</i>	Did Well Dewater?: <i>no</i>				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<i>3x 40 mL</i>	<i>HCL</i>	<i>HVOL</i>	<i>yes no</i>	<i>—</i>	<i>—</i>	<i>—</i>
<i>2x 40 mL</i>	<i>H2SO4</i>	<i>TOC</i>	<i>yes no</i>	<i>—</i>	<i>—</i>	<i>—</i>
<i>2x 40 mL</i>	<i>none</i>	<i>Methane</i>	<i>yes no</i>	<i>—</i>	<i>—</i>	<i>—</i>
		<i>Ethane</i>	<i>yes no</i>			
		<i>Ethene</i>	<i>yes no</i>			
			<i>yes no</i>			

**COMMENTS**

*\* water level came up during monitoring*

**WELL MONITORING DATA SHEET**

	Well I.D.	MW-251'	Job Number:	1126
	Client:	MUSTAK	Date:	12-13-16
	Project:	GWM	Sampler:	J6M
	Weather:	Partly Sunny cold	Time In/Out:	

**WELL DATA**

Well Depth:	~	Well Diameter:	2"	Water Height	~
Depth to Water:	25.69	Screened Interval:	~	x Multiplier	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes	~
Purge Volume:	~	Free Product Thickness:	~	= Purge Volume	~
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				BP				Pump Intake Depth:			MS		Comments	
Sampling Method:				LF				Tubing Type:			HDPE			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks		
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria			
1245			25.69	.25	9.33	10.14	212	8.79	51.4	-	Clear			
1248			25.47	.25	9.20	11.98	151	2.06	53.6	-	Clear			
1251			25.36	.25	9.17	12.14	149	1.78	55.1	-	Clear			
1254			25.35	.25	9.15	12.22	146	1.72	57.3	-	Clear			

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear


**SAMPLING DATA**

Sample ID:	MW-251	Sampling Flow Rate:	.25	Analytical Laboratory:	Paci		
Sample Time:	1254	Final Depth to Water:	25.35	Did Well Dewater?	no		
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	MS/MSD	Duplicate ID
3x40 ML	HCL	HVOC	yes	no	~	~	~
			yes	no			
			yes	no			
			yes	no			
			yes	no			
			yes	no			

**COMMENTS**

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**WELL MONITORING DATA SHEET**

	Well I.D.	S-2	Job Number:	1126
	Client:	MUSTAF VADL	Date:	12-13-16
	Project:	BLM	Sampler:	567
	Weather:	Foggy	Time In/Out:	

**WELL DATA**

Well Depth:	~	Well Diameter:	2"	Water Height:	~
Depth to Water:	24.85	Screened Interval:	~	x Multiplier:	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes:	~
Purge Volume:	~	Free Product Thickness:	~	= Purge Volume:	~
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:	BP	Pump Intake Depth:	MS	Comments:	
Sampling Method:	LF	Tubing Type:	HOPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
0930			24.85	.2	7.95	12.42	1020	1.41	73.9	-	IRON
0933			24.93	.2	7.99	12.40	1026	1.33	71.5	-	colored
0936			25.06	.2	7.91	12.38	1036	1.30	71.6	-	
0939			25.15	.2	7.92	12.37	1039	1.26	71.6	-	↓

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	S-2	Sampling Flow Rate:	.20	Analytical Laboratory:	PALC
Sample Time:	0939	Final Depth to Water:	25.15	Did Well Dewater?	no
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD Duplicate ID
3x 40 ml	HCL	HVOC	yes no		
			yes no		
			yes no		
			yes no		
			yes no		
			yes no		

**COMMENTS**


WELL MONITORING DATA SHEET



Well I.D.	MW 24 D	Job Number:	1126
Client:	MUSTAR VORL	Date:	12-12-16
Project:	BWM	Sampler:	JGM
Weather:	PARTLY SUNNY	Time In/Out:	-

WELL DATA

Well Depth:	~	Well Diameter:	2"	Water Height	~
Depth to Water:	25.17	Screened Interval:	~	x Multiplier	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes	~
Purge Volume:	-	Free Product Thickness:	~	= Purge Volume	~
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

PURGING DATA

Purge Method:				BP				Pump Intake Depth:				MS				Comments	
Sampling Method:				LF				Tubing Type:				HDPE					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks					
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria						
1537			25.17	.25	7.78	13.28	207	11.53	43.8	-	clear						
1540			25.60	.25	8.12	13.71	212	1.98	16.7	-	clear						
1543			25.60	.25	8.18	14.00	214	.99	1.01	-	clear						
1546			25.60	.25	8.23	14.15	215	.94	-10.3	-	clear						
1549			25.60	.25	8.25	14.25	217	0.85	-15.9	-	clear						

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW 24 D	Sampling Flow Rate:	.25	Analytical Laboratory:	Pace		
Sample Time:	1549	Final Depth to Water:	25.60	Did Well Dewater?	NO		
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
3 x 40 ml	VQA	HVOC	yes no	-	-	-	
			yes no				
			yes no				
			yes no				
			yes no				

COMMENTS


**WELL MONITORING DATA SHEET**



Well I.D.	W16MS3-40	Job Number:	1126
Client:	MUST of Vale	Date:	12-16-16
Project:	60M	Sampler:	J6m
Weather:	Sunny, cold	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height:	—
Depth to Water:	23.25	Screened Interval:	40'	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP	Pump Intake Depth:	MS	Comments:	
Sampling Method:	LF	Tubing Type:	HDPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1010			23.25	.20	7.02	14.21	531	6.32	11.8	-	clear
1013			23.29	.20	7.29	14.28	536	6.20	-1.0	-	clear
1016			23.32	.20	7.31	14.43	538	6.10	-4.1	-	clear
1019			23.35	.20	7.33	14.56	542	5.95	-9.2	-	clear

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	M6MS3-40	Sampling Flow Rate:	.20	Analytical Laboratory:	Pace	
Sample Time:	1019	Final Depth to Water:	23.35	Did Well Dewater?	no	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40ml	HCL	HvOC	yes no	—	—	—
2 X 40ml	H2SO4	TOC	yes no	—	—	—
2 X 40ml	none	Methane	yes no	—	—	—
		Ethane	yes no			
		Ethanol	yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	M6753-60	Job Number:	1126
Client:	Nustar Vancouver	Date:	12-16-16
Project:	GM	Sampler:	JGM
Weather:	Partly Sunny, cold	Time In/Out:	

**WELL DATA**

Well Depth:	~	Well Diameter:	—	Water Height:	—
Depth to Water:	23.38	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	~	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	—

**PURGING DATA**

Purge Method:				Pump Intake Depth:				Comments			
BP				MS							
Sampling Method:				Tubing Type:							
IF				HDPE							
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (bt)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1035			23.38	.20	7.61	11.11	105	6.00	48.2	—	clear
1038			23.41	.20	7.82	12.01	91	4.80	46.1	—	clear
1041			23.42	.20	7.83	12.26	90	4.63	43.9	—	clear
1044			23.43	.20	7.84	12.48	87	4.41	42.7	—	clear

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	M6753-60	Sampling Flow Rate:	.20	Analytical Laboratory:	pac	
Sample Time:	1044	Final Depth to Water:	23.43	Did Well Dewater?	no	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x 40 ml	HCl	HVOC	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**




**WELL MONITORING DATA SHEET**



Well I.D.	M6MS1-60	Job Number:	1126
Client:	MUSTAR	Date:	12-26-16
Project:	GWM	Sampler:	JGM
Weather:	Sunny,	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	24.90	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP			Pump Intake Depth:	MS			Comments			
Sampling Method:	LF			Tubing Type:	HDPE						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1210			24.90	.20	9.39	15.21	111	5.57	-0.3	—	clear
1213			24.91	.20	8.83	15.22	96	6.48	16.1	—	clear
1216			24.91	.20	8.80	15.23	95	6.65	20.2	—	clear
1219			24.93	.20	8.79	15.24	92	6.78	28.9	—	clear


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	M6MS1-60	Sampling Flow Rate:	.20	Analytical Laboratory:	Pace	
Sample Time:	1219	Final Depth to Water:	24.93	Did Well Dewater?	no	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x40 ML	HCL	HVOC	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.: <i>M6MS2-60</i>	Job Number: <i>1126</i>
	Client: <i>MUSTAR VAPOR</i>	Date: <i>12-16-16</i>
	Project: <i>GLM</i>	Sampler: <i>JGM</i>
	Weather: <i>SUNNY</i>	Time In/Out:

**WELL DATA**

Well Depth: <i>—</i>	Well Diameter: <i>—</i>	Water Height: <i>—</i>
Depth to Water: <i>24.60</i>	Screened Interval: <i>—</i>	x Multiplier: <i>—</i>
Water Column Length: <i>—</i>	Depth to Free Product: <i>—</i>	x Casing Volumes: <i>—</i>
Purge Volume: <i>—</i>	Free Product Thickness: <i>—</i>	= Purge Volume: <i>—</i>
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162
		4-inch = 0.653
		1 gallon = 3.785 liters

**PURGING DATA**

Purge Method: <i>RP</i>	Pump Intake Depth: <i>M5</i>	Comments
Sampling Method: <i>LF</i>	Tubing Type: <i>HDPE</i>	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
<i>1305</i>			<i>24.60</i>	<i>.20</i>	<i>9.54</i>	<i>14.40</i>	<i>132</i>	<i>2.84</i>	<i>-0.3</i>	<i>—</i>	<i>clear</i>
<i>1308</i>			<i>24.63</i>	<i>.20</i>	<i>9.54</i>	<i>14.66</i>	<i>111</i>	<i>1.01</i>	<i>-5.8</i>	<i>—</i>	<i>clear</i>
<i>1311</i>			<i>24.68</i>	<i>.20</i>	<i>9.54</i>	<i>14.83</i>	<i>108</i>	<i>0.93</i>	<i>-8.0</i>	<i>—</i>	<i>clear</i>
<i>1314</i>			<i>24.70</i>	<i>.20</i>	<i>9.56</i>	<i>14.96</i>	<i>106</i>	<i>.84</i>	<i>-10.7</i>	<i>—</i>	<i>clear</i>

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID: <i>M6MS2-60</i>	Sampling Flow Rate: <i>.20</i>	Analytical Laboratory: <i>Pace</i>				
Sample Time: <i>1314</i>	Final Depth to Water: <i>24.70</i>	Did Well Dewater? <i>NO</i>				
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<i>3 x 40 mL</i>	<i>HCL</i>	<i>HVOC</i>	yes <del>no</del>	<i>—</i>	<i>—</i>	<i>—</i>
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

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**WELL MONITORING DATA SHEET**



Well I.D.	M6M52-40	Job Number:	1126
Client:	Mustar	Date:	12-16-16
Project:	GWM	Sampler:	J67
Weather:	Sunny	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	—	Water Height	—
Depth to Water:	24.25	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				BP	Pump Intake Depth:				MS	Comments		
Sampling Method:				RF	Tubing Type:				HDPE			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks	
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria	
1245			24.25	.20	8.20	14.86	1233	6.05	-5.3	-	Clear	
1248			24.26	.20	9.13	14.85	1286	0.83	-21.6	-	Clear	
1251			24.27	.20	9.18	14.85	1291	0.85	-23.0	-	Clear	
1254			24.28	.20	9.18	14.86	1295	0.80	-28.1	-	Clear	

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	M6M52-40	Sampling Flow Rate:	.20	Analytical Laboratory:	Pace	
Sample Time:	1254	Final Depth to Water:	24.28	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x40ml	HCL	H VOC	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

**WELL MONITORING DATA SHEET**



Well I.D.	M6M51-43	Job Number:	1126
Client:	Mustaf Vancouver	Date:	12-16-16
Project:	6M	Sampler:	J6M
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:	~	Well Diameter:	~	Water Height:	~
Depth to Water:	24.73	Screened Interval:	~	x Multiplier:	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes:	~
Purge Volume:	~	Free Product Thickness:	~	= Purge Volume:	~
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	~

**PURGING DATA**

Purge Method:				ZF				Pump Intake Depth:			MS		Comments	
Sampling Method:				BP				Tubing Type:			HDPE			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks		
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria			
1135			24.73	.20	6.70	14.23	1602	4.96	71.0	-		clear		
1138			24.76	.20	7.63	14.61	1611	5.89	0.1	-				
1141			24.77	.20	7.67	14.83	1615	5.94	-10.3					
1144			24.78	.20	7.72	14.97	1630	6.06	-17.5	-		clear		

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	M6M51-43	Sampling Flow Rate:	.20	Analytical Laboratory:	Pace	
Sample Time:	1144	Final Depth to Water:	24.78	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 mL	HCL	HVOC	yes no	~	~	~
2 x 40 mL	H2SO4	TOC	yes no	~	~	~
2 x 40 mL	NONE	Methane	yes no	~	~	~
		Ethane	yes no			
		Ethene	yes no			
			yes no			

**COMMENTS**

\* Brake H2SO4 Sample vial → cap broke while sealing. Top of glass broke as well. Will submit 1 TOC vial.

**WELL MONITORING DATA SHEET**



*Gauged @ Inflection*

Well I.D.	MW-325	Job Number:	1126
Client:	MUSTAR VANCOUVER	Date:	12-14-16
Project:	BWM	Sampler:	J6m
Weather:	Cloudy, Cold	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	26.18	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP			Pump Intake Depth:	MS Dedicated			Comments			
Sampling Method:	LE			Tubing Type:	HDPE Dedicated						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	←- Stabilization Criteria
1159			26.18	0.2	8.05	14.01	257	4.76	65.2	—	clear
1202			26.63	0.20	8.06	14.38	168	1.55	58.6	—	clear
1205			27.04	0.20	7.91	14.50	149	1.49	54.4	—	clear
1208			27.04	.20	7.88	14.51	143	1.41	54.3	—	clear
1211			27.04	.20	7.88	14.52	143	1.39	54.4	—	clear

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-325	Sampling Flow Rate:	0.20	Analytical Laboratory:	Pace	
Sample Time:	1211	Final Depth to Water:	27.04	Did Well Dewater?	NC	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 X 40ml	HCL	4 VOL	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

26.50 = MW 32 i @ 1214  
Gauged @ Inflection for  
Representative data

**WELL MONITORING DATA SHEET**



Well I.D.	MW-19	Job Number:	1126
Client:	Nustar Vancouver	Date:	12-12-16
Project:	6WM	Sampler:	JGM
Weather:	Rainy	Time In/Out:	

**WELL DATA**

Well Depth:	~	Well Diameter:	2 1/2	Water Height:	~
Depth to Water:	25.94	Screened Interval:	~	x Multiplier:	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes:	~
Purge Volume:	~	Free Product Thickness:	~	= Purge Volume:	~
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BF			Pump Intake Depth:	MS			Comments			
Sampling Method:	LF			Tubing Type:	HDPE						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
1305			25.94	.25	7.48	14.44	1818	8.49	179.5	-	clear
1308			25.94	.25	7.74	14.52	1834	9.06	176.8	-	clear
1311			25.94	.25	7.74	14.48	1838	9.07	176.8	-	clear
1314			25.94	.25	7.83	14.39	1826	9.22	175.2	-	clear
1317			SAMPLE								


Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-19	Sampling Flow Rate:	.25	Analytical Laboratory:	Pace	
Sample Time:	1317	Final Depth to Water:	25.94	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x 40 ml	HCL	HVOC	yes no	~	-	-
2 x 40 ml	H2SO4	TOC	yes no			
3 x 40 ml	HCL	HVOC	yes no			DUP
2 x 40 ml	none	Methoxyethanol	yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	MW-23 i	Job Number:	1126
	Client:	Mustar vani	Date:	12-13-16
	Project:	GWM	Sampler:	JGM
	Weather:	50994	Time In/Out:	

WELL DATA					
Well Depth:	-	Well Diameter:	2"	Water Height	~
Depth to Water:	25.71	Screened Interval:	~	x Multiplier	-
Water Column Length:	-	Depth to Free Product:	-	x Casing Volumes	-
Purge Volume:	-	Free Product Thickness:	-	= Purge Volume	-
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA			
Purge Method:	BP	Pump Intake Depth:	M/S
Sampling Method:	ZF	Tubing Type:	H/DPE
Comments			

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1030			25.71	.20	9.04	12.0	119	8.85	49.4	-	clear
1033			25.71	.20	9.11	14.13	111	4.98	46.6	-	clear
1036			25.71	.20	9.06	14.22	109	4.85	47.8	-	clear
1039			25.71	.20	9.02	14.28	106	4.84	47.6	-	clear

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA						
Sample ID:	MW-23 i	Sampling Flow Rate	.20	Analytical Laboratory:	Pace	
Sample Time:	1039	Final Depth to Water:	25.71	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x 40ml	HCL	HVOC	yes no	-	-	-
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS	



## WELL MONITORING DATA SHEET

Well I.D.	MW-21i-105	Job Number:	1126
Client:	MUSTAK VAPC	Date:	12-13-16
Project:	6UM	Sampler:	J6M
Weather:	partly sunny, cold	Time In/Out:	

### WELL DATA

Well Depth:	—	Well Diameter:	2"
Depth to Water:	25.76	Screened Interval:	—
Water Column Length:	—	Depth to Free Product:	—
Purge Volume:	—	Free Product Thickness:	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162
		4-inch = 0.653	1 gallon = 3.785 liters

### PURGING DATA

Purge Method:	BP	Pump Intake Depth:	MS
Sampling Method:	ZF	Tubing Type:	HDPE

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria	
1440			25.76	.25	8.21	10.63	115	5.22	40.1	—	Clear	
1443			25.55	.25	8.23	11.23	89	1.16	40.1	—	Clear	
1446			25.59	.25	8.25	11.44	89	1.07	42.3	—	Clear	
1449			25.63	.25	8.27	11.68	88	1.00	41.5	—	Clear	

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

### SAMPLING DATA

Sample ID:	MW-21i-105	Sampling Flow Rate	0.25	Analytical Laboratory:	PACC		
Sample Time:	1449	Final Depth to Water:	25.63	Did Well Dewater?	NO		
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	MS/MSD	Duplicate ID
			yes	no			
			yes	no			
			yes	no			
			yes	no			
			yes	no			

### COMMENTS



**WELL MONITORING DATA SHEET**



Well I.D.	MW-221	Job Number:	1126
Client:	MUSTAR VANCOUVER	Date:	12-13-16
Project:	GUM	Sampler:	JGM
Weather:	Partly Sunny, cold	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	26.40	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP			Pump Intake Depth:	MS			Comments			
Sampling Method:	IF			Tubing Type:	HDPE						
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
1335			26.40	.25	8.43	10.39	185	5.87	75.8	—	clear
1338			25.52	.25	8.43	13.04	275	1.05	-19.0	—	clear
1341			26.01	.25	8.28	13.09	260	0.89	-23.6	—	clear
1344			26.12	.25	8.24	13.13	253	0.61	-29.9	—	clear
1347			26.30	.25	8.21	13.18	244	0.44	-31.8	—	clear

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-221	Sampling Flow Rate:	.25	Analytical Laboratory:	Pace	
Sample Time:	1347	Final Depth to Water:	26.30	Did Well Dewater?	no	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x 40 ml	HCL	H VOC	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MW-211-40	Job Number:	1126
Client:	Mustaf name	Date:	12-13-16
Project:	GM	Sampler:	JGM
Weather:	partly sunny, cold	Time In/Out:	—

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height:	—
Depth to Water:	25.40	Screened Interval:	—	x Multiplier:	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes:	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume:	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:				BP				Pump Intake Depth:				MS				Comments			
Sampling Method:				LF				Tubing Type:				HDPE							
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks							
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria								
1600			25.40	.25	8.17	13.44	161	4.00	51.8	—	Clear								
1603			25.42	.25	8.22	14.26	171	1.74	45.7	—	Clear								
1606			25.42	.25	8.18	14.20	171	1.33	43.0	—	Clear								
1609			25.42	.25	8.16	14.27	171	1.30	41.6	—	Clear								

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-211-40	Sampling Flow Rate:	.25	Analytical Laboratory:	Pace	
Sample Time:	1609	Final Depth to Water:	25.42	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x40mL	HCL	HVOL	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MW-201	Job Number:	1126
Client:	Mustar Vancouver	Date:	12-14-16
Project:	GWM	Sampler:	JGM
Weather:	cloudy COLD	Time In/Out:	

**WELL DATA**

Well Depth:	~	Well Diameter:	2"	Water Height:	~
Depth to Water:	24.95	Screened Interval:	~	x Multiplier:	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes:	~
Purge Volume:	~	Free Product Thickness:	~	= Purge Volume:	~
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:	BP	Pump Intake Depth:	MS	Comments:	
Sampling Method:	LP	Tubing Type:	HOPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
0850			24.95	.20	8.85	7.64	80	13.25	84.2	-	clear
0853			24.80	.20	8.99	11.85	85	4.95	75.9	-	clear
0856			24.83	.20	8.84	11.91	85	4.80	77.6	-	clear
0859			24.87	.20	8.80	12.06	85	4.62	78.2	-	clear
0902			24.90	.20	8.76	12.20	85	4.45	79.9	-	clear

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-201	Sampling Flow Rate:	.20	Analytical Laboratory:	Pace	
Sample Time:	0902	Final Depth to Water:	24.90	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x 40 mL	HCL	HVOC	yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MW-191	Job Number:	1126
Client:	Mustar Vancouver	Date:	12-14-16
Project:	Gwyn	Sampler:	J6m
Weather:	Cloudy, cold	Time In/Out:	

**WELL DATA**

Well Depth:	~	Well Diameter:	2"	Water Height	~
Depth to Water:	25.61	Screened Interval:	~	x Multiplier	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes	~
Purge Volume:	~	Free Product Thickness:	~	= Purge Volume	~
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:	BP	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	HDPE	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	-- Stabilization Criteria
1120			25.61	.20	7.94	8.63	107	7.28	87.6	-	clear
1123			2520	.20	8.03	12.21	150	1.82	85.6	-	clear
1126			2530	.20	8.06	12.33	153	1.79	75.9	-	clear
1129			2536	.20	8.10	12.38	156	1.77	67.7	-	clear

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-191	Sampling Flow Rate	.20	Analytical Laboratory:	Pace	
Sample Time:	1129	Final Depth to Water:	25.36	Did Well Dewater?	no	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x 40 ml	HCL	HVOC	yes no	-	-	-
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

\* water level came up during monitoring.

**WELL MONITORING DATA SHEET**



Well I.D.	MW-181	Job Number:	1721
Client:	Mustar Vancouver	Date:	12-14-16
Project:	GWM	Sampler:	JGM
Weather:	Cloudy 31°	Time In/Out:	

**WELL DATA**

Well Depth:	~	Well Diameter:	2"	Water Height	~
Depth to Water:	25.12	Screened Interval:	~	x Multiplier	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes	~
Purge Volume:	~	Free Product Thickness:	~	= Purge Volume	~
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:	BP	Pump Intake Depth:	MS	Comments	
Sampling Method:	LF	Tubing Type:	HDPE		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
0935			25.12	.25	8.55	8.59	81	9.35	99.4	-	clear
0938			25.12	.25	8.61	9.01	86	4.63	90.6	-	clear
0941			25.13	.25	8.65	12.35	87	4.67	84.1	-	clear
0944			25.14	.25	8.67	12.80	88	4.70	80.5	-	clear
0947			25.15	.25	8.72	12.82	89	4.72	78.0	-	clear


Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-181	Sampling Flow Rate:	.25	Analytical Laboratory:	Pacc	
Sample Time:	0947	Final Depth to Water:	25.15	Did Well Dewater?	no	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x 40 ml	HCL	HVOC	yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**

	Well I.D.	S-1	Job Number:	1126
	Client:	Mustaf vanc	Date:	12-13-16
	Project:	6wm	Sampler:	J6m
	Weather:	Loggy	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2"	Water Height	—
Depth to Water:	24.95	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:	BP	Pump Intake Depth:	MS	Comments
Sampling Method:	LF	Tubing Type:	HDPE	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria
0905			24.95	.20	8.96	11.70	73	6.67	53.2	—	clear
0908			24.95	.20	9.06	13.50	81	1.63	45.6	—	clear
0911			24.95	.20	9.04	13.49	84	1.71	41.3	—	clear
0914			24.95	.20	9.03	13.48	88	1.61	40.8	—	clear
0917			24.95	.20	8.99	13.50	90	1.55	37.9	—	clear


Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	S-1	Sampling Flow Rate	.20	Analytical Laboratory:	Pale	
Sample Time:	0917	Final Depth to Water:	24.95	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x40 ml	HCL	HVOC	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


WELL MONITORING DATA SHEET

	Well I.D.	MW-7	Job Number:	1126
	Client:	MUSTAR Vancouver	Date:	12-14-16
	Project:	GWM	Sampler:	J6M
	Weather:	Snow, cold	Time In/Out:	

WELL DATA

Well Depth:	~	Well Diameter:	4"	Water Height	~
Depth to Water:	25.60	Screened Interval:	~	x Multiplier	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes	~
Purge Volume:	~	Free Product Thickness:	~	= Purge Volume	~
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

PURGING DATA

Purge Method:				BP				Pump Intake Depth:			MS		Comments	
Sampling Method:				LF				Tubing Type:			HDPE			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks		
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria			
1325			25.60	.20	7.01	12.84	77	2.54	53.5	-	clear			
1328			26.11	.20	7.05	13.99	73	1.30	34.5	-	clear			
1331			26.14	.20	7.03	14.23	70	1.26	21.2	-	clear			
1334			26.17	.20	7.02	14.46	68	1.20	14.0	-	clear			
1337			26.20	.20	7.02	14.63	67	1.13	5.6	-	clear			

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	MW-7	Sampling Flow Rate	.20	Analytical Laboratory:	Pace	
Sample Time:	1337	Final Depth to Water:	26.20	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x 40 mL	HCL	HVOC	yes no	~	-	
3x 40 mL	HCL	HVOC	yes no	~	-	MW-7 DUP
			yes no			
			yes no			
			yes no			

COMMENTS

\* MAGGOTS IN WELL OK: Small White  
 x Sulfur Small crawling Bugs



**WELL MONITORING DATA SHEET**

Well I.D.	MW-16	Job Number:	1126
Client:	Mustaf Vahcova	Date:	12-14-16
Project:	Gum	Sampler:	J6m
Weather:	cloudy, cold	Time In/Out:	

**WELL DATA**

Well Depth:	~	Well Diameter:	4"	Water Height	~
Depth to Water:	24.85, 24.80	Screened Interval:	~	x Multiplier	~
Water Column Length:	~	Depth to Free Product:	~	x Casing Volumes	~
Purge Volume:	~	Free Product Thickness:	~	= Purge Volume	~
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				BP				Pump Intake Depth:			MS		Comments	
Sampling Method:				LF				Tubing Type:			HDPE			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks		
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria			
1020			24.80	.25	7.58	7.38	293	8.39	105.5	-	clear			
1023			24.95	.25	7.74	8.98	325	2.85	96.0	-	clear			
1026			24.95	.25	7.71	9.75	340	1.08	92.7	-	clear			
1029			24.95	.25	7.68	9.73	342	1.01	90.0	-	clear			
1032			24.95		7.63	9.73	344	.94	87.7	-	clear			
<p>↑ Extra Tubing Above ground &amp; EXTRA windy conditions 33°F</p>														

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-16	Sampling Flow Rate	.25	Analytical Laboratory:	Pace		
Sample Time:	1032	Final Depth to Water:	24.95	Did Well Dewater?	NO		
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
3x 40 mL	HCL	HVOC	yes no	-	-	-	
			yes no				
			yes no				
			yes no				
			yes no				

**COMMENTS**

\*24.85 was observed before pump installation









**WELL MONITORING DATA SHEET**



Well I.D.	MW-8	Job Number:	1126
Client:	Mustar Vancouver	Date:	12-14-16
Project:	Gwm	Sampler:	J67
Weather:	cloudy COLD	Time In/Out:	

**WELL DATA**

Well Depth:	—	Well Diameter:	2" 4"	Water Height	—
Depth to Water:	25.90	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:		RP		Pump Intake Depth:		MS		Comments			
Sampling Method:		ZF		Tubing Type:		HDPE					
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria
0815			25.90	.20	9.96	8.31	836	7.30	123.4	—	clear
0818			25.99	.20	9.54	12.99	945	2.29	106.9	—	clear
0821			26.05	.20	8.81	13.35	944	1.50	103.5	—	clear
0824			26.11	.20	8.76	13.61	944	1.31	99.1	—	clear
0827			26.20	.20	8.74	13.84	943	1.04	97.9	—	clear

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-8	Sampling Flow Rate:	.20	Analytical Laboratory:	PACC	
Sample Time:	0827	Final Depth to Water:	26.20	Did Well Dewater?	no	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x40ml	HCL	VOL	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**


**WELL MONITORING DATA SHEET**



Well I.D.	MW-9	Job Number:	1126
Client:	Mustar Vancouver	Date:	12-14-16
Project:	6000	Sampler:	JGM
Weather:	Snow	Time In/Out:	~

**WELL DATA**

Well Depth:	—	Well Diameter:	4"	Water Height	—
Depth to Water:	25.87	Screened Interval:	—	x Multiplier	—
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	~	= Purge Volume	—
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

**PURGING DATA**

Purge Method:				BP				Pump Intake Depth:			MS		Comments	
Sampling Method:				LF				Tubing Type:			HDPE			
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color	Other Remarks		
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	← Stabilization Criteria			
1415			25.87	.20	6.17	10.00	928	7.25	85.7	—	clear			
1418			25.87	.20	6.74	12.63	874	3.49	72.0	—	clear			
1421			25.87	.20	6.59	12.71	761	4.08	79.3	—	clear			
1424			25.87	.20	6.53	12.80	758	4.29	82.1	—	clear			
1427			25.87	.20	6.52	12.88	756	4.53	85.9	—	clear			

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	MW-9	Sampling Flow Rate	.20	Analytical Laboratory:	Pace	
Sample Time:	1427	Final Depth to Water:	25.87	Did Well Dewater?	NO	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x40ML	HCL	HVOC	yes no	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			

**COMMENTS**

Label came off bag









WELL MONITORING DATA SHEET



Well I.D.	<i>Equipment</i>	Job Number:	<i>1126</i>
Client:	<i>Blank, Mustat</i>	Date:	<i>12-16-16</i>
Project:	<i>Vancouver 600</i>	Sampler:	<i>JBM</i>
Weather:	<i>Sunny</i>	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:		Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:		Pump Intake Depth:		Comments							
Sampling Method:		Tubing Type:									
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	<i>Equipment</i>	Sampling Flow Rate:	<i>_____</i>	Analytical Laboratory:	<i>Pace</i>	
Sample Time:	<i>1340</i>	Final Depth to Water:	<i>_____</i>	Did Well Dewater?	<i>_____</i>	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
<i>3x 40ML</i>	<i>HCL</i>	<i>HVOC</i>	yes <input checked="" type="checkbox"/> no <input type="checkbox"/>	<i>_____</i>	<i>_____</i>	<i>_____</i>
			yes <input type="checkbox"/> no <input type="checkbox"/>			
			yes <input type="checkbox"/> no <input type="checkbox"/>			
			yes <input type="checkbox"/> no <input type="checkbox"/>			
			yes <input type="checkbox"/> no <input type="checkbox"/>			
			yes <input type="checkbox"/> no <input type="checkbox"/>			

COMMENTS


**WELL MONITORING DATA SHEET**



Well I.D.	<i>Field Blank</i>	Job Number:	<i>1126</i>
Client:	<i>MUSTAR VANCOUVER</i>	Date:	<i>12/12/16</i>
Project:	<i>GM</i>	Sampler:	<i>JGM</i>
Weather:		Time In/Out:	

**WELL DATA**

Well Depth:		Well Diameter:		Water Height	
Depth to Water:		Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

**PURGING DATA**

Purge Method:		Pump Intake Depth:					Comments				
Sampling Method:		Tubing Type:									
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

**SAMPLING DATA**

Sample ID:	<i>Field Blank</i>	Sampling Flow Rate:		Analytical Laboratory:	<i>Pace</i>		
Sample Time:	<i>0800</i>	Final Depth to Water:		Did Well Dewater?			
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	MS/MSD	Duplicate ID
<i>3 X 40ML</i>	<i>HCL</i>	<i>HVOC</i>	<del>yes</del> no				
			yes	no			
			yes	no			
			yes	no			
			yes	no			
			yes	no			

**COMMENTS**


Separate sheet

Field Blank

WELL MONITORING DATA SHEET



Well I.D.	TRIP Blank	Job Number:	1126
Client:	EO	Date:	12-12-16
Project:	MUSTAR VANCOUVER	Sampler:	JGM
Weather:	SUNNY	Time In/Out:	

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:		Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)		1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters

PURGING DATA

Purge Method:				Pump Intake Depth:				Comments			
Sampling Method:				Tubing Type:							
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<- Stabilization Criteria

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	TRIP Blank	Sampling Flow Rate		Analytical Laboratory:	Pace	
Sample Time:	1335	Final Depth to Water:		Did Well Dewater?		
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 40 ml	HCL	HVOC	yes no	12/16/16		TRIP
2 x 40 ml	HCL	HVOC	yes no	12/12/16		FIELD
			yes no			
			yes no			
			yes no			

COMMENTS

\* EOX sample Documentation ONLY

***Appendix B***

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**Historical Groundwater Analytical Data**

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-1	11/17/93	--	0.5	--	--	<0.250	<0.250	--	14.0	--	--	0.75	<0.250	--	1.40	<0.500
	09/01/95	<0.250	<0.500	<0.250	<0.250	<0.250	<0.250	<0.250	13.0	<0.250	<0.250	0.62	<0.250	--	0.89	0.61
	09/24/96	<0.0050	<0.0200	<0.0020	<0.0020	0.054	<0.0020	0.0084	11.0	0.083	0.017	2.60	0.068	--	1.80	0.42
	12/02/96	0.0008	<0.00050	<0.00050	<0.00020	0.0067	<0.00050	0.0003	1.50	0.0044	<0.00020	1.20	0.0073	--	0.31	0.0016
	11/12/97	<0.125	<0.250	<0.125	<0.125	<0.125	<0.125	<0.125	11.6	<0.125	<0.125	6.33	<0.125	--	2.88	<0.250
	08/11/99	<0.0500	<0.250	<0.0250	<0.250	0.0431	<0.0250	<0.0250	8.59	0.086	<0.0250	2.52	0.0525	--	1.21	0.408
	11/16/99	<0.0500	<0.125	<0.0250	<0.0500	0.038	<0.0250	<0.0250	6.25	0.0475	<0.0250	2.40	0.028	--	0.829	0.148
	02/29/00	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	6.72	0.0609	<0.0500	1.37	<0.100	--	0.59	0.438
	06/27/00	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	6.48	0.0651	<0.0500	1.78	<0.100	--	0.795	0.284
	08/31/00	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	5.16	<0.0500	<0.0500	1.96	<0.100	--	0.72	<0.0500
	11/30/00	<0.0200	<0.100	<0.0100	<0.0100	0.015	<0.0100	<0.0100	1.55	0.0127	<0.0100	0.66	<0.0200	--	0.234	<0.0100
	02/27/01	<0.100	<0.100	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	4.99	<0.0500	<0.0500	1.14	<0.100	--	0.44	0.19
	05/29/01	<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	4.05	<0.0250	<0.0250	1.04	<0.0500	--	0.407	0.091
	09/25/01	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	5.00	<0.0500	<0.0500	0.89	<0.0500	--	0.44	0.24
	12/17/01	<0.0020	<0.0100	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.109	0.00126	<0.0010	0.164	<0.0020	--	0.0429	<0.0010
	03/19/02	<0.0500	<0.0250	<0.0250	<0.0500	0.035	<0.0250	<0.0250	4.12	0.035	<0.0250	0.71	<0.0250	--	0.349	0.17
	05/30/02	<0.0100	<0.0050	<0.0050	<0.0100	0.0108	<0.0050	<0.0050	1.14	0.0066	<0.0050	0.307	<0.0050	--	0.101	0.0223
	11/08/02	<0.0200	<0.0100	<0.0100	<0.0200	0.0228	<0.0100	<0.0100	1.98	0.0202	<0.0100	0.367	<0.0100	--	0.174	0.0144
	05/30/03	<0.0200	<0.0100	<0.0100	<0.0200	0.0212	<0.0100	<0.0100	2.18	<0.0100	<0.0100	1.20	0.0142	--	0.34	0.0226
	11/02/04	<0.0200	<0.0100	<0.0100	<0.0200	0.0224	<0.0100	<0.0100	2.13	0.0236	<0.0100	0.335	<0.0100	--	0.169	0.0228
	11/16/04	<0.0120	<0.0120	<0.0120	<0.0120	0.015	<0.0120	<0.0120	1.30	<0.0120	<0.0120	0.31	<0.0120	--	0.13	<0.0120
	05/18/05	<0.0050	<0.0025	<0.0025	<0.0050	0.012	<0.0025	<0.0025	0.773	0.0141	<0.0025	0.193	<0.0025	--	0.0876	0.0038
	05/23/07	<0.0100	<0.0100	<0.0100	<0.0100	0.0155	<0.0100	<0.0100	1.11	<0.0100	<0.0100	0.0585	<0.0100	--	0.0454	0.0117
	09/11/07	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.916	<0.0250	<0.0250	0.034	<0.0250	--	0.034	0.0625
	12/13/07	<0.0100	<0.00500	<0.00500	<0.0100	0.0097	<0.00500	<0.00500	0.526	0.005	<0.00500	0.0819	<0.00500	--	0.0454	0.0088
	03/05/08	<0.00100	<0.000500	<0.000500	<0.00100	0.0161	<0.000500	0.00166	0.826	0.00918	0.00	0.0497	0.001	<0.000500	0.0456	0.0588
	09/19/08	<0.0200	<0.0100	<0.0100	<0.0200	0.0204	<0.0100	<0.0100	0.633	<0.0100	<0.0100	0.108	<0.0100	<0.0100	0.0748	<0.0100
	12/10/08	<0.0025	<0.0025	<0.0025	<0.0025	0.015	<0.0025	<0.0025	0.57	0.0062	<0.0025	0.028	<0.0025	<0.0025	0.025	0.048

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-1 (continued)	03/27/09	<0.0025	<0.0025	<0.0025	<0.0025	0.017	<0.00050	<0.0025	0.58	0.0057	<0.0025	0.039	<0.0025	<0.0025	0.042	0.0044
	06/17/09	<0.00090	<0.00090	<0.00090	<0.00090	0.0063	<0.00090	<0.00090	0.31	0.0036	0.00099	0.021	<0.00090	<0.00090	0.014	0.0097
	09/18/09	<0.00080	<0.00080	<0.00080	<0.00080	0.019	<0.00080	<0.00080	0.59	0.0042	0.0019	0.029	<0.00080		0.027	0.0081
	12/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	0.17	0.00072	0.00067	0.053	0.00053	<0.00050	0.026	<0.00050
	03/19/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0093	<0.00050	0.00061	0.30	0.0036	0.0014	0.022	<0.00050	<0.00050	0.021	0.026
	06/15/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0096	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.0066	<0.00050
	09/23/10	<0.00090	<0.00090	<0.00090	<0.00090	0.012	<0.00090	<0.00090	0.380	0.0034	0.0016	0.025	<0.00090	<0.00090	0.027	0.0071
	12/09/10	<0.0015	<0.0015	<0.0015	<0.0015	0.007	0.0015	<0.0015	0.250	0.0022	<0.0015	0.025	<0.0015	<0.0015	0.017	0.0080
	03/10/11	<0.0015	<0.0015	<0.0015	<0.0015	0.0075	<0.0015	<0.0015	0.250	0.003	<0.0015	0.016	<0.0015	<0.0015	0.016	0.018
	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0044	<0.0005	<0.0005	0.011	<0.0005	<0.0005	0.0034	<0.0005
	09/19/11	<0.0015	<0.0015	<0.0015	<0.0015	0.012	<0.0015	<0.0015	0.3	0.0032	<0.0015	0.0052	<0.0015	<0.0015	0.013	0.03
	12/09/11	<0.0015	<0.0015	<0.0015	<0.0015	0.011	<0.0015	<0.0015	0.26	0.0029	<0.0015	0.0062	<0.0015	<0.0015	0.0084	0.04
	03/09/12	<0.00050	<0.00050	<0.00050	<0.00050	0.008	<0.00050	<0.00050	0.20	0.0024	0.0010	0.0031	<0.00050	<0.00050	0.0095	0.02
	06/22/12	<0.0005	<0.0005	<0.0005	<0.0005	0.005	<0.0005	<0.0005	0.14	0.0017	0.0005	0.0170	<0.0005	<0.0005	0.0130	0.01
	09/13/12	<0.0015	<0.0015	<0.0015	<0.0015	0.010	<0.0015	<0.0015	0.26	0.0024	<0.0015	<0.0015	<0.0015	<0.0015	0.0070	0.03
	12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.047	0.00064	<0.00050	0.026	<0.00050	<0.00050	0.014	<0.00050
	03/15/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.14	0.0016	0.00080	0.00083	<0.00050	<0.00050	0.0060	0.00098
	06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0072	<0.00050	<0.00050	0.13	0.0019	0.00063	0.0011	<0.00050	<0.00050	0.0024	0.028
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.18	0.0016	0.0010	0.0032	<0.00050	<0.00050	0.0056	0.00092
	12/16/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0078	<0.00050	<0.00050	0.11	0.0018	<0.00050	0.0085	<0.00050	<0.00050	0.0059	0.013
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0091	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.0043	<0.00050
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0056	0.0450	0.0010	<0.00050	<0.00050	<0.00050	<0.00050	0.00065	0.0059
	9/30/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.17	0.0013	0.00083	0.012	<0.00050	<0.00050	0.0097	0.0033
	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.030	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.0094	<0.00050
	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0062	<0.00050	<0.00050	0.047	0.00067	<0.00050	0.0011	<0.00050	<0.00050	0.0019	<0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0095	<0.00050	<0.00050	0.075	0.00080	<0.00050	0.0043	<0.00050	<0.00050	0.0046	0.0049
9/24/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0084	<0.00050	<0.00050	0.039	0.00065	<0.00050	0.0028	<0.00050	<0.00050	0.0024	0.0327	
12/8/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.025	<0.00050	<0.00050	0.0180	<0.00050	<0.00050	0.0089	<0.00050	
3/7/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0044	<0.00050	<0.00050	0.0519	<0.00050	<0.00050	0.0180	<0.00050	<0.00050	0.0103	0.00057	
6/15/2016	<0.00050	<0.002	<0.00050	<0.00050	0.0037	<0.00050	<0.00050	0.0131	<0.00050	<0.00050	0.00067	<0.00050	<0.00050	0.0012	0.0053	
9/27/2016	<0.00050	<0.002	<0.00050	<0.00050	0.0086	<0.00050	<0.00050	0.0252	<0.00050	<0.00050	0.00230	<0.00050	<0.00050	0.0031	0.0239	
12/16/2016	<0.00050	<0.002	<0.00050	<0.00050	0.0034	<0.00050	<0.00050	0.0225	<0.00050	<0.00050	0.00800	<0.00050	<0.00050	0.0058	0.0009	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-2	11/17/93	--	0.051	--	--	0.012	<0.00050	--	0.01	--	--	<0.00050	<0.00050	--	<0.00050	<0.00010
	09/01/95	<0.00050	0.016	<0.00050	<0.00020	0.0082	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	0.0022
	09/24/96	<0.00050	0.019	<0.00020	<0.00020	0.0096	0.0005	<0.00020	0.0094	<0.00020	<0.00020	<0.00020	<0.00050	--	0.0003	0.0051
	12/02/96	<0.00050	0.0088	<0.00050	<0.00020	0.0069	0.0006	<0.00020	0.011	<0.0010	<0.00020	<0.00050	<0.0010	--	<0.00030	0.0072
	11/13/97	<0.00050	<0.0010	<0.00050	<0.00050	0.00532	0.000571	<0.00050	0.0079	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.0010
	08/11/99	<0.0010	0.0183	<0.00050	<0.00050	0.00638	<0.00050	<0.00050	0.02	<0.00050	<0.00050	<0.00050	<0.0010	--	0.0104	0.00164
	02/29/00	<0.0010	0.016	<0.00050	<0.00050	0.00568	<0.00050	<0.00050	0.0235	<0.00050	<0.00050	<0.00050	<0.0010	--	0.00452	0.00121
	06/27/00	<0.0010	0.0183	<0.00050	<0.00050	0.00534	<0.00050	0.00127	0.0234	<0.00050	<0.00050	0.0128	<0.0010	--	0.0166	<0.00050
	05/30/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	--	<0.00050	<0.00050
	05/30/02	<0.0010	0.00168	<0.00050	<0.0010	0.00265	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	0.00061	<0.00050	--	<0.00050	<0.00050
	11/08/02	<0.0010	0.0104	<0.00050	<0.0010	0.00313	<0.00050	<0.00050	0.00184	<0.00050	<0.00050	0.00105	<0.00050	--	0.00098	<0.00050
	05/30/03	<0.0010	0.00364	<0.00050	<0.0010	0.00195	<0.00050	<0.00050	0.00059	<0.00050	<0.00050	0.0066	<0.00050	--	0.00113	<0.00050
	09/12/07	<0.00100	0.0059	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	03/07/08	<0.00100	0.00786	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.001	<0.000500	<0.000500	<0.000500	<0.000500
	09/18/08	<0.00100	0.00593	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500
	03/24/09	<0.00050	0.0048	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/16/09	<0.00050	0.0051	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.00085	<0.00050
	03/19/10	<0.00050	0.0057	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/23/10	<0.0005	0.0038	<0.00050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	03/09/11	<0.00050	0.0048	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/16/11	<0.00050	0.0043	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/09/12	<0.00050	0.0043	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/13/12	<0.00050	0.0034	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/14/13	<0.00050	0.0031	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/19/13	<0.00050	0.0029	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/30/2014	<0.00050	0.0023	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/19/2015	<0.00050	0.00096	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/23/2015	<0.00050	0.00270	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/7/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/29/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-3	11/17/93	--	0.21	--	--	0.027	0.004	--	0.24	--	--	0.19	0.02	--	0.097	0.13
	09/01/95	<0.0500	<0.100	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	2.70	<0.0500	<0.0500	1.30	<0.0500	--	0.14	0.73
	09/24/96	<0.0050	<0.0200	0.0079	<0.0020	0.012	<0.0020	<0.0020	1.10	0.0095	0.004	1.80	0.021	--	0.33	0.082
	12/02/96	<0.0500	<0.0500	<0.0500	<0.0200	<0.0300	<0.0500	<0.0200	0.65	<0.100	<0.0200	2.10	<0.100	--	0.47	<0.0500
	11/12/97	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.46	<0.0250	<0.0250	2.00	<0.0250	--	0.241	<0.0500
	08/11/99	<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.50	<0.0100	<0.0100	1.76	0.0254	--	0.247	<0.0100
	11/16/99	<0.0200	<0.0500	<0.0100	<0.0200	0.014	<0.0100	<0.0100	0.628	0.0152	<0.0100	0.70	<0.0100	--	0.132	<0.0100
	02/29/00	<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.473	<0.0100	<0.0100	1.89	0.0254	--	0.356	<0.0100
	06/27/00	<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.41	<0.0100	0.0102	1.46	<0.0200	--	0.241	<0.0100
	08/31/00	<0.0200	<0.100	<0.0100	<0.0100	0.0522	<0.0100	<0.0100	2.58	0.0255	<0.0100	0.399	<0.0200	--	0.1	0.171
	11/30/00	<0.0050	<0.0250	<0.0025	<0.0025	0.0133	<0.0025	<0.0025	0.374	0.00373	<0.0025	0.366	<0.0050	--	0.0803	0.0031
	02/27/01	<0.0050	<0.0250	0.00364	<0.0025	0.00578	<0.0025	<0.0025	0.153	<0.0025	0.0025	0.358	<0.0050	--	0.0761	<0.0025
	05/29/01	<0.0050	<0.0250	0.0028	<0.0025	<0.0025	<0.0025	<0.0025	0.112	<0.0025	<0.0025	0.647	0.00512	--	0.0933	<0.0025
	09/25/01	<0.0013	0.0031	0.0024	<0.0013	0.01	0.002	<0.0013	0.21	0.003	0.0017	0.55	0.0072	--	0.09	0.0049
	12/17/01	<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.164	<0.0050	<0.0050	0.826	0.0169	--	0.155	<0.0050
	03/19/02	<0.0050	<0.0025	0.00275	<0.0050	<0.0025	<0.0025	<0.0025	0.138	0.0041	<0.0025	0.758	0.0096	--	0.107	<0.0025
	05/30/02	<0.0100	0.0078	<0.0050	<0.0100	0.0278	<0.0050	<0.0050	1.38	0.0426	0.006	0.302	0.0115	--	0.0551	0.0967
	11/08/02	<0.0050	0.015	<0.0025	<0.0050	0.0294	0.00355	<0.0025	0.399	0.00905	0.0057	0.359	0.0058	--	0.0671	0.0194
	05/30/03	<0.0050	<0.0025	0.00645	<0.0050	<0.0025	<0.0025	<0.0025	0.0501	0.00365	<0.0025	0.706	0.00495	--	0.0726	<0.0025
	11/16/04	<0.0100	<0.0050	<0.0050	<0.0100	0.015	<0.0050	<0.0050	0.44	0.0059	<0.0050	0.27	<0.0050	--	0.072	<0.0050
	03/23/05	<0.0020	0.00226	0.00416 B	<0.0020	0.00892	<0.0010	<0.0010	0.246	0.0084	0.00286	0.329	0.00504	--	0.0719	0.00384
	05/18/05	<0.0020	<0.0010	0.00386	<0.0020	0.00574	<0.0010	<0.0010	0.188	0.00472	0.00302	0.304	0.00506	--	0.0885	<0.0010
	05/23/07	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.11	0.0063	<0.00200	0.349	0.00454	--	0.0706	<0.00200
	09/11/07	<0.00500	0.00995	0.0144	<0.00500	0.043	0.0061	<0.00250	0.95	0.0282	0.012	0.601	0.031	--	0.223	0.0061
	12/12/07	<0.0100	<0.00500	<0.00500	<0.0100	<0.00500	<0.00500	<0.00500	0.0957	<0.00500	<0.00500	0.254	<0.00500	--	0.0632	<0.00500
	03/06/08	<0.00100	<0.000500	0.00210 J	<0.00100	0.00132	<0.000500	<0.000500	0.127	0.00849	0.00237	0.144	0.00566	<0.000500	0.0947	<0.000500
	09/19/08	<0.00500	0.0037	0.00265 J	<0.00500	0.0106	<0.00250	<0.00250	0.187	0.00585	0.00295	0.283	0.0066	<0.00250	0.075	<0.00250
	12/10/08	<0.00090	0.0015	0.0019	<0.00090	0.0053	0.0012	<0.00090	0.12	0.0043	0.0015	0.20	0.0038	<0.00090	0.054	<0.00090
	03/26/09	<0.00050	<0.00050	0.0014	<0.00050	0.0016	<0.00050	<0.00050	0.083	0.0043	0.0012	0.18	0.0036	<0.00050	0.046	<0.00050
	06/17/09	<0.00050	<0.00050	0.0011	<0.00050	0.00089	<0.00050	<0.00050	0.076	0.0047	0.00071	0.19	0.0034	<0.00050	0.049	<0.00050
	09/18/09	<0.00050	<0.00050	0.0033	<0.00050	0.01	<0.00050	<0.00050	0.18	0.0062	0.0022	0.27	0.0073	<0.00050	0.062	0.0012

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-3 (continued)	12/17/09	<0.00090	<0.00090	0.00096	<0.00090	<0.00090	<0.00090	<0.00090	0.05	0.0032	<0.00090	0.18	0.0032	<0.00090	0.047	<0.00090
	03/19/10	<0.00090	<0.00090	0.001 BE	<0.00090	<0.00090	<0.00090	<0.00090	0.077	0.0054	<0.00090	0.28	0.0041	<0.00090	0.049	<0.00090
	06/16/10	<0.00050	<0.00050	0.0023	<0.00050	0.0016	0.0009	<0.00050	0.042	0.0017	<0.00050	0.18	0.0019	<0.00050	0.03	<0.00050
	09/23/10	<0.0005	<0.0005	0.0028 BE	<0.0005	0.00056	<0.0005	<0.0005	0.075	0.0044	0.00051	0.220	0.003	<0.0005	0.039	<0.0005
	12/09/10	<0.0005	<0.0005	0.0027	<0.0005	<0.0005	<0.0005	<0.0005	0.039	0.0034	<0.0005	0.210	0.003	<0.0005	0.035	<0.0005
	03/10/11	<0.00050	<0.00050	0.0054	<0.00050	<0.00050	<0.00050	<0.00050	0.0089	0.0011	<0.00050	0.110	0.0016	<0.00050	0.015	<0.00050
	06/10/11	<0.0005	<0.0005	0.0016	<0.0005	0.0022	0.00076	<0.0005	0.036	0.0011	0.00054	0.099	0.0016	<0.0005	0.03	<0.0005
	09/16/11	<0.00050	<0.00050	0.002	<0.00050	0.003	0.00059	<0.00050	0.07	0.0017	0.00091	0.13	0.0024	<0.00050	0.031	<0.00050
	12/09/11	<0.00050	<0.00050	0.0022	<0.00050	0.0029	0.00054	<0.00050	0.062	0.0016	0.00083	0.19	0.0026	<0.00050	0.045	<0.00050
	03/12/12	<0.00050	<0.00050	0.0024	<0.00050	0.001	<0.00050	<0.00050	0.05	0.0028	0.0010	0.1400	0.0031	<0.00050	0.0450	<0.00050
	06/21/12	<0.0005	<0.0005	0.0023	<0.0005	0.001	<0.0005	<0.0005	0.05	0.0027	0.0006	0.1700	0.0027	<0.0005	0.0370	<0.0005
	09/13/12	<0.00050	<0.00050	0.0017	<0.00050	0.004	<0.00050	<0.00050	0.10	0.0021	0.0014	0.1400	0.0033	<0.00050	0.0450	<0.00050
	12/13/12	<0.00050	<0.00050	0.0013	<0.00050	0.00078	<0.00050	<0.00050	0.027	0.0016	<0.00050	0.17	0.0020	<0.00050	0.036	<0.00050
	03/14/13	<0.00050	<0.00050	0.0018	<0.00050	0.0010	<0.00050	<0.00050	0.064	0.0025	0.0014	0.16	0.0032	<0.00050	0.053	<0.00050
	06/14/13	<0.00090	<0.00090	0.0014	<0.00090	0.0011	<0.00090	<0.00090	0.068	0.0031	0.0013	0.21	0.0033	<0.00090	0.048	<0.00090
	09/19/13	<0.00050	<0.00050	0.0011	<0.00050	0.0011	<0.00050	<0.00050	0.099	0.0015	0.0014	0.086	0.0017	<0.00050	0.03	<0.00050
	12/16/13	<0.00050	<0.00050	0.0014	<0.00050	0.0013	<0.00050	<0.00050	0.047	0.0021	0.00081	0.17	0.0024	<0.00050	0.038	<0.00050
	3/21/2014	<0.00050	<0.00050	0.0013	<0.00050	0.00064	<0.00050	<0.00050	0.0270	0.0016	<0.00050	0.150	0.0020	<0.00050	0.030	<0.00050
	6/24/2014	<0.00050	0.00086	0.00086	<0.00050	0.00140	<0.00050	<0.00050	0.0650	0.0032	0.00130	0.180	0.0032	<0.00050	0.044	<0.00050
	9/30/2014	<0.00050	<0.00050	0.001	<0.00050	0.0067	0.00070	<0.00050	0.11	0.0021	0.0013	0.18	0.0028	<0.00050	0.047	<0.00050
12/11/2014	<0.00050	<0.00050	0.0012	<0.00050	0.00080	<0.00050	<0.00050	0.028	0.0017	<0.00050	0.15	0.0022	<0.00050	0.037	<0.00050	
3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
6/15/2015	<0.00050	<0.00050	0.00086	<0.00050	0.0011	<0.00050	<0.00050	0.049	0.0020	0.00088	0.16	0.0028	<0.00050	0.044	<0.00050	
12/9/2015	<0.00050	<0.00050	0.00066	<0.00050	0.0049	<0.00050	<0.00050	0.072	0.0018	0.00110	0.15	0.0018	<0.00050	0.034	<0.00050	
3/7/2016	<0.00050	<0.0020	0.00076	<0.00050	0.0022	<0.00050	<0.00050	0.062	0.0025	0.0013	0.199	0.0036	<0.00050	0.0451	<0.00050	
6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0502	0.00082	<0.00050	0.0495	0.00077	<0.00050	0.0174	<0.00050	
9/30/2016	<0.00050	<0.0020	0.00067	<0.00050	0.0082	0.0007	<0.00050	0.0953	0.0015	0.0016	0.145	0.002	<0.00050	0.0401	<0.00050	
12/16/2016	<0.00050	<0.0020	0.00052	<0.00050	0.0011	<0.00050	<0.00050	0.0268	0.0009	0.0006	0.0862	0.0012	<0.00050	0.0239	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-4	11/17/93	--	0.85	--	--	0.012	<0.0500	--	0.02	--	--	0.04	<0.0500	--	0.0054	<0.0100
	09/01/95	<0.0050	0.34	<0.0050	<0.0050	0.0052	<0.0500	<0.0050	0.014	<0.0050	<0.0050	<0.0500	<0.0500	--	<0.0500	0.030
	09/24/96	<0.00050	0.3	<0.00020	<0.00020	0.0071	0.0014	<0.00020	0.0032	<0.00020	0.001	0.0005	<0.00050	--	0.0008	0.0047
	12/02/96	<0.00050	0.31	<0.00050	0.0003	0.0038	0.001	<0.00020	0.019	<0.0010	0.0003	<0.00050	<0.0010	--	<0.00030	0.039
	11/13/97	<0.00050	0.252	<0.00050	<0.00050	0.00422	0.00123	<0.00050	0.00691	<0.00050	0.000688	<0.00050	<0.00050	--	<0.00050	<0.0010
	08/11/99	<0.0020	0.144	<0.0010	<0.0010	0.00121	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0036	<0.0020	--	<0.0010	<0.0010
	11/16/99	<0.0010	0.0263	<0.00050	<0.0010	0.0023	<0.00050	<0.00050	0.00418	<0.00050	<0.00050	0.0012	<0.00050	--	0.00088	0.00207
	02/29/00	<0.0020	0.119	<0.0010	<0.0010	0.00284	<0.0010	<0.0010	0.0041	<0.0010	<0.0010	<0.0010	<0.0020	--	<0.0010	0.00572
	06/28/00	<0.0050	0.0594	<0.0025	<0.0025	0.00389	<0.0025	<0.0025	0.0025	<0.0025	<0.0025	<0.0025	<0.0050	--	<0.0025	<0.0025
	07/05/00	Well Abandoned														
	MW-5	11/17/93	--	1.90	--	--	<0.0250	<0.0250	--	0.10	--	--	1.20	<0.0250	--	0.052
09/01/95		<0.001	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	1.3	<0.001	<0.001	60.0	<0.001	--	<0.001	<0.002
09/24/96		<0.0050	0.14	<0.0020	<0.0020	0.035	<0.0020	0.0075	2.6	0.08	0.0053	16.0	0.064	--	0.67	0.37
12/02/96		0.071	<0.0500	<0.0500	0.027	<0.0300	<0.0500	<0.0200	5.6	<0.100	<0.0200	27.0	0.11	--	1.70	0.34
11/12/97		<0.500	<0.001	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	28.0	<0.500	--	1.25	<0.001
08/11/99		<0.200	<0.001	<0.100	<0.100	<0.100	<0.100	<0.100	1.75	<0.100	<0.100	25.1	<0.200	--	0.862	0.238
02/29/00		<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.126	<0.0500	<0.0500	5.25	<0.100	--	0.135	<0.0500
08/31/00		<0.0500	<0.250	<0.0250	<0.0250	0.0414	<0.0250	<0.0250	1.86	<0.0250	<0.0250	5.66	<0.0500	--	0.347	0.28
11/30/00		<0.0500	<0.250	<0.0250	<0.0250	0.0273	<0.0250	<0.0250	3.85	0.0268	<0.0250	6.15	<0.0500	--	0.511	0.189
02/27/01		<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	1.37	<0.0250	<0.0250	7.35	<0.0500	--	0.445	0.127
05/30/01		<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	2.41	<0.0250	<0.0250	5.56	<0.0500	--	0.439	0.129
09/25/01		<0.0250	0.2	<0.0250	<0.0250	0.034	<0.0250	<0.0250	1.80	<0.0250	<0.0250	2.20	<0.0250	--	0.18	0.18
12/17/01		<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	1.48	<0.0500	<0.0500	10.1	<0.100	--	0.646	<0.0500
03/19/02		<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.36	<0.0250	<0.0250	4.64	<0.0250	--	0.221	0.114
05/29/02		<0.0500	0.046	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.916	<0.0250	<0.0250	4.33	<0.0250	--	0.238	0.0395
08/29/02		<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	1.16	<0.0250	<0.0250	4.09	<0.0250	--	0.288	0.31
11/08/02		<0.0050	0.178	<0.0025	<0.0050	0.0083	<0.0025	<0.0025	0.385	0.00325	<0.0025	0.603	<0.0025	--	0.0634	0.066
01/23/03		<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.582	<0.0250	<0.0250	4.09	<0.0250	--	0.349	<0.0250
05/30/03		<0.0100	0.0141	<0.0050	<0.0100	<0.0050	<0.0050	<0.0050	0.382	<0.0050	<0.0050	1.45	0.0079	--	0.14	0.067

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-5 (continued)	11/10/03	<0.0010	0.0842	<0.0010	<0.0010	0.00106	<0.0010	<0.0010	0.0907	<0.0010	<0.0010	0.161	<0.0010	--	0.0308	0.00942
	01/26/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/04/04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.432	<0.0200	<0.0200	2.44	<0.0200	--	0.178	0.188
	08/17/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/02/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/16/04	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	6.30	<0.0500	<0.0500	1.80	<0.0500	--	0.37	0.99
	03/23/05	<0.0200	<0.0100	<0.0100	<0.0200	0.0262	<0.0100	<0.0100	2.35	0.0276	<0.0100	0.511	<0.0100	--	0.147	0.604
	05/18/05	<0.0050	<0.0025	<0.0025	<0.0050	0.00925	<0.0025	0.00645	0.817	0.0102	<0.0025	0.611	<0.0025	--	0.156	0.329
	08/18/05	<0.00500	0.00515	<0.00250	<0.00500	0.0144	<0.00250	<0.00250	0.397	0.0047	<0.00250	0.169 B	<0.00250	--	0.0818	0.278
	11/15/05	<0.0200	<0.0100	<0.0100	<0.0200	0.0362	<0.0100	<0.0100	2.79	0.014	<0.0100	0.408	<0.0100	--	0.177	0.615
	02/21/06	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0727	0.00106	<0.000500	0.184	0.001	--	0.0315	0.00505
	06/05/06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2.80	<0.0200	<0.0200	0.157	<0.0200	--	0.075	0.199
	09/06/06	<0.00200	0.0106	<0.00100	<0.00200	0.0083	<0.00100	<0.00100	0.377	0.00366	<0.00100	0.104	<0.00100	--	0.045	0.0299
	12/06/06	<0.00200	<0.00100	<0.00100	<0.00200	0.00132	<0.00100	0.00134	0.113	0.00128	0.00152	0.24	0.0016	--	0.058	0.0433
	02/07/07	<0.0100	<0.00500	<0.00500	<0.0100	<0.00500	<0.00500	<0.00500	1.22	0.018	<0.00500	0.124	<0.00500	--	0.0269	0.6
	05/22/07	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.634	0.00845	<0.00500	0.102	<0.00500	--	0.0408	0.0594
	09/12/07	<0.00100	0.0675	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0162	<0.00050	<0.00050	0.00089	<0.00050	--	0.00138	0.00186
	12/13/07	<0.00100	<0.00050	<0.00050	<0.00100	0.0071	<0.00050	0.00467	2.42	0.00922	0.00114	0.18	<0.00050	--	0.179	0.416
	03/07/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00218	<0.000500	0.00133	0.411	0.00321	<0.000500	0.0864	<0.000500	<0.000500	0.0261	0.105
	09/18/08	<0.00100	0.101	<0.000500	<0.00100	0.00079	<0.000500	<0.000500	0.0112	<0.000500	<0.000500	0.00114	<0.000500	<0.000500	0.00127	0.00174
	12/10/08	<0.0020	<0.0020	<0.0020	<0.0020	0.0037	<0.0020	<0.0020	0.36	0.0023	<0.0020	0.049	<0.0020	<0.0020	0.053	0.15
	03/27/09	<0.00050	0.0042	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.17	0.001	<0.00050	0.00059	<0.00050	<0.00050	<0.00050	0.064
	06/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	0.0006	0.16	0.0025	<0.00050	0.011	<0.00050	<0.00050	0.012	0.011
	09/18/09	<0.00050	0.065 BE	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0036	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0005	0.0012
	12/17/09	<0.00050	<0.00080	<0.00050	<0.00050	0.0021	<0.00050	0.0014	0.34	0.002	<0.00050	0.019	<0.00050	<0.00050	0.037	0.093
	03/19/10	<0.00050	0.0014	<0.00050	<0.00050	0.0044	<0.00050	<0.00050	0.072	<0.00050	<0.00050	0.024	<0.00050	<0.00050	0.014	0.021
	06/16/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0036	<0.00050	0.00083	0.094	0.001	0.00054	0.0041	<0.00050	<0.00050	0.01	0.023
	09/23/10	<0.0005	0.059	<0.0005	<0.0005	0.00084	<0.0005	<0.0005	0.0097	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00097	0.0013
	12/09/10	<0.0005	<0.0005	<0.0005	<0.0005	0.00084	<0.0005	<0.0005	0.14	0.00073	<0.0005	0.0056	<0.0005	<0.0005	0.0088	0.015
	03/11/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00096	<0.00050	<0.00050	0.034	<0.00050	<0.00050	0.0084	<0.00050	<0.00050	0.0076	0.0047
	06/10/11	<0.0005	<0.0005	<0.0005	<0.0005	0.005	<0.0005	<0.0005	0.04	<0.0005	0.00063	0.0022	<0.0005	<0.0005	0.0038	0.026
	09/19/11	<0.00050	0.0023	<0.00050	<0.00050	0.0028	<0.00050	<0.00050	0.097	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.011	0.0063
	12/09/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.047	<0.00050	<0.00050	0.0027	<0.00050	<0.00050	0.0077	0.0028

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-5 (continued)	03/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0034
	06/22/12	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.01	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	0.0029	0.003
	09/14/12	<0.00050	0.0200	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.03	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.003
	12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	0.00072	<0.00050	<0.00050	0.067	0.00065	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0017
	03/15/13	<0.00050	0.0074	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.048	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	0.0066
	06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0085	<0.00050	<0.00050	0.0072	<0.00050	<0.00050	0.0072	0.0017
	09/19/13	<0.00050	0.023	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0046	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	0.00061
	12/16/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00088	<0.00050	<0.00050	0.18	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0008	0.071
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.039	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0034	0.010
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.00130	<0.00050	<0.00050	0.008	0.002
	9/30/2014	<0.00050	0.028	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0036
	12/16/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.033	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0022	0.0019
	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.027	<0.00050	<0.00050	0.0084	<0.00050	<0.00050	0.0058	0.0056
	6/17/2015	<0.00050	0.0022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0032	<0.00050	<0.00050	0.00063	<0.00050	<0.00050	0.00064	<0.00050
	9/24/2015	<0.00050	0.0246	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0040	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00130
	12/8/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	0.1990	<0.00050	<0.00050	0.02950	<0.00050	<0.00050	0.04320	0.03230
	12/8/2015 DUP	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00068	0.1750	<0.00050	<0.00050	0.02710	<0.00050	<0.00050	0.03850	0.02840
	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.0099	<0.00050	<0.00050	0.0031	<0.00050
	6/17/2016	<0.00050	0.0075	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0233	<0.00050	<0.00050	0.0073	<0.00050	<0.00050	0.0032	<0.00050
	9/29/2016	<0.0050	<0.020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0043	<0.00050	<0.00050	0.0115	<0.00050	<0.00050	0.0025	0.0011	
MW-6	11/17/93	--	<0.0010	--	--	<0.00050	<0.00050	--	0.0012	--	--	0.0021	<0.00050	--	0.00054	<0.0010
	09/01/95	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.0010
	09/24/96	<0.00050	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0003	<0.00020	<0.00020	<0.00020	<0.00050	--	<0.00020	<0.0010
	12/02/96	<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	<0.00050	<0.00020	<0.00020	<0.0010	<0.00020	<0.00050	<0.0010	--	<0.00020	<0.00020
	11/12/97	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00103	<0.00050	--	<0.00050	<0.0010
	08/11/99	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	--	0.00137	<0.00050
	11/16/99	<0.0010	<0.0025	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	02/29/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000654	<0.0010	--	<0.00050	<0.00050
	06/27/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	--	<0.00050	<0.00050
	05/29/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	--	<0.00050	<0.00050
	05/30/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00151	<0.00050	<0.00050	0.00131	<0.00050	--	<0.00050	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)															
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride	
MW-6 (continued)	08/28/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	11/08/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00051	<0.00050	<0.00050	0.00255	<0.00050	<0.00050	0.00097	<0.00050	--	0.00055	0.00052	
	01/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	05/30/03	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.00373	<0.00050	--	0.00099	<0.00050	
	11/17/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00088	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	
	05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	09/12/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	03/06/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.00116	<0.000500	<0.000500	<0.000500	<0.000500	
	09/19/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
	03/19/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
	09/23/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
	03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
	09/15/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
	03/05/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
	09/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
	03/14/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
10/2/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
9/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
3/7/2016	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
9/28/2016	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
MW-7	12/02/96	0.081	<0.0500	<0.0500	0.039	<0.0300	<0.0500	0.11	0.11	<0.100	<0.0200	73.0	1.90	--	7.60	<0.0500	
	11/12/97	<0.500	<0.001	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	36.4	<0.500	--	7.67	<0.001	
	08/11/99	<0.001	<0.005	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	49.0	1.21	--	4.65	<0.500	
	11/16/99	<0.100	<0.250	<0.0500	<0.100	<0.0500	<0.0500	0.092	0.353	<0.0500	<0.0500	54.8	0.914	--	5.32	<0.0500	
	02/28/00	<0.001	<0.005	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	52.4	<0.001	--	4.06	<0.500	
	06/28/00	<0.001	<0.005	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	54.3	<0.001	--	3.39	<0.500	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-7 (continued)	08/31/00	<0.500	<0.002	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	50.9	0.824	--	3.96	<0.250
	11/30/00	<0.500	<0.002	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	33.5	0.52	--	3.56	<0.250
	02/27/01	<0.500	<0.002	<0.250	<0.250	<0.250	<0.250	<0.250	0.386	<0.250	<0.250	26.7	<0.500	--	3.29	<0.250
	05/30/01	<0.200	<1	<0.100	<0.100	<0.100	<0.100	<0.100	0.374	<0.100	<0.100	20.4	0.214	--	2.82	<0.100
	09/25/01	<0.0250	<0.0250	<0.0250	<0.0250	0.028	<0.0250	0.035	0.35	<0.0250	<0.0250	19.0	0.26	--	2.50	<0.0250
	12/17/01	<0.100	<0.0500	<0.0500	<0.0500	0.0846	<0.0500	<0.0500	0.506	<0.0500	<0.0500	10.1	0.2	--	1.96	<0.0500
	03/18/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.206	<0.0250	<0.0250	7.25	0.071	--	1.02	<0.0250
	05/31/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.0425	<0.0250	<0.0250	5.50	<0.0250	--	0.311	<0.0250
	08/29/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	0.0505	0.093	<0.0250	<0.0250	4.94	0.0445	--	0.634	<0.0250
	11/07/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.123	<0.0250	<0.0250	5.81	0.043	--	0.758	<0.0250
	01/23/03	<0.0200	<0.0100	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	0.0598	<0.0100	<0.0100	2.01	0.014	--	0.282	<0.0100
	05/28/03	<0.0100	<0.0050	<0.0050	<0.0050	0.0063	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	1.08	0.0109	--	0.0679	<0.0050
	11/11/03	<0.0200	<0.0200	<0.0200	<0.0200	0.0402	<0.0200	<0.0200	0.246	<0.0200	<0.0200	2.46	0.062	--	0.599	<0.0200
	01/27/04	<0.0200	<0.0100	<0.0100	<0.0200	0.017	<0.0100	<0.0100	0.105	<0.0100	<0.0100	3.51	0.033	--	0.38	<0.0100
	05/04/04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.0724	<0.0200	<0.0200	3.94	0.022	--	0.323	<0.0200
	11/16/04	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.099	<0.0500	<0.0500	8.00	<0.0500	--	0.52	<0.0500
	03/24/05	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.0985	<0.0250	<0.0250	3.93	0.026	--	0.404	<0.0250
	05/18/05	<0.0100	<0.0050	<0.0050	<0.0100	<0.0050	<0.0050	<0.0050	0.0727	<0.0050	<0.0050	1.31	0.0124	--	0.18	<0.0050
	05/18/05 DUP	<0.0100	<0.0050	<0.0050	<0.0100	<0.0050	<0.0050	<0.0050	0.0694	<0.0050	<0.0050	1.25	0.0124	--	0.179	<0.0050
	08/18/05	<0.0200	<0.0100	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	0.0548	<0.0100	<0.0100	1.80	<0.0100	--	0.237	<0.0100
	11/15/05	<0.0200	<0.0100	<0.0100	<0.0200	0.0152	<0.0100	<0.0100	0.107	<0.0100	<0.0100	1.96	0.0296	--	0.333	<0.0100
	02/21/06	<0.0200	<0.0100	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	2.64	<0.0100	--	0.139	<0.0100
	06/05/06	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	26.1	<0.200	--	0.568	<0.200
	09/06/06	<0.100	<0.0500	<0.0500	<0.100	<0.0500	<0.0500	<0.0500	0.056	<0.0500	<0.0500	12.8	<0.0500	--	0.422	<0.0500
	12/06/06	<0.200	<0.100	<0.100	<0.200	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	24.6	<0.100	--	0.408	<0.100
	02/07/07	<0.200	<0.100	<0.100	<0.200	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	31.5	<0.100	--	0.352	<0.100
	05/22/07	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	29.1	<0.200	--	0.45	<0.200
	09/12/07	<0.200	<0.100	<0.100	<0.200	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	21.3	<0.100	--	0.366	<0.100
	12/13/07	<0.500	<0.250	<0.250	<0.500	<0.250	<0.250	<0.250	0.345	<0.250	<0.250	18.7	<0.250	--	1.04	0.28
	03/06/08 <sup>2</sup>	<0.00100	<0.000500	<0.000500	<0.00100	0.00506	0.00257	0.00399	0.0423	0.0029	<0.000500	26.3	0.0387	<0.000500	0.43	<0.000500
06/10/08	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	27.0	<0.500	<0.500	0.575	<0.500	
09/18/08	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	23.2	<0.500	<0.500	0.53	<0.500	
12/11/08	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.13	<0.050	<0.050	15.0	<0.050	<0.050	0.45	<0.050	
12/11/08 DUP	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.12	<0.050	<0.050	14.0	<0.050	<0.050	0.43	<0.050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-7	03/23/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.42	<0.00050	<0.00050	3.33	<0.00050	<0.00050	0.27	<0.00050
(continued)	06/18/09	<0.0030	<0.0030	<0.0030	<0.0030	0.0037	<0.0030	<0.0030	0.52	<0.0030	<0.0030	0.89	0.0052	<0.0030	0.35	<0.0030
	06/18/09 DUP	<0.0025	<0.0025	<0.0025	<0.0025	0.0038	<0.0025	<0.0025	0.52	<0.0025	<0.0025	0.91	0.0056	<0.0025	0.36	<0.0025
	09/18/09	<0.0030	<0.0030	<0.0030	<0.0030	0.0098	<0.0030	0.0055	0.93	<0.0030	<0.0030	2.6	0.01	<0.0030	0.25	<0.0030
	09/18/09 DUP	<0.0030	<0.0030	<0.0030	<0.0030	0.0087	<0.0030	0.0048	0.85	<0.0030	<0.0030	2.6	0.0093	<0.0030	0.24	<0.0030
	12/18/09	<0.0050	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	0.33	<0.0050	<0.0050	1.6	0.0067	<0.0050	0.16	<0.0050
	12/18/09 DUP	<0.0050	<0.0050	<0.0050	<0.0050	0.0066	<0.0050	<0.0050	0.32	<0.0050	<0.0050	1.5	0.0066	<0.0050	0.16	<0.0050
	03/16/10	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.18	<0.0025	<0.0025	0.5	<0.0025	<0.0025	0.052	<0.0025
	03/16/10 DUP	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.18	<0.0020	<0.0020	0.6	<0.0020	<0.0020	0.055	<0.0020
	06/17/10	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	0.36	<0.0015	<0.0015	0.2	0.0027	<0.0015	0.072	<0.0015
	06/17/10 DUP	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	0.36	<0.0015	<0.0015	0.2	0.0028	<0.0015	0.072	<0.0015
	09/23/10	<0.003	<0.003	<0.003	<0.003	0.0033	<0.003	<0.003	0.690	<0.003	<0.003	0.750	0.0035	<0.003	0.110	0.0048
	09/23/10 DUP	<0.003	<0.003	<0.003	<0.003	0.0031	<0.003	<0.003	0.700	<0.003	<0.003	0.740	0.0038	<0.003	0.100	0.0041
	12/10/10	<0.0009	<0.0009	<0.0009	<0.0009	0.0018	<0.0009	<0.0009	0.094	<0.0009	<0.0009	0.220	0.0016	<0.0009	0.036	0.0017
	12/10/10 DUP	<0.0009	<0.0009	<0.0009	<0.0009	0.0017	<0.0009	<0.0009	0.098	<0.0009	<0.0009	0.230	0.0017	<0.0009	0.036	0.0018
	03/11/11	<0.00090	<0.00090	<0.00090	<0.00090	0.0066	<0.00090	0.0016	0.150	0.00091	<0.00090	0.420	0.0051	<0.00090	0.082	0.0093
	03/11/11 DUP	<0.00090	<0.00090	<0.00090	<0.00090	0.0065	<0.00090	0.0019	0.150	0.0011	<0.00090	0.400	0.0052	<0.00090	0.080	0.0097
	06/07/11	<0.0025	<0.0025	<0.0025	<0.0025	0.0048	<0.0025	0.0034	1.4	0.0033	<0.0025	0.43	0.004	<0.0025	0.11	0.0079
	06/07/11 DUP	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	1.4	<0.006	<0.006	0.4	<0.006	<0.006	0.11	0.0078
	09/19/11	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	1.3	<0.0050	<0.0050	0.41	<0.0050	<0.0050	0.084	0.078
	09/19/11 DUP	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	<0.0070	1.3	<0.0070	<0.0070	0.42	<0.0070	<0.0070	0.087	0.081
	12/07/11	<0.0050	<0.0050	<0.0050	<0.0050	0.0080	<0.0050	0.0069	3.4	0.0068	<0.0050	0.2	<0.0050	<0.0050	0.032	0.11
	12/07/11 DUP	<0.0060	<0.0060	<0.0060	<0.0060	0.0076	<0.0060	0.0078	3.4	0.0068	<0.0060	0.21	<0.0060	<0.0060	0.032	0.11
	03/12/12	<0.0050	<0.0050	<0.0050	<0.0050	0.009	<0.0050	<0.0050	1.60	<0.0050	<0.0050	0.0410	<0.0050	<0.0050	0.0086	0.60
	03/12/12 DUP	<0.0070	<0.0070	<0.0070	<0.0070	0.010	<0.0070	<0.0070	1.60	<0.0070	<0.0070	0.0420	<0.0070	<0.0070	0.0089	0.66
	06/22/2012	<0.002	0.0092	<0.002	<0.002	0.010	<0.002	<0.002	0.54	<0.002	<0.002	0.0240	<0.002	<0.002	0.0051	0.30
	06/22/12 DUP	<0.002	0.0081	<0.002	<0.002	0.009	<0.002	<0.002	0.50	<0.002	<0.002	0.0250	<0.002	<0.002	0.0052	0.29
	09/14/12	<0.00050	0.0063	<0.00050	<0.00050	0.004	<0.00050	0.0005	0.18	0.0007	<0.00050	0.0280	<0.00050	0.0005	0.0052	0.08
	09/14/12 DUP	<0.00050	0.0057	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.18	0.0008	<0.00050	0.0280	<0.00050	<0.00050	0.0053	0.08
	12/14/12	<0.00050	0.0063	<0.00050	<0.00050	0.0019	<0.00050	<0.00050	0.13	<0.00050	<0.00050	0.0082	<0.00050	<0.00050	0.0053	0.016
	12/14/12 DUP	<0.00050	0.0056	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.13	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.0068	0.018
	03/15/13	<0.00050	0.0052	<0.00050	<0.00050	0.00068	<0.00050	<0.00050	0.11	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.00075	0.011
	03/15/13 DUP	<0.00050	0.0054	<0.00050	<0.00050	0.00069	<0.00050	<0.00050	0.11	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.00078	0.011

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-7 (continued)	06/14/13	<0.00050	0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.057	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	<0.00050	0.015
	06/14/13 DUP	<0.00050	0.0020	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	0.058	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	<0.00050	0.016
	09/20/13	<0.00050	0.0030	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.056	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.01
	09/20/13 DUP	<0.00050	0.0030	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.056	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.01
	12/16/13	<0.00050	0.0024	<0.00050	<0.00050	0.0029	<0.00050	<0.00050	0.0069	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	<0.00050	0.0091
	12/16/13 DUP	<0.00050	0.0024	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0063	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0089
	3/24/2014	<0.00050	0.00097	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.013	<0.00050	<0.00050	0.0098	<0.00050	<0.00050	0.0026	0.0076
	3/24/2014 DUP	<0.00050	0.0010	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.013	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0025	0.0077
	6/25/2014	<0.00050	0.0013	<0.00050	<0.00050	0.00017	<0.00050	<0.00050	0.00059	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013
	6/25/14 DUP	<0.00050	0.00015	<0.00050	<0.00050	0.00019	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014
	9/30/2014	<0.00050	0.0019	<0.00050	<0.00050	0.0027	<0.00050	<0.00050	0.0045	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0098
	9/30/2014 DUP	<0.00050	0.0017	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.0043	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0088
	12/15/2014	<0.00050	0.0012	<0.00050	<0.00050	0.0034	<0.00050	<0.00050	0.012	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	0.015
	12/15/2014 DUP	<0.00050	0.0016	<0.00050	<0.00050	0.0045	<0.00050	<0.00050	0.016	<0.00050	<0.00050	0.00061	<0.00050	<0.00050	0.0015	0.021
	3/20/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.0084	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	0.010
	3/20/15 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.0077	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.0010	0.010
	6/17/2015	<0.00050	0.00072	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.0010	0.013
	6/17/2015 DUP	<0.00050	0.00071	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.00096	<0.00050	<0.00050	0.0010	0.012
	9/24/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.00450	<0.00050	<0.00050	0.0042	0.005
	9/24/2015 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.013	<0.00050	<0.00050	0.00450	<0.00050	<0.00050	0.0042	0.005
12/8/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.00940	<0.00050	<0.00050	0.0017	0.002	
6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0006	<0.00050	<0.00050	0.0109	<0.00050	<0.00050	0.00069	<0.00050	<0.00050	0.0021	0.0054	
6/17/16 DUP	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	0.002	0.0054	
9/29/2016	<0.00050	<0.002	<0.00050	<0.00050	0.00110	<0.00050	<0.00050	0.011	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.006	0.0055	
9/29/2016 DUP	<0.00050	<0.002	<0.00050	<0.00050	0.00110	<0.00050	<0.00050	0.011	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.006	0.0055	
12/14/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.009	<0.00050	<0.00050	0.00065	<0.00050	<0.00050	<0.00050	0.0010	
12/14/2016 DUP	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.009	<0.00050	<0.00050	0.00078	<0.00050	<0.00050	<0.00050	0.0010	
MW-8	12/02/96	<0.00050	<0.00050	<0.00050	<0.00020	0.001	<0.00050	0.0002	0.0065	<0.0010	<0.00020	0.0023	<0.0010	--	0.012	<0.00050
	11/13/97	<0.0010	<0.0020	<0.0010	<0.0010	0.00172	<0.0010	0.00244	0.00932	<0.0010	<0.0010	0.0524	0.004	--	0.0386	<0.0020
	08/11/99	<0.0010	<0.0050	<0.00050	<0.00050	0.00075	<0.00050	<0.00050	0.00182	<0.00050	<0.00050	0.0462	0.00479	--	0.0243	<0.00050
	11/16/99	<0.0010	<0.0025	<0.00050	<0.0010	0.00122	<0.00050	<0.00050	0.00211	<0.00050	<0.00050	0.0398	0.00155	--	0.0155	<0.00050
	02/28/00	<0.0010	<0.0050	<0.00050	<0.00050	0.000929	<0.00050	0.000721	0.00238	<0.00050	<0.00050	0.0418	0.0037	--	0.0205	<0.00050
	06/27/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00146	<0.00050	<0.00050	0.0337	0.00288	--	0.0175	<0.00050
	05/30/01	<0.100	<0.0050	<0.00050	<0.00050	0.000611	<0.00050	<0.00050	0.000601	<0.00050	<0.00050	0.0118	<0.0010	--	0.00546	<0.00050
	05/30/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00109	<0.00050	<0.00050	0.00202	<0.00050	<0.00050	0.0121	<0.00050	--	0.00447	<0.00050
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00084	<0.00050	<0.00050	0.0404	0.00155	--	0.0112	<0.00050
	11/02/04	<0.0010	<0.00050	<0.00050	<0.0010	0.00102	<0.00050	<0.00050	0.00199	<0.00050	<0.00050	0.00888	<0.00050	--	0.0024	<0.00050
	11/16/04	<0.00050	<0.00050	<0.00050	<0.00050	0.0009	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.0006	<0.00050	--	0.0031	<0.00050
	03/23/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00078	<0.00050	<0.00050	0.00182	<0.00050	<0.00050	0.0135	0.00053	--	0.00241	<0.00050

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-8	05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	0.0011	<0.00050	<0.00050	0.00645	<0.00050	<0.00050	0.0132	<0.00050	--	0.00692	<0.00050
(continued)	05/17/05 DUP	<0.0010	<0.00050	<0.00050	<0.0010	0.00119	<0.00050	<0.00050	0.00697	<0.00050	<0.00050	0.0114	<0.00050	--	0.00639	<0.00050
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00078	<0.000500	<0.000500	0.00419	<0.000500	<0.000500	0.0148	0.00065	--	0.00299	<0.000500
	06/05/06	<0.00100	<0.00100	<0.00100	<0.00100	0.00126	<0.00100	<0.00100	0.0198	<0.00100	<0.00100	0.0207	<0.00100	--	0.0114	<0.00100
	12/06/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00111	<0.00050	<0.00050	0.0142	<0.00050	<0.00050	0.0183	<0.00050	--	0.00508	<0.00050
	05/23/07	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0228	<0.00100	--	0.00232	<0.00100
	09/12/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00052	<0.00050	<0.00050	0.0124	0.0006	--	0.00065	<0.00050
	12/12/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00103	<0.00050	<0.00050	0.0137	<0.00050	<0.00050	0.00827	<0.00050	--	0.00271	<0.00050
	03/06/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00164	<0.000500	<0.000500	0.0191 J	<0.000500	<0.000500	0.0014	<0.000500
	6/10/08 <sup>7</sup>	<0.00100	<0.00100	<0.00100	<0.00100	0.00107	<0.00100	<0.00100	0.0105	<0.00100	<0.00100	0.0108	<0.00100	<0.00100	0.00387	<0.00100
	09/18/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00158	<0.000500	<0.000500	0.0132	0.0005	<0.000500	0.00121	<0.000500
	12/09/08	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.0091	<0.00050	<0.00050	0.00057	<0.00050
	12/09/08 DUP	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.0097	<0.00050	<0.00050	0.00059	<0.00050
	03/26/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.008	<0.00050	<0.00050	0.00056	<0.00050
	06/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.00077	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	0.0014	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.011	<0.00050	<0.00050	<0.00050	<0.00050
	12/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0032	<0.00050	<0.00050	0.0084	<0.00050	<0.00050	0.00051	<0.00050
	03/18/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.0110	<0.00050	<0.00050	<0.00050	<0.00050
	06/14/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0200	0.00052	<0.00050	0.0042	<0.00050	<0.00050	0.0011	<0.00050
	09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	<0.0005	<0.0005	0.0081	<0.0005	<0.0005	<0.0005	<0.0005
	12/08/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	<0.0005	0.0200	0.0011	<0.0005	0.0025	<0.0005	<0.0005	0.0006	<0.0005
	03/11/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00093	<0.00050	<0.00050	0.020	0.00058	<0.00050	0.0079	<0.00050	<0.00050	0.00095	<0.00050
	06/08/11	<0.0005	<0.0005	<0.0005	<0.0005	0.0015	<0.0005	<0.0005	0.04	0.00082	<0.0005	0.004	<0.0005	<0.0005	0.0011	<0.0005
	09/15/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.00054	<0.00050
	12/08/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00054	<0.00050	<0.00050	0.01	<0.00050	<0.00050	<0.00050	<0.00050
	03/06/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.0068	<0.00050	<0.00050	0.0006	<0.00050
	06/20/12	<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	<0.0005	0.02	<0.0005	<0.0005	0.0061	<0.0005	<0.0005	0.0014	<0.0005
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0070	<0.00050	<0.00050	<0.00050	<0.00050
	12/12/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.036	0.0010	<0.00050	0.0048	<0.00050	<0.00050	0.0010	<0.00080
	03/13/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00094	<0.00050	<0.00050	0.0072	<0.00050	<0.00050	<0.00050	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-8 (continued)	06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00084	<0.00050	<0.00050	0.018	0.00064	<0.00050	0.0062	<0.00050	<0.00050	0.00076	<0.00050
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0066	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	<0.00050	<0.00050
	12/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0055	0.00054	<0.00050	0.0040	<0.00050	<0.00050	<0.00050	<0.00050
	3/19/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.021	0.0011	<0.00050	0.0023	<0.00050	<0.00050	0.00085	<0.00050
	6/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.0056	<0.00050	<0.00050	<0.00050	<0.00050
	9/26/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.0061	<0.00050	<0.00050	<0.00050	<0.00050
	12/10/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.013	0.00086	<0.00050	0.0023	<0.00050	<0.00050	0.00062	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0076	<0.00050	<0.00050	<0.00050	<0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0059	<0.00050	<0.00050	<0.00050	<0.00050
	9/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.0063	<0.00050	<0.00050	<0.00050	<0.00050
	12/7/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	<0.00050	<0.00050
	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0064	<0.00050	<0.00050	<0.00050	<0.00050
	6/15/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	<0.00050	<0.00050	<0.00050
	9/27/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0053	<0.00050	<0.00050	<0.00050	<0.00050
	12/14/2016	<0.00050	<0.002	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	<0.00050	<0.00050
	MW-9	12/02/96	<0.0500	<0.0500	<0.0500	<0.0200	<0.0300	<0.0500	<0.0200	<0.0200	<0.100	<0.0200	5	0.2	--	1.6
11/13/97		<0.0500	<0.100	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.487	<0.0500	<0.0500	2.89	<0.0500	--	1.84	<0.100
08/11/99		<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.054	<0.0100	<0.0100	1.49	0.0432	--	0.52	<0.0100
11/16/99		<0.0200	<0.0500	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	0.103	<0.0100	<0.0100	1.73	0.032	--	0.31	<0.0100
02/28/00		<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	2.04	0.0364	--	0.32	<0.0100
06/27/00		<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	1.30	<0.0500	--	0.30	<0.0250
08/31/00		<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	1.56	0.0313	--	0.23	<0.0050
11/30/00		<0.0100	<0.0500	<0.0050	<0.0050	0.0217	<0.0050	0.0105	1.33	0.0117	<0.0050	0.823	0.0266	--	0.528	0.00815
09/25/01		<0.0025	<0.0025	<0.0025	<0.0025	0.0038	<0.0025	<0.0025	0.0091	<0.0025	<0.0025	0.68	0.016	--	0.14	<0.0025
12/17/01		<0.0050	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.306	<0.0050	--	0.0742	<0.0025
03/18/02		<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.113	<0.00050	--	0.0191	<0.00050
05/31/02		<0.0020	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.00122	<0.0010	<0.0010	0.296	0.00144	--	0.044	<0.0010
08/29/02		<0.0020	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.00188	<0.0010	<0.0010	0.294	0.00212	--	0.0674	<0.0010
11/07/02		<0.0050	<0.0025	<0.0025	<0.0050	<0.0025	<0.0025	<0.0025	0.0172	<0.0025	<0.0025	0.453	0.004	--	0.145	<0.0025
01/23/03		<0.0020	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.00166	<0.0010	<0.0010	0.205	0.00274	--	0.0595	<0.0010
05/28/03		<0.0010	<0.00050	<0.00050	<0.0010	0.00181	<0.00050	<0.00050	0.00097	<0.00050	<0.00050	0.141	0.00285	--	0.0274	<0.00050
11/11/03		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0237	<0.0050	<0.0050	0.401	0.00625	--	0.0914	<0.0050
01/27/04		<0.0020	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.00258	<0.0010	<0.0010	0.179	0.00254	--	0.0581	<0.0010
05/04/04		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00109	<0.0010	<0.0010	0.178	0.00256	--	0.0519	<0.0010
11/15/04		<0.0250	<0.0250	<0.0250	<0.0250	0.028	<0.0250	<0.0250	1.20	0.027	<0.0250	1.80	<0.0250	--	1.00	<0.0250
03/24/05	<0.0050	<0.0025	<0.0025	<0.0050	0.00	<0.0025	<0.0025	0.0542	<0.0025	<0.0025	0.675	0.008	--	0.239	<0.0025	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-9 (continued)	05/18/05	<0.0020	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.00268	<0.0010	<0.0010	0.00241	0.00208	--	0.0624	<0.0010
	08/18/05	<0.00500	<0.00250	<0.00250	<0.00500	<0.00250	<0.00250	<0.00250	0.0205 B	<0.00250	<0.00250	0.551	0.0076	--	0.209	<0.00250
	11/15/05	<0.0100	<0.00500	<0.00500	<0.0100	0.0271	<0.00500	0.0068	1.02	0.0186	<0.00500	1.04	0.0141	--	0.633	0.0212
	02/21/06	<0.0100	<0.00500	<0.00500	<0.0100	<0.00500	<0.00500	<0.00500	0.0167	<0.00500	<0.00500	0.534	<0.00500	--	0.165	<0.00500
	06/05/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00147	<0.00100	<0.00100	0.151	0.0026	--	0.0573	<0.00100
	09/05/06	<0.00500	<0.00250	<0.00250	<0.00500	0.0055	<0.00250	<0.00250	0.117	0.00315	<0.00250	0.698	0.0068	--	0.314	<0.00250
	12/06/06	<0.00500	<0.00250	<0.00250	<0.00500	0.00295	<0.00250	<0.00250	0.059	<0.00250	<0.00250	0.578	0.00555	--	0.237	<0.00250
	02/07/07	<0.00500	<0.00250	<0.00250	<0.00500	0.00315	<0.00250	<0.00250	0.0726	<0.00250	<0.00250	0.591	0.0061	--	0.239	0.00265
	05/23/07	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.00632	<0.00200	<0.00200	0.21	0.003	--	0.0904	<0.00200
	09/12/07	<0.00200	<0.00100	<0.00100	<0.00200	0.00234	<0.00100	<0.00100	0.0471	0.00144	<0.00100	0.282	0.00512	--	0.184	<0.00100
	12/13/07	<0.00500	<0.00250	<0.00250	<0.00500	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	0.253	0.00445	--	0.0784	<0.00250
	03/06/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00192	<0.000500	<0.000500	0.138	0.00377	<0.000500	0.0615	<0.000500
	06/10/08	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00273	<0.00100	<0.00100	0.297	0.00516	<0.00100	0.0877	<0.00100
	09/18/08	<0.00500	<0.00250	<0.00250	<0.00500	0.00705	<0.00250	<0.00250	0.172	0.0038	<0.0005000	0.524	0.00535	<0.000500	0.315	0.00415
	12/09/08	<0.00090	<0.00090	<0.00090	<0.00090	0.0038	<0.00090	0.0013	0.13	0.0025	<0.00090	0.27	0.0051	<0.00090	0.14	0.0023
	03/26/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0054	<0.00050	<0.00050	0.17	0.004	<0.00050	0.056	<0.00050
	06/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	0.0011	0.072	0.0028	<0.00050	0.42	0.0049	<0.00050	0.18	0.0018
	09/17/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.17	0.0044	<0.00050	0.06	<0.00050
	12/17/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00057	<0.00050	<0.00050	0.12	0.0025	<0.00050	0.04	<0.00050
	03/19/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00080	<0.00050	<0.00050	0.16	0.003	<0.00050	0.05	<0.00050
	06/16/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.10	0.0014	<0.00050	0.04	<0.00050
	09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0017	<0.0005	<0.0005	0.140	0.0029	<0.0005	0.050	<0.0005
	12/10/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.100	0.0013	<0.0005	0.330	<0.0005
	03/11/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00066	<0.00050	<0.00050	0.017	0.00082	<0.00050	0.190	0.0027	<0.00050	0.081	0.00052
	03/11/11 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.00067	<0.00050	<0.00050	0.017	0.00085	<0.00050	0.200	0.0028	<0.00050	0.084	0.00051
	06/10/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	<0.0005	0.053	0.0019	<0.0005	0.031	<0.0005
09/19/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.072	0.0023	<0.00050	0.23	0.0031	<0.00050	0.12	0.00078	
12/09/11	<0.00090	<0.00090	<0.00090	<0.00090	0.053	<0.00090	0.011	1.8	0.04	<0.00090	0.6	0.01	<0.00090	0.59	0.026	
03/12/12	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.02	0.0006	<0.00050	0.1400	0.0020	<0.00050	0.0560	<0.00050	
06/22/12	<0.0005	<0.0005	<0.0005	<0.0005	0.003	<0.0005	0.0011	0.14	0.0043	<0.0005	0.2200	0.0033	<0.0005	0.1800	0.00	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-9 (continued)	09/14/12	<0.00090	<0.00090	<0.00090	<0.00090	<0.00090	<0.00090	<0.00090	0.02	<0.00090	<0.00090	0.2100	0.0024	<0.00090	0.0780	<0.00090
	12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	0.00070	<0.00050	<0.00050	0.029	0.00096	<0.00050	0.11	0.0011	<0.00050	0.049	<0.00050
	03/15/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0050	<0.00050	<0.00050	0.086	0.0018	<0.00050	0.034	<0.00050
	06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	0.0010	0.10	0.0037	<0.00050	0.24	0.0031	<0.00050	0.15	0.0022
	09/20/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0020	<0.00050	0.00051	0.074	0.0022	<0.00050	0.16	0.0020	<0.00050	0.087	0.00082
	12/16/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0065	<0.00050	0.0014	0.230	0.0064	<0.00050	0.210	0.0035	<0.00050	0.180	0.0028
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.039	0.00057	<0.00050	0.019	<0.00050
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00068	0.041	0.00160	<0.00050	0.190	0.0023	<0.00050	0.091	0.0011
	9/30/2014	<0.00090	<0.00090	<0.00090	<0.00090	0.0023	<0.00090	<0.00090	0.077	0.0023	<0.00090	0.23	0.0029	<0.00090	0.11	0.0013
	12/15/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.035	0.00064	<0.00050	0.018	<0.00050
	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00077	<0.00050	<0.00050	0.019	0.00060	<0.00050	0.16	0.0020	<0.00050	0.060	<0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00093	<0.00050	0.00054	0.013	0.00078	<0.00050	0.16	0.0019	<0.00050	0.062	0.0016
	9/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.07	0.0022	<0.00050	0.032	<0.00050
	12/8/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00350	<0.00050	0.00085	0.145	0.00420	<0.00050	0.20	0.0024	<0.00050	0.113	0.0020
	12/8/2015 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.00370	<0.00050	0.00093	0.153	0.00440	<0.00050	0.20	0.0025	<0.00050	0.118	0.0021
	3/8/2016	<0.0010	<0.0040	<0.0010	<0.0010	0.0041	<0.001	<0.0010	0.117	0.0038	<0.0010	0.164	0.0023	<0.0010	0.0946	0.0034
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0018	<0.00050	0.00058	0.0607	0.0024	<0.00050	0.116	0.0017	<0.00050	0.0683	0.00089
	9/29/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.0393	0.0018	<0.00050	0.192	0.0025	<0.00050	0.0919	0.00076
12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0597	0.0016	<0.00050	0.076	0.0011	<0.00050	0.0449	0.00052	
MW-10	12/02/96	<0.00050	<0.00050	<0.00050	<0.00020	<0.00030	<0.00050	<0.00020	<0.00020	<0.0010	<0.00020	0.0027	<0.0010	--	0.0004	<0.00050
	11/13/97	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00153	<0.00050	--	0.00365	<0.0010
	08/11/99	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00202	<0.0010	--	0.00124	<0.00050
	11/16/99	<0.0010	<0.0025	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0696	0.00189	--	0.0103	<0.00050
	02/28/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00163	<0.0010	--	0.00116	<0.00050
	06/27/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00172	<0.0010	--	0.00374	<0.00050
	05/30/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00125	<0.0010	--	0.00252	<0.00050
	05/30/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00405	<0.00050	--	0.00143	<0.00050
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00086	<0.00050	<0.00050	0.00221	<0.00050	--	0.00128	<0.00050
	11/02/04	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00093	<0.00050	--	0.00098	<0.00050
	11/16/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	--	0.0034	<0.00050
	03/23/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00102	<0.00050	--	0.00121	<0.00050
	05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00126	<0.00050	--	0.00119	<0.00050
	09/12/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00059 J	<0.00050	--	0.00083	<0.00050
	03/05/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.00166	<0.000500	<0.000500	0.00167	<0.000500
	09/18/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.00113	<0.000500	<0.000500	0.0014	<0.000500

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-10 (continued)	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.0016	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0020	<0.00050
	03/18/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0016	<0.00050
	09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.0005	0.0014	<0.0005
	03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0008	<0.00050
	09/14/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.0021	<0.00050
	03/06/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.0020	<0.00050
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.0014	<0.00050
	03/13/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.0031	<0.00050
	09/18/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0014	<0.00050
	3/19/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.0088	<0.00050	<0.00050	0.016	<0.00050
	9/26/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.0020	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.0018	<0.00050
	9/21/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0016	<0.00050
	3/7/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00098	<0.00050
	9/27/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.00140	<0.00050
	MW-11	12/02/96	<0.0500	<0.0500	<0.0500	<0.0200	<0.0300	<0.0500	0.052	0.14	<0.100	<0.0200	2.20	0.55	--	5.90
11/13/97		<0.0500	<0.100	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.686	0.0903	--	2.72	<0.100
08/10/99		<0.0050	<0.0250	<0.0025	<0.0025	0.0137	<0.0025	0.0228	0.0144	<0.0025	<0.0025	0.259	0.112	--	1.30	<0.0025
11/16/99		<0.0200	<0.0500	<0.0100	<0.0200	0.012	<0.0100	0.0168	0.0188	<0.0100	<0.0100	0.478	0.0948	--	1.50	<0.0100
02/28/00		<0.0050	<0.0250	<0.0025	<0.0025	0.00271	<0.0025	0.0079	0.00505	<0.0025	<0.0025	0.247	0.0302	--	0.473	<0.0025
06/27/00		<0.0100	<0.0500	<0.0050	<0.0050	0.0121	<0.0050	0.0289	0.0148	<0.0050	<0.0050	0.337	0.108	--	1.39	<0.0050
08/31/00		<0.0200	<0.100	<0.0100	<0.0100	0.0154	<0.0100	0.028	0.0248	<0.0100	<0.0100	0.646	0.159	--	1.69	<0.0100
11/30/00		<0.0200	<0.100	<0.0100	<0.0100	0.0122	<0.0100	0.0264	0.0193	<0.0100	<0.0100	0.342	0.125	--	1.55	<0.0100
02/27/01		<0.005	<0.0250	<0.0025	<0.0025	0.00365	<0.0025	0.00782	0.0071	<0.0025	<0.0025	0.198	0.0351	--	0.468	<0.0025
05/30/01		<0.0100	<0.0500	<0.0050	<0.0050	0.0052	<0.0050	0.0136	0.00909	<0.0050	<0.0050	0.256	0.0488	--	0.858	<0.0050
09/25/01		<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.26	0.057	--	0.82	<0.013
12/17/01		<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	0.0154	0.0259	<0.0050	<0.0050	0.983	0.0409	--	1.39	<0.0050
03/18/02		<0.0100	<0.0050	<0.0050	<0.0100	0.0119	<0.0050	0.0194	0.0171	<0.0050	<0.0050	0.433	0.0798	--	1.37	<0.0050
05/30/02		<0.0100	<0.0050	<0.0050	<0.0100	0.0059	<0.0050	0.0109	0.0156	<0.0050	<0.0050	0.571	0.0456	--	0.965	<0.0050
11/07/02		<0.0100	<0.0050	<0.0050	<0.0100	0.015	<0.0050	0.0193	0.0189	<0.0050	<0.0050	0.347	0.112	--	1.64	<0.0050
01/23/03		<0.0050	<0.0025	<0.0025	<0.0050	0.00335	<0.0025	0.0043	0.00535	<0.0025	<0.0025	0.265	0.0241	--	0.534	<0.0025
05/28/03		<0.0100	<0.0050	<0.0050	<0.0100	0.0133	<0.0050	0.0179	0.0176	<0.0050	<0.0050	0.305	0.105	--	1.58	<0.0050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-11 (continued)	11/11/03	<0.0050	<0.0050	<0.0050	<0.0050	0.005	<0.0050	0.00515	0.00915	<0.0050	<0.0050	0.191	0.0388	--	0.504	<0.0050
	01/26/04	<0.0100	<0.0050	<0.0050	<0.0100	0.0096	<0.0050	0.0115	0.0135	<0.0050	<0.0050	0.369	0.0733	--	1.07	<0.0050
	03/22/04	Well Abandoned														
MW-12	12/02/96	<0.0500	<0.0500	<0.0500	<0.0200	<0.0300	<0.0500	<0.0200	0.029	<0.100	<0.0200	2.50	<0.100	--	0.95	<0.0500
	11/12/97	<0.250	<0.500	<0.250	<0.250	<0.250	<0.250	<0.250	2.71	<0.250	<0.250	12.9	0.645	--	5.40	<0.500
	08/11/99	<0.200	<0.001	<0.100	<0.100	0.12	<0.100	<0.100	2.68	<0.100	<0.100	11.3	0.758	--	3.52	<0.100
	11/16/99	<0.200	<0.500	<0.100	<0.200	<0.100	<0.100	<0.100	0.16	<0.100	<0.100	18.2	0.922	--	4.63	<0.100
	02/28/00	<0.200	<0.001	<0.100	<0.100	<0.100	<0.100	<0.100	0.908	<0.100	<0.100	3.78	<0.200	--	1.21	<0.100
	06/27/00	<0.100	<0.500	<0.0500	<0.0500	0.161	<0.0500	<0.0500	2.88	<0.0500	<0.0500	12.0	0.712	--	3.18	<0.0500
	05/30/01	<0.0500	<0.250	<0.0250	<0.0250	0.0648	<0.0250	0.054	1.65	<0.0250	<0.0250	4.99	0.298	--	1.81	<0.0250
	05/30/02	<0.0050	<0.0025	<0.0025	<0.0050	0.00425	<0.0025	<0.0025	0.101	<0.0025	<0.0025	0.344	0.0066	--	0.0816	<0.0025
	05/29/03	<0.0050	<0.0025	<0.0025	<0.0050	0.0284	<0.0025	0.008	0.601	0.0057	<0.0025	0.362	0.0182	--	0.199	<0.0025
	11/16/04	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.059	<0.0025	<0.0025	0.41	0.0035	--	0.096	<0.0025
	03/23/05	<0.0200	<0.0100	<0.0100	<0.0200	0.247	<0.0100	0.053	3.64	0.0402	<0.0100	1.08	0.0498	--	0.639	0.0142
	05/18/05	<0.0010	<0.00050	<0.00050	<0.0010	0.001	<0.00050	0.001	0.0301	0.00057	<0.00050	0.0511	0.00092	--	0.0214	<0.00050
	05/22/07	<0.00500	<0.00500	<0.00500	<0.00500	0.0356	<0.00500	0.00745	0.785	0.0111	<0.00500	0.233	0.0078	--	0.139	<0.00500
	09/11/07	<0.100	<0.0500	<0.0500	<0.100	0.316	<0.0500	0.057	6.70	0.053	<0.0500	0.431	<0.0500	--	0.516	<0.0500
	12/12/07	<0.00200	<0.00100	<0.00100	<0.00200	0.0011	<0.00100	<0.00100	0.0438	<0.00100	<0.00100	0.106	0.00316	--	0.0396	<0.00100
	03/05/08	<0.00100	0.00497	<0.000500	<0.00100	0.156	0.00201	0.0462	3.17	0.0418	<0.000500	0.44	0.0212	<0.000500	0.329	0.0185
	09/19/08	<0.0500	<0.0250	<0.0250	<0.0500	0.394	<0.0250	0.066	7.65	0.069	<0.0250	0.968	0.045	<0.0250	0.924	0.058
	12/10/08	<0.0040	<0.0040	<0.0040	<0.0040	0.033	<0.0040	0.0066	0.67	0.0087	<0.0040	0.099	0.005	<0.0040	0.08	<0.0040
	03/27/09	<0.0040	0.0048	<0.0040	<0.0040	0.23	<0.0040	0.039	4.80	0.046	<0.0040	0.54	0.028	<0.0040	0.44	0.031
	03/27/09 DUP	<0.0040	0.005	<0.0040	<0.0040	0.25	<0.0040	0.044	4.70	0.051	<0.0040	0.60	0.032	<0.0040	0.49	0.035
06/18/09	<0.015	<0.015	<0.015	<0.015	0.17	<0.015	0.032	3.50	0.036	<0.015	0.27	<0.015	<0.015	0.23	0.026	
06/18/09 DUP	<0.015	<0.015	<0.015	<0.015	0.17	<0.015	0.032	3.60	0.037	<0.015	0.31	<0.015	<0.015	0.25	0.025	
09/18/09	<0.015	<0.015	<0.015	<0.015	0.24	<0.015	0.046	4.2	0.05	<0.015	0.54	0.0260	<0.015	0.44	0.051	
09/18/09 DUP	<0.015	<0.015	<0.015	<0.015	0.26	<0.015	0.049	4.6	0.052	<0.015	0.59	0.0280	<0.015	0.47	0.056	
12/18/09	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.1	0.0011	0.0013	0.17	0.0022	<0.00050	0.065	<0.00050	
12/18/09 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.096	0.0011	0.0013	0.16	0.0021	<0.00050	0.062	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-12	03/19/10	<0.00050	0.0041	<0.00050	<0.00050	0.220	0.0026	0.048	4.4	0.053	<0.00050	0.48	0.0280	0.0007	0.380	0.037
(continued)	03/19/10 DUP	<0.015	<0.015	<0.015	<0.015	0.270	<0.015	0.044	4.9	0.054	<0.015	0.60	0.0290	<0.015	0.460	0.039
	06/16/10	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.019	<0.00050	<0.00050	0.038	<0.00050	<0.00050	0.017	<0.00050
	06/16/10 DUP	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.018	0.00054	<0.00050	0.0370	<0.00050	<0.00050	0.016	<0.00050
	09/23/10	<0.015	<0.015	<0.015	<0.015	0.260	<0.015	0.047	4.8	0.056	<0.015	0.780	0.038	<0.015	0.560	0.068
	9/23/10 DUP	<0.015	<0.015	<0.015	<0.015	0.260	<0.015	0.049	4.8	0.057	<0.015	0.800	0.041	<0.015	0.580	0.065
	12/09/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.004	<0.0005	<0.0005	0.005	<0.0005	<0.0005	0.0021	<0.0005
	12/09/10 DUP	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.004	<0.0005	<0.0005	0.0058	<0.0005	<0.0005	0.002	<0.0005
	03/10/11	<0.00050	0.00067	<0.00050	<0.00050	0.094	0.00096	0.017	1.9	0.019	0.00055	0.340	0.012	<0.00050	0.220	0.011
	03/10/11 DUP	<0.00050	0.00087	<0.00050	<0.00050	0.093	0.001	0.017	1.6	0.019	0.00055	0.260	0.013	<0.00050	0.180	0.011
	06/07/11	<0.0005	<0.0005	<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.059	0.0010	<0.0005	0.053	0.0007	<0.0005	0.025	<0.0005
	06/07/11 DUP	<0.0005	<0.0005	<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.06	0.001	<0.0005	0.058	0.00069	<0.0005	0.027	<0.0005
	09/19/11	<0.00050	0.003	<0.00050	<0.00050	0.24	0.0025	0.045	4.7	0.055	<0.00050	0.86	0.065	0.00094	0.69	0.063
	09/19/11 DUP	<0.02	<0.02	<0.02	<0.02	0.24	<0.02	0.053	4.7	0.06	<0.02	0.86	0.06	<0.02	0.68	0.068
	12/07/11	<0.00050	<0.00050	<0.00050	<0.00050	0.13	0.0013	0.028	2.9	0.033	<0.00050	0.52	0.034	0.00054	0.38	0.04
	12/07/11 DUP	<0.00050	<0.015	<0.00050	<0.00050	0.14	0.0013	0.029	2.9	0.033	<0.00050	0.58	0.034	0.00055	0.4	0.041
	03/12/12	<0.015	<0.015	<0.015	<0.015	0.210	<0.015	0.0440	3.80	0.0450	<0.015	0.7700	0.0480	<0.015	0.5400	0.05
	03/12/12 DUP	<0.020	<0.020	<0.020	<0.020	0.220	<0.020	0.0440	4.00	0.0470	<0.020	0.7400	0.0500	<0.020	0.5400	0.05
	06/22/2012	<0.005	<0.005	<0.005	<0.005	0.100	<0.005	0.0160	1.70	0.0390	<0.005	0.2700	0.0130	<0.005	0.2000	0.02
	06/22/12 DUP	<0.005	<0.005	<0.005	<0.005	0.100	<0.005	0.0160	1.70	0.0390	<0.005	0.2700	0.0130	<0.005	0.1900	0.02
	09/14/12	<0.0050	<0.0050	<0.0050	<0.0050	0.220	<0.0050	0.0450	4.70	0.0560	<0.0050	0.8900	0.0610	<0.0050	0.5900	0.06
	09/14/12 DUP	<0.015	<0.015	<0.015	<0.015	0.270	<0.015	0.0580	5.40	0.0730	<0.015	1.1000	0.0760	<0.015	0.7300	0.08
	12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.062	0.00097	<0.00050	0.038	0.00052	<0.00050	0.022	<0.00050
	12/13/12 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.062	0.00092	<0.00050	0.038	0.00053	<0.00050	0.023	<0.00050
	03/15/13	<0.00050	0.0010	<0.00050	<0.00050	0.20	0.0017	0.040	4.3	0.055	<0.00050	0.76	0.053	0.00071	0.54	0.053
	03/15/13 DUP	<0.00050	0.0010	<0.00050	<0.00050	0.20	0.0018	0.040	4.2	0.056	<0.00050	0.75	0.052	0.00066	0.52	0.054
	06/13/13	<0.015	<0.015	<0.015	<0.015	0.23	<0.015	0.038	4.7	0.053	<0.015	0.59	0.044	<0.015	0.48	0.055
	06/13/13 DUP	<0.015	<0.015	<0.015	<0.015	0.24	<0.015	0.039	4.8	0.053	<0.015	0.61	0.046	<0.015	0.50	0.059
	09/20/13	<0.00050	<0.00050	<0.00050	<0.00050	0.17	0.0016	0.037	3.4	0.049	<0.00050	0.51	0.037	0.00066	0.4	0.05

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-12 (continued)	09/20/13 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.18	0.0017	0.036	3.4	0.048	<0.00050	0.52	0.037	0.00063	0.4	0.049
	12/16/13	<0.0025	<0.0025	<0.0025	<0.0025	0.036	<0.0025	0.0075	0.80	0.010	<0.0025	0.15	0.0057	<0.0025	0.11	0.0096
	12/16/13 DUP	<0.0025	<0.0025	<0.0025	<0.0025	0.035	<0.0025	0.0076	0.77	0.0096	<0.0025	0.14	0.0058	<0.0025	0.11	0.0098
	3/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.11	0.00077	0.018	1.9	0.025	<0.00050	0.18	0.0086	<0.00050	0.17	0.047
	3/24/2014 DUP	<0.0070	<0.0070	<0.0070	<0.0070	0.097	<0.0070	0.016	1.9	0.022	<0.0070	0.17	0.0075	<0.0070	0.14	0.035
	6/24/2014	<0.0015	<0.0015	<0.0015	<0.0015	0.014	<0.0015	0.0017	0.3	0.0021	<0.0015	0.042	<0.0015	<0.0015	0.03	<0.0015
	6/24/2014 DUP	<0.0015	<0.0015	<0.0015	<0.0015	0.014	<0.0015	0.0019	0.31	0.0023	<0.0015	0.042	0.0016	<0.0015	0.034	<0.0015
	9/30/2014	<0.015	<0.015	<0.015	<0.015	0.190	<0.015	0.039	3.50	0.045	<0.015	0.67	0.036	<0.015	0.48	0.042
	9/30/2014 DUP	<0.015	<0.015	<0.015	<0.015	0.180	<0.015	0.039	3.50	0.045	<0.015	0.68	0.035	<0.015	0.46	0.042
	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00072	<0.00050	<0.00050	0.034	0.00064	<0.00050	0.025	<0.00050	<0.00050	0.015	<0.00050
	12/11/2014 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.032	0.00060	<0.00050	0.024	<0.00050	<0.00050	0.014	<0.00050
	3/20/2015	<0.0050	<0.0050	<0.0050	<0.0050	0.102	<0.0050	0.025	2.11	0.029	<0.0050	0.58	0.018	<0.0050	0.34	0.037
	3/20/15 DUP	<0.0125	<0.0125	<0.0125	<0.0125	0.143	<0.0125	0.026	2.49	0.029	<0.0125	0.50	0.022	<0.0125	0.34	0.029
	6/19/2015	<0.010	<0.010	<0.010	<0.010	0.15	<0.010	0.028	2.57	0.025	<0.010	0.51	0.024	<0.010	0.36	0.031
	6/19/2015 DUP	<0.010	<0.010	<0.010	<0.010	0.16	<0.010	0.031	2.68	0.030	<0.010	0.52	0.023	<0.010	0.36	0.033
	9/22/2015	<0.0083	<0.0083	<0.0083	<0.0083	0.12	<0.0083	0.017	2.25	0.023	<0.0083	0.34	0.016	<0.0083	0.24	0.023
	9/22/2015 DUP	<0.0083	<0.0083	<0.0083	<0.0083	0.13	<0.0083	0.021	2.49	0.026	<0.0083	0.43	0.020	<0.0083	0.28	0.027
	12/8/2015	<0.0050	<0.0050	<0.0050	<0.0050	0.01	<0.0050	<0.0050	0.04	0.001	<0.0050	0.05	0.001	<0.0050	0.02	<0.0050
	3/8/2016	<0.0036	<0.0143	<0.0036	<0.0036	0.080	<0.0036	0.0154	1.38	0.0162	<0.0036	0.325	0.0077	<0.0036	0.209	0.0213
	3/8/16 DUP	<0.0036	<0.0143	<0.0036	<0.0036	0.082	<0.0036	0.0166	1.39	0.0156	<0.0036	0.336	0.0077	<0.0036	0.21	0.0212
6/16/2016	<0.0084	<0.0334	<0.0084	<0.0084	0.174	<0.0084	0.0299	3.31	0.0316	<0.0084	0.314	0.0128	<0.0084	0.288	0.0523	
6/16/16 DUP	<0.0084	<0.0334	<0.0084	<0.0084	0.192	<0.0084	0.0319	3.42	0.0374	<0.0084	0.367	0.0154	<0.0084	0.311	0.067	
9/27/2016	<0.010	<0.040	<0.010	<0.010	0.026	<0.010	<0.010	0.53	<0.010	<0.010	0.068	<0.010	<0.010	0.045	0.015	
9/27/2016 DUP	<0.0025	<0.010	<0.0025	<0.0025	0.044	<0.0025	0.0115	0.87	0.0114	<0.0025	0.387	0.0039	<0.0025	0.163	0.023	
12/14/2016	<0.001	<0.004	<0.001	<0.001	<0.001	<0.001	<0.001	0.01	0.0023	<0.001	<0.001	<0.001	<0.001	<0.001	0.021	
12/14/2016 DUP	<0.0025	0.0291	<0.0025	<0.0025	0.017	<0.0025	0.0047	0.74	<0.0025	<0.0025	0.062	<0.0025	<0.0025	0.042	0.021	
MW-13	12/02/96	0.0007	<0.00050	<0.00050	<0.00020	<0.00030	<0.00050	0.0003	0.0091	<0.0010	<0.00020	0.75	0.0066	--	0.082	<0.00050
	11/12/97	<0.250	<0.500	<0.250	<0.250	0.291	<0.250	<0.250	5.05	<0.250	<0.250	18.1	<0.250	--	9.05	<0.500
	08/11/99	<0.200	<0.001	<0.100	<0.100	<0.100	<0.100	<0.100	2.28	<0.100	<0.100	9.59	<0.200	--	3.92	<0.100
	11/16/99	<0.0500	<0.125	<0.0250	<0.0500	0.108	<0.0250	0.051	2.62	<0.0250	<0.0250	7.21	0.0675	--	3.05	--
	02/28/00	<0.200	<0.001	<0.100	<0.100	<0.100	<0.100	<0.100	0.562	<0.100	<0.100	1.34	<0.200	--	0.602	<0.100
	06/28/00	<0.100	<0.500	<0.0500	<0.0500	0.132	<0.0500	0.142	4.21	<0.0500	<0.0500	14.7	0.155	--	6.36	<0.0500
	05/30/01	<0.200	<1	<0.100	<0.100	<0.100	<0.100	<0.100	2.46	<0.100	<0.100	10.3	<0.200	--	4.62	<0.100
	05/30/02	<0.0020	<0.0010	<0.0010	<0.0020	0.00144	<0.0010	0.00128	0.0604	<0.0010	<0.0010	0.241	0.00168	--	0.0864	<0.0010
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00171	<0.00050	0.00175	0.0796	0.00126	<0.00050	0.121	0.00158	--	0.13	<0.00050
	11/16/04	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	1.20	<0.0120	--	0.23	<0.0120
	05/18/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00314	<0.00050	<0.00050	0.0712	<0.00050	--	0.0103	<0.00050
	09/12/07	<0.0500	<0.0250	<0.0250	<0.0500	0.055	<0.0250	0.028	1.29	<0.0250	<0.0250	2.73	0.0295	--	2.02	<0.0250
	12/12/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00336	<0.00050	<0.00050	0.0513	0.0006	--	0.0195	<0.00050

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-13 (continued)	03/05/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00832	<0.000500	0.00446	0.174	0.00452	<0.000500	0.383	0.00421	<0.000500	0.337	0.001
	06/25/08	<0.00500	<0.00500	<0.00500	<0.00500	0.0152	<0.00500	<0.00500	0.32	0.0104	<0.00500	0.132	<0.00500	--	0.16	<0.00500
	09/19/08	<0.00500	<0.00250	<0.00250	<0.00500	0.0056	<0.00250	<0.00250	0.116	0.00265	<0.00250	0.266	<0.00250	<0.00250	0.187	<0.00250
	12/10/08	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	0.00062	0.032	0.00069	<0.00050	0.025	0.0006	<0.00050	0.039	<0.00050
	03/27/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.025	<0.00050	<0.00050	0.017	<0.00050
	03/27/09 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.00079	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.025	<0.00050	<0.00050	0.017	<0.00050
	06/18/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	0.0008	0.058	0.0018	<0.00050	0.016	<0.00050	<0.00050	0.042	<0.00050
	09/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	0.0033	0.13	0.0029	<0.00050	0.43	0.004	<0.00050	0.27	0.001
	12/18/09	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	0.016	<0.00050	<0.00050	0.066	0.00061	<0.00050	0.045	<0.00050
	03/19/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	0.0014	0.064	0.0012	<0.00050	0.13	0.0013	<0.00050	0.11	<0.00050
	06/16/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.0076	<0.00050
	09/23/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0027	<0.0005	<0.0005	0.045	<0.0005	<0.0005	0.012	<0.0005
	12/21/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	03/11/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.00065	<0.00050
	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.0061	<0.0005	<0.0005	0.0042	<0.0005
	09/19/11	<0.00050	0.00054	<0.00050	<0.00050	0.035	<0.00050	0.017	0.7	0.02	<0.00050	2.2	0.017	0.00063	1.3	0.0036
	12/09/11	<0.0090	<0.0090	<0.0090	<0.0090	0.023	<0.0090	0.011	0.53	0.018	<0.0090	2.8	0.012	<0.0090	1.4	<0.0090
03/12/12	<0.0090	<0.0090	<0.0090	<0.0090	0.024	<0.0090	0.0140	0.60	0.0140	<0.0090	1.8000	0.0110	<0.0090	1.2000	<0.0090	
06/22/12	<0.004	<0.004	<0.004	<0.004	0.040	<0.004	0.0130	0.94	0.0300	<0.004	1.3000	0.0086	<0.004	1.0000	0.00	
09/14/12	<0.0040	<0.0040	<0.0040	<0.0040	0.038	<0.0040	0.0210	0.90	0.0220	<0.0040	3.1000	0.0160	<0.0040	1.8000	<0.0040	
12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.013	0.00062	<0.00050	0.088	<0.00050	<0.00050	0.051	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-13 (continued)	03/15/13	<0.00050	<0.00050	<0.00050	<0.00050	0.034	<0.00050	0.021	0.89	0.020	<0.00050	2.4	0.014	0.00068	1.7	0.0032
	06/14/13	<0.0040	<0.0040	<0.0040	<0.0040	0.019	<0.0040	0.0094	0.52	0.015	<0.0040	1.1	0.0060	<0.0040	0.92	<0.0040
	09/20/13	<0.00050	<0.00050	<0.00050	<0.00050	0.04	<0.00050	0.02	0.77	0.019	<0.00050	2.6	0.013	0.00074	1.7	0.0034
	12/13/13	<0.0040	<0.0040	<0.0040	<0.0040	0.011	<0.0040	0.0066	0.28	0.0058	<0.0040	1.3	0.005	<0.0040	0.72	<0.0040
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.1	<0.00050	<0.00050	0.054	<0.00050
	6/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.88	0.033	<0.00050	1.5	0.0120	0.00067	1.3	0.0032
	09/30/14	<0.0040	<0.0040	<0.0040	<0.0040	0.038	<0.0040	0.020	0.890	0.019	<0.0040	3.1	0.013	<0.0040	2.0	<0.0040
	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.018	0.00066	<0.00050	0.091	<0.00050	<0.00050	0.065	<0.00050
	3/18/2015	<0.0016	<0.0016	<0.0016	<0.0016	0.019	<0.0016	0.0031	0.52	0.0074	<0.0016	0.55	0.0024	<0.0016	0.61	<0.0016
	6/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.034	<0.00050	0.016	0.62	0.015	<0.00050	2.0	0.010	<0.00050	1.4	0.0020
	9/22/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.034	<0.00050	0.021	0.75	0.016	<0.00050	2.4	0.010	<0.00050	1.7	0.0024
	12/8/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	0.001	0.03	0.001	<0.00050	0.2	0.001	<0.00050	0.1	<0.00050
	3/8/2016	<0.0025	<0.010	<0.0025	<0.0025	0.0143	<0.0025	0.0064	0.336	0.0046	<0.0025	0.839	0.0037	<0.0025	0.736	<0.0025
	6/16/2016	<0.0084	<0.0334	<0.0084	<0.0084	0.0413	<0.0084	0.0178	0.841	0.0192	<0.0084	2.47	0.0101	<0.0084	1.82	<0.0084
	9/28/2016	<0.0025	<0.010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.148	<0.0025	<0.0025	4.84	<0.0025	<0.0025	0.90	<0.0025
	9/28/16 DUP	<0.0025	<0.010	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.145	<0.0025	<0.0025	5.09	<0.0025	<0.0025	0.95	<0.0025
12/16/2016	<0.005	<0.020	<0.005	<0.005	<0.005	<0.005	<0.005	0.509	<0.005	<0.005	1.02	<0.005	<0.005	0.39	<0.005	
MW-14	11/12/97	<0.0050	<0.0100	<0.0050	<0.0050	0.00501	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0426	<0.0050	--	0.394	<0.0100
	08/10/99	<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0151	<0.0100	<0.0100	0.121	0.0356	--	0.853	<0.0100
	11/16/99	<0.0020	<0.0050	<0.0010	<0.0020	0.00248	<0.0010	0.00248	0.0042	<0.0010	<0.0010	0.186	0.0108	--	0.313	<0.0010
	02/28/00	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	0.0832	0.0851	<0.0500	<0.0500	0.711	0.19	--	5.30	<0.0500
	06/27/00	<0.0100	<0.0500	<0.0050	<0.0050	0.0101	<0.0050	0.0189	0.219	<0.0050	<0.0050	0.207	0.0462	--	1.15	<0.0050
	11/30/00	<0.0020	<0.0100	<0.0010	<0.0010	0.00108	<0.0010	0.00188	0.00227	<0.0010	<0.0010	0.0213	0.00554	--	0.157	<0.0010
	05/30/01	<0.0010	<0.0500	<0.0050	<0.0050	0.00616	<0.0050	0.0138	0.0304	<0.0050	<0.0050	0.268	0.0282	--	1.28	<0.0050
	05/30/02	<0.0100	<0.0050	<0.0050	<0.0100	<0.0050	<0.0050	<0.0050	0.0084	<0.0050	<0.0050	0.0783	0.0119	--	0.303	<0.0050
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.0009	<0.00050	0.00147	0.00415	<0.00050	<0.00050	0.0806	0.00499	--	0.188	<0.00050
	11/15/04	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.096	<0.0250	<0.0250	0.48	<0.0250	--	1.20	<0.0250
	05/17/05	<0.0020	<0.0010	<0.0010	<0.0020	0.00464	<0.0010	<0.0023	0.0411	<0.0010	<0.0010	0.127	0.00928	--	0.367	<0.0010
	09/12/07	<0.0200	<0.0100	<0.0100	<0.0200	0.0216	<0.0100	<0.0100	0.162	<0.0100	<0.0100	0.18	0.0222	--	0.963	<0.0100
	03/05/08	<0.00100	<0.000500	0.000850 J	<0.00100	0.0243	<0.000500	0.0139	0.217	0.00386	<0.000500	0.549	0.0272	<0.000500	1.77	<0.000500
	06/25/08	<0.00500	<0.00500	<0.00500	<0.00500	0.0152	<0.00500	0.0102	0.113	<0.00500	<0.00500	0.36	0.0182	--	1.29	<0.00500
	09/19/08	<0.00500	<0.00250	<0.00250	<0.00500	0.0191	<0.00250	0.0086	0.173	<0.00250	<0.00250	0.425	0.0166	<0.00250	1.32	<0.00250
	12/10/08	<0.0050	<0.0050	<0.0050	<0.0050	0.017	<0.0050	0.0096	0.16	<0.0050	<0.0050	0.33	0.017	<0.0050	1.20	<0.0050
03/27/09	<0.0025	<0.0025	<0.0025	<0.0025	0.016	<0.0025	0.0067	0.16	0.0025	<0.0025	0.32	0.014	<0.0025	0.98	<0.0025	
06/17/09	<0.0025	<0.0025	<0.0025	<0.0025	0.021	<0.0025	0.012	0.15	<0.0025	<0.0025	0.40	0.021	<0.0025	1.40	<0.0025	
09/18/09	<0.00050	<0.00050	0.00074	<0.00050	0.019	<0.00050	0.0088	0.15	0.002	<0.00050	0.44	0.017	<0.00050	1.30	<0.00050	
12/15/09	<0.0025	<0.0025	<0.0025	<0.0025	0.011	<0.0025	0.0047	0.12	<0.0025	<0.0025	0.41	0.0076	<0.0025	0.82	<0.0025	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-14 (continued)	03/17/10	<0.0025	<0.0025	<0.0025	<0.0025	0.022	<0.0025	0.0095	0.14	<0.0025	<0.0025	0.32	0.015	<0.0025	1.3	<0.0025
	07/02/10	<0.0025	<0.0025	<0.0025	<0.0025	0.0070	<0.0025	0.0048	0.052	<0.0025	<0.0025	0.22	0.0059	<0.0025	0.61	<0.0025
	09/22/10	<0.003	<0.003	<0.003	<0.003	0.016	<0.003	0.0065	0.140	<0.003	<0.003	0.230	0.01	<0.003	0.800	<0.003
	12/08/10	<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	0.0007	0.011	<0.0005	<0.0005	0.082	0.0015	<0.0005	0.150	<0.0005
	03/09/11	<0.0030	<0.0030	<0.0030	<0.0030	0.0068	<0.0030	0.0038	0.055	<0.0030	<0.0030	0.200	0.005	<0.0030	0.540	<0.0030
	06/08/11	<0.0005	<0.0005	<0.0005	<0.0005	0.00064	<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.027	0.0011	<0.0005	0.066	<0.0005
	09/14/11	<0.0025	<0.0025	<0.0025	<0.0025	0.012	<0.0025	0.0057	0.12	<0.0025	<0.0025	0.3	0.008	<0.0025	0.85	<0.0025
	12/06/11	<0.0025	<0.0025	<0.0025	<0.0025	0.0084	<0.0025	0.0039	0.088	<0.0025	<0.0025	0.32	0.0057	<0.0025	0.74	<0.0025
	03/07/12	<0.0025	<0.0025	<0.0025	<0.0025	0.009	<0.0025	0.0046	0.09	<0.0025	<0.0025	0.2700	0.0061	<0.0025	0.7600	<0.0025
	06/19/12	<0.0025	<0.0025	<0.0025	<0.0025	0.011	<0.0025	0.0056	0.07	<0.0025	<0.0025	0.2000	0.0074	<0.0025	0.7300	<0.0025
	09/11/12	<0.0025	<0.0025	<0.0025	<0.0025	0.011	<0.0025	0.0051	0.11	<0.0025	<0.0025	0.2800	0.0066	<0.0025	0.7300	<0.0025
	12/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	0.016	<0.00050	<0.00050	0.027	<0.00050
	03/12/13	<0.00050	<0.00050	0.00056	<0.00050	0.012	<0.00050	0.0044	0.10	0.0017	<0.00050	0.23	0.0072	<0.00050	0.67	<0.00050
	06/12/13	<0.0030	<0.0030	<0.0030	<0.0030	0.011	<0.0030	0.0050	0.084	<0.0030	<0.0030	0.26	0.0066	<0.0030	0.77	<0.0030
	09/18/13	<0.00050	<0.00050	<0.00050	<0.00050	0.013	<0.00050	0.0046	0.13	0.0020	<0.00050	0.24	0.0059	<0.00050	0.64	<0.00050
	12/11/13	<0.0015	<0.0015	<0.0015	<0.0015	0.0084	<0.0015	0.0028	0.083	<0.0015	<0.0015	0.18	0.0037	<0.0015	0.46	<0.0015
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.02	<0.00050
	6/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.017	<0.00050	0.0070	0.12	0.0018	<0.00050	0.21	0.00087	<0.00050	0.67	<0.00050
	9/24/2014	<0.0025	<0.0025	<0.0025	<0.0025	0.010	<0.0025	0.0040	0.120	<0.0025	<0.0025	0.24	0.004	<0.0025	0.64	<0.0025
	12/9/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0047	<0.00050	<0.00050	0.029	0.00061	<0.00050	0.063	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	0.0059	0.13	0.0022	<0.00050	0.31	0.0059	<0.00050	0.91	<0.00050
	6/16/2015	<0.0031	<0.0031	<0.0031	<0.0031	0.015	<0.0031	0.0049	0.12	<0.0031	<0.0031	0.25	0.0044	<0.0031	0.79	<0.0031
	9/21/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	0.0056	0.12	0.0021	<0.00050	0.20	0.0047	<0.00050	0.65	<0.00050
	12/8/2015	Not sampled; well monument under water.														
	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.03	<0.00050
	9/27/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.007	<0.00050	0.0021	0.06	0.0009	<0.00050	0.10	0.0017	<0.00050	0.22	<0.00050
12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.001	<0.00050	
MW-15	11/13/97	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	0.00678	<0.00050	<0.00050	0.00238	0.00168	--	0.00181	<0.0010
	11/16/99	<0.0010	<0.0025	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.967	0.0137	--	0.0634	<0.00050
	02/28/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0179	0.00155	--	0.00101	<0.00050
	06/27/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00544	0.00103	--	0.000565	<0.00050
	05/30/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00232	<0.0010	--	<0.00050	<0.00050
	05/31/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00259	0.00063	--	<0.00050	<0.00050
	05/29/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.00442	<0.00050	--	0.0013	<0.00050
	11/02/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	--	<0.00050	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-15 (continued)	11/16/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.012	<0.00050	--	0.0031	<0.00050
	03/24/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	--	0.00149	<0.00050
	05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	--	0.001	<0.00050
	09/13/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00054 J	<0.00050	--	<0.00050	<0.00050
	03/07/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.00263 J	<0.000500	<0.000500	<0.000500	<0.000500
	09/18/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.001	<0.000500	<0.000500	<0.000500	<0.000500
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	<0.00050	<0.00050
	09/17/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	<0.00050	<0.00050	<0.00050
	03/18/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	<0.00050	<0.00050	<0.00050
	09/23/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00076	<0.0005	<0.0005	<0.0005	<0.0005
	03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/16/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	<0.00050	<0.00050	<0.00050
	03/09/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	<0.00050	<0.00050	<0.00050	<0.00050
	09/10/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	<0.00050	<0.00050	<0.00050
	03/14/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00058	<0.00050	<0.00050	<0.00050	<0.00050
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00056	<0.00050	<0.00050	<0.00050	<0.00050
	3/21/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/30/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00087	<0.00050	<0.00050	<0.00050	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/23/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	<0.00050	<0.00050
3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00059	<0.00050	<0.00050	<0.00050	<0.00050	
9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	<0.00050	<0.00050	
MW-16	11/12/97	<0.0050	<0.0100	<0.0050	<0.0050	0.0198	<0.0050	0.0278	0.0236	<0.0050	<0.0050	0.328	0.0575	--	0.142	<0.0100
	08/11/99	<0.0050	<0.0250	<0.0025	<0.0025	0.0152	<0.0025	<0.0025	0.0072	<0.0025	<0.0025	0.205	0.0556	--	0.0856	<0.0025
	02/28/00	<0.0020	<0.0100	<0.0010	<0.0010	0.0104	<0.0010	0.012	0.0074	<0.0010	<0.0010	0.523	0.0545	--	0.112	<0.0010
	06/27/00	<0.0100	<0.0500	<0.0050	<0.0050	0.0124	<0.0050	0.0139	0.00839	<0.0050	<0.0050	0.236	0.045	--	0.0938	<0.0050
	05/30/01	<0.0100	<0.0500	<0.0050	<0.0050	0.00928	<0.0050	0.012	0.00895	<0.0050	<0.0050	0.302	0.0301	--	0.11	<0.0050
	05/30/02	<0.0050	<0.0025	<0.0025	<0.0050	0.0135	<0.0025	0.0106	0.00865	<0.0025	<0.0025	0.467	0.024	--	0.119	<0.0025
	05/29/03	<0.0050	<0.0025	<0.0025	<0.0050	0.0036	<0.0025	0.00335	0.00285	<0.0025	<0.0025	0.412	0.0134	--	0.076	<0.0025
	11/02/04	<0.0020	<0.0100	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00166	<0.0010	<0.0010	0.26	0.0069	--	0.0254	<0.0010
	11/16/04	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.30	0.0078	--	0.026	<0.0025
	03/24/05	<0.0020	<0.0010	<0.0010	<0.0010	<0.0018	<0.0010	<0.00134	0.00196	<0.0010	<0.0010	0.373	0.0118	--	0.0494	<0.0010
05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00439	<0.00050	0.00314	0.00925	<0.00050	<0.00050	0.12	0.00909	--	0.0415	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-16 ..... (continued)	11/15/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00275	<0.000500	0.00186	0.0025	<0.000500	<0.000500	0.152	0.00894	--	0.0334	<0.000500
	06/06/06	<0.00200	<0.00200	<0.00200	<0.00200	0.0122	<0.00200	0.00338	0.21	<0.00200	<0.00200	0.0846	0.00256	--	0.0252	0.00564
	12/06/06	<0.00200	<0.00100	<0.00100	<0.00200	0.0042	<0.00100	0.00212	0.0167	<0.00100	<0.00100	0.176	0.00588	--	0.0456	<0.00100
	05/23/07	<0.00100	<0.00100	<0.00100	<0.00100	0.00257	<0.00100	<0.00100	0.014	<0.00100	<0.00100	0.0988	0.00335	--	0.0238	<0.00100
	09/13/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00315	<0.00050	0.00108	0.0066	<0.00050	<0.00050	0.163	0.00587	--	0.0492	<0.00050
	12/12/07	<0.00200	<0.00100	<0.00100	<0.00100	0.00232	<0.00100	0.00144	0.0059	<0.00100	<0.00100	0.11	0.00592	--	0.0282	<0.00100
	03/07/08	<0.00100	<0.000500	<0.000500	<0.00100	0.003	<0.000500	0.00186	0.00593	<0.000500	<0.000500	0.28	0.00612	<0.000500	0.0733	<0.000500
	09/18/08	<0.00500	<0.00250	<0.00250	<0.00500	0.0027	<0.00250	<0.00250	0.00515	<0.00250	<0.00250	0.30	0.0062	<0.00250	0.0652	<0.00250
	12/09/08	<0.0010	<0.0010	<0.0010	<0.0010	0.0026	<0.0010	0.0018	0.0055	<0.0010	<0.0010	0.30	0.0057	<0.0010	0.067	<0.0010
	03/26/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	0.00082	0.0032	<0.00050	<0.00050	0.15	0.0052	<0.00050	0.028	<0.00050
	06/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.005	<0.00050	0.00095	0.029	<0.00050	<0.00050	0.054	0.0018	<0.00050	0.016	0.00068
	09/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	0.0011	0.002	<0.00050	<0.00050	0.22	0.0048	<0.00050	0.033	<0.00050
	12/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0009	<0.00050	0.0006	0.0014	<0.00050	<0.00050	0.1	0.0032	<0.00050	0.019	<0.00050
	03/19/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	0.0010	0.002	<0.00050	<0.00050	0.11	0.0045	<0.00050	0.036	<0.00050
	06/16/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0049	<0.00050	0.0009	0.037	<0.00050	<0.00050	0.039	0.00094	<0.00050	0.0099	0.0016
	09/23/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	0.00094	0.0028	<0.0005	<0.0005	0.240	0.0042	<0.0005	0.043	<0.0005
	12/10/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	0.00054	0.0016	<0.0005	<0.0005	0.094	0.0024	<0.0005	0.018	<0.0005
	03/10/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	0.0005	0.0062	<0.00050	<0.00050	0.110	0.0019	<0.00050	0.021	<0.00050
	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	0.0049	<0.0005	0.0012	0.063	<0.0005	<0.0005	0.028	<0.0005	<0.0005	0.0071	0.0022
	09/19/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.0051	<0.00050	<0.00050	0.16	0.0027	<0.00050	0.013	<0.00050
12/08/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00092	<0.00050	0.00061	0.0022	<0.00050	<0.00050	0.21	0.0029	<0.00050	0.038	<0.00050	
06/20/12	<0.0005	<0.0005	<0.0005	<0.0005	0.004	<0.0005	0.0006	0.02	<0.0005	<0.0005	0.0600	0.0010	<0.0005	0.0140	0.00	
09/13/12	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	0.0006	0.01	<0.00050	<0.00050	0.1900	0.0024	<0.00050	0.0350	<0.00050	
12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	0.00068	0.0057	<0.00050	<0.00050	0.11	0.0011	<0.00050	0.024	<0.00050	
03/14/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00098	<0.00050	0.00070	0.0047	<0.00050	<0.00050	0.20	0.0020	<0.00050	0.050	<0.00050	
06/14/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0060	<0.00050	<0.00050	0.084	0.00096	<0.00050	0.018	<0.00050	
09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00092	<0.00050	0.00075	0.0071	<0.00050	<0.00050	0.18	0.0014	<0.00050	0.057	<0.00050	
12/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00080	<0.00050	0.00068	0.0059	<0.00050	<0.00050	0.16	0.0014	<0.00050	0.052	<0.00050	
3/20/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	0.00089	0.019	<0.00050	<0.00050	0.052	<0.00050	<0.00050	0.013	0.00055	
6/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.070	0.00070	<0.00050	0.012	<0.00050	
9/27/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00077	<0.00050	0.00066	0.0088	<0.00050	<0.00050	0.20	0.0014	<0.00050	0.047	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)															
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride	
MW-16 (continued)	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	<0.00050	0.0040	<0.00050	<0.00050	0.076	0.00096	<0.00050	0.017	<0.00050	
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00070	<0.00050	<0.00050	0.0060	<0.00050	<0.00050	0.16	0.00094	<0.00050	0.031	<0.00050	
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00061	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.18	0.0010	<0.00050	0.042	<0.00050	
	9/23/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00056	<0.00050	<0.00050	0.00065	0.010	<0.00050	<0.00050	0.17	0.0012	<0.00050	0.044	<0.00050
	12/7/2015	Not sampled: well monument under water.															
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.14	0.0007	<0.00050	0.036	<0.00050	
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.003	<0.00050	<0.00050	0.05	<0.00050	<0.00050	0.012	<0.00050	
MW-17	11/13/97	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	--	<0.00050	<0.0010	
	11/16/99	<0.0010	<0.0025	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.127	0.0015	--	0.00954	<0.00050	
	02/28/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00185	<0.0010	--	0.00251	<0.00050	
	06/27/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00227	<0.0010	--	<0.00050	<0.00050	
	05/30/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	--	<0.00050	<0.00050	
	05/30/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00082	<0.00050	--	<0.00050	<0.00050	
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00175	<0.00050	--	0.00092	<0.00050	
	11/15/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0025	<0.00050	--	<0.00050	<0.00050	
	05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00806	<0.00050	--	0.00668	<0.00050	
	05/23/07	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00882	<0.00100	<0.00100	0.0378	<0.00100	--	0.0282	<0.00100	
	09/11/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050 J	<0.00050	--	<0.00050	<0.00050	
	03/05/08	<0.00100	<0.000500	<0.000500	<0.00100	0.0009	<0.000500	<0.000500	0.00096	<0.000500	<0.000500	0.00105	<0.000500	<0.000500	0.00362	<0.000500	
	09/19/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.0008	<0.000500	
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	0.00057	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.00069	<0.00050	<0.00050	0.003	<0.00050	
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.00072	<0.00050	<0.00050	0.0032	<0.00050	
	03/23/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.00320	0.00058	<0.00050	0.0180	<0.00050	
	09/20/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00069	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	0.0030	<0.0005	
	03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00065	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.0082	<0.00050	
	09/13/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00096	<0.00050	<0.00050	0.00071	<0.00050	<0.00050	0.0031	<0.00050	
	03/07/12	<0.00050	<0.00050	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.0068	0.0006	<0.00050	0.0250	<0.00050	
09/11/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.00066	<0.00050	<0.00050	0.0025	<0.00050		
03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	<0.00050	0.0041	<0.00050	<0.00050	0.011	<0.00050		
09/17/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.0042	<0.00050	<0.00050	0.0089	<0.00050		
3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		
9/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.0032	<0.00050	<0.00050	0.0068	<0.00050		
3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00071	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0039	<0.00050	<0.00050	0.0126	<0.00050		
9/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.0042	<0.00050		
3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.00083	<0.00050	<0.00050	0.0033	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0227	<0.00050		
9/27/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.0042	<0.00050	<0.00050	0.0104	<0.00050		

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-18i	09/29/00	ND	ND	0.000694	ND	0.000843	ND	ND	0.0165	ND	ND	0.0117	ND	--	0.00832	ND
	11/30/00	<0.0010	<0.0050	<0.00050	<0.00050	0.000907	<0.00050	<0.00050	0.0116	<0.00050	<0.00050	0.0124	<0.0010	--	0.0176	<0.00050
	02/27/01	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0102	<0.0025	<0.0025	0.0152	<0.0050	--	0.01	<0.0025
	05/30/01	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.00647	<0.0025	<0.0025	0.0295	<0.0050	--	0.00806	<0.0025
	09/25/01	<0.0010	<0.0010	<0.0010	<0.0010	0.0018	<0.0010	<0.0010	0.023	<0.0010	<0.0010	0.062	0.0023	--	0.039	<0.0010
	03/29/02	<0.0010	<0.00050	<0.00050	<0.0010	0.0012	<0.00050	<0.00050	0.0173	<0.00050	<0.00050	0.0711	0.00122	--	0.031	<0.00050
	05/30/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00118	<0.00050	<0.00050	0.0186	<0.00050	<0.00050	0.0532	0.00114	--	0.0193	<0.00050
	08/29/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00691	<0.00050	<0.00050	0.0182	<0.00050	--	0.00734	<0.00050
	11/07/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00056	<0.00050	<0.00050	0.0101	<0.00050	<0.00050	0.0233	<0.00050	--	0.0097	<0.00050
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00068	<0.00050	<0.00050	0.0123	<0.00050	<0.00050	0.0276	0.0005	--	0.0125	<0.00050
	05/29/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00059	<0.00050	<0.00050	0.0104	<0.00050	<0.00050	0.0239	0.0005	--	0.0108	<0.00050
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0161	<0.0010	<0.0010	0.0315	<0.0010	--	0.0163	<0.0010
	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	0.001	<0.00050	<0.00050	0.0142	<0.00050	<0.00050	0.0697	0.001	--	0.0	<0.00050
	05/04/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0156	<0.0010	<0.0010	0.112	<0.0010	--	0.0121	<0.0010
	08/17/04	<0.0010	<0.00050	0.00376	<0.00050	0.00081	0.00186	<0.00050	0.0226	0.00078	<0.00050	0.0438	0.00096	--	0.024	<0.0010
	11/02/04	<0.00050	<0.00050	<0.00050	<0.00050	0.00109	<0.00050	<0.00050	0.0218	<0.00050	<0.00050	0.0322	0.0006	--	0.0178	<0.00050
	11/16/04	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.024	<0.00050	<0.00050	0.042	0.00069	--	0.021	<0.00050
	02/01/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00892	<0.00050	<0.00050	0.013	<0.00050	--	0.00601	<0.00050
	05/18/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.00969	<0.00050	--	0.01	<0.00050
	08/18/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00117	<0.000500	<0.000500	0.0180 B	<0.000500	<0.000500	0.0214 B	0.00058	--	0.0163 B	<0.000500
	08/18/05 DUP	<0.00100	<0.000500	<0.000500	<0.00100	0.00117	<0.000500	<0.000500	0.0185 B	<0.000500	<0.000500	0.0218 B	0.00057	--	0.0162 B	<0.000500
	11/15/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00731	<0.000500	<0.000500	0.0114	<0.000500	--	0.00631	<0.000500
	02/21/06	<0.00100	<0.000500	<0.000500	<0.00100	0.00093	<0.000500	<0.000500	0.0148	<0.000500	<0.000500	0.0243	0.00052	--	0.0152	<0.000500
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00588	<0.00100	<0.00100	0.00846	<0.00100	--	0.00447	<0.00100
	09/06/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00579	<0.00050	<0.00050	0.00789	<0.00050	--	0.00423	<0.00050
	12/06/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00056	<0.00050	<0.00050	0.0116	<0.00050	<0.00050	0.0112	<0.00050	--	0.00691	<0.00050
	02/07/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00068	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.015	<0.00050	--	0.00932	<0.00050
	05/23/07	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0146	<0.00100	<0.00100	0.0172	<0.00100	--	0.0113	<0.00100
	09/11/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00487	<0.00050	<0.00050	0.00113	<0.00050	--	0.00146	<0.00050
	12/13/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00299	<0.00050	<0.00050	0.00557	<0.00050	--	0.00332	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-18i (continued)	03/06/08	<0.00100	<0.000500	<0.000500	<0.00100	0.001	<0.000500	<0.000500	0.0132	<0.000500	<0.000500	0.0132	<0.000500	<0.000500	0.00978	<0.000500
	06/10/08	<0.00100	0.001	0.001	<0.00100	<0.00100	<0.00100	<0.00100	0.00417	<0.00100	<0.00100	0.00431	<0.00100	--	0.00218	<0.00100
	09/17/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00395	<0.000500	<0.000500	0.0031	<0.000500	<0.000500	0.00255	<0.000500
	12/09/08	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0085	<0.00050	<0.00050	0.0074	<0.00050
	03/26/09	<0.00050	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	0.008	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	0.0047	<0.00050
	06/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0033	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.0017	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0082	<0.00050	<0.00050	0.0059	<0.00050	<0.00050	0.0045	<0.00050
	12/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.0016	<0.00050
	03/18/10	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	<0.00050	0.0110	<0.00050	<0.00050	0.0097	<0.00050	<0.00050	0.0060	<0.00050
	06/15/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0030	<0.00050	<0.00050	0.0036	<0.00050	<0.00050	0.0018	<0.00050
	09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	0.00071	<0.0005	0.0005	0.015	<0.0005	<0.0005	0.0098	<0.0005	<0.0005	0.0074	<0.0005
	12/09/10	<0.0005	<0.0005	<0.0005	<0.0005	0.00066	<0.0005	0.0005	0.015	<0.0005	<0.0005	0.0120	<0.0005	<0.0005	0.0080	<0.0005
	03/10/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0052	<0.00050
	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.002	<0.0005	<0.0005	0.0021	<0.0005	<0.0005	0.001	<0.0005
	09/15/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0033	<0.00050	<0.00050	0.0029	<0.00050	<0.00050	0.0019	<0.00050
	12/08/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0098	<0.00050	<0.00050	0.0085	<0.00050	<0.00050	0.0048	<0.00050
	03/07/12	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.02	<0.00050	<0.00050	0.0120	<0.00050	<0.00050	0.0064	<0.00050
	06/21/12	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00	<0.0005	<0.0005	0.0015	<0.0005	<0.0005	0.0010	<0.0005
	09/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0022	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.001	<0.00050
	12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0063	<0.00050	<0.00050	0.0039	<0.00050	<0.00050	0.0021	<0.00050
	03/13/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0052	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.0021	<0.00050
	06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0039	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0013	<0.00050
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.0022	<0.00050	<0.00050	0.0013	<0.00050
	12/13/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.0053	<0.00050	<0.00050	0.0036	<0.00050
	3/20/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.0010	<0.00050	<0.00050	0.00070	<0.00050
	6/26/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00063	<0.00050	<0.00050	0.00019	<0.00050	<0.00050	0.001	<0.00050
	9/26/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.00093	<0.00050
	12/10/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0029	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.0013	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0023	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.0011	<0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.0011	<0.00050
	9/23/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0035	<0.00050	<0.00050	0.0034	<0.00050	<0.00050	0.0018	<0.00050
	12/7/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0065	<0.00050	<0.00050	0.0040	<0.00050	<0.00050	0.0026	<0.00050
	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.001	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00098	<0.00050	<0.00050	0.00073	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.00085	<0.00050
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0028	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.0012	<0.00050

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-19	11/07/02	<0.0200	<0.0100	<0.0100	<0.0200	0.252	<0.0100	0.0662	2.45	0.023	<0.0100	3.10	0.139	--	1.81	0.0792
	05/30/03	<0.0500	<0.0250	<0.0250	<0.0500	0.109	<0.0250	0.036	1.30	<0.0250	<0.0250	7.16	0.104	--	2.07	0.0355
	11/16/04	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.065	<0.0500	0.49	<0.0500	<0.0500	7.30	0.13	--	1.40	<0.0500
	05/18/05	<0.0100	<0.0050	<0.0050	<0.0100	0.0193	<0.0050	<0.0050	0.161	<0.0050	<0.0050	1.50	0.0338	--	0.205	0.0246
	11/15/05	<0.0200	<0.0100	<0.0100	<0.0200	0.027	<0.0100	0.0188	0.23	<0.0100	<0.0100	3.08	0.0672	--	0.785	0.0146
	11/15/05 DUP	<0.0200	<0.0100	<0.0100	<0.0200	0.025	<0.0100	0.0202	0.221	<0.0100	<0.0100	2.86	0.0644	--	0.762	0.0152
	06/05/06	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0809	<0.0100	<0.0100	1.28	0.0131	--	0.237	<0.0100
	12/06/06	<0.0200	<0.0100	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	0.0762	<0.0100	<0.0100	2.06	0.0172	--	0.304	<0.0100
	05/22/07	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.114	<0.0200	<0.0200	2.72	0.0514	--	0.504	<0.0200
	09/11/07	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.0855	<0.0250	<0.0250	3.37	0.0625	--	0.608	<0.0250
	12/12/07	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.08	<0.0250	<0.0250	2.07	0.0385	--	0.326	<0.0250
	03/05/08 <sup>7</sup>	<0.00100	<0.000500	<0.000500	<0.00100	0.0125	<0.000500	0.0205	0.149	0.00453	<0.000500	4.06	0.066	<0.000500	1.03	0.00641
	06/25/08	<0.0200	<0.0200	<0.0200	<0.0200	0.0458	<0.0200	0.0296	0.435	<0.0200	<0.0200	2.79	0.0466	--	1.41	<0.0200
	09/19/08	<0.0500	<0.0250	<0.0250	<0.0500	0.062	<0.0250	0.0375	0.715	<0.0250	<0.0250	4.99	0.0565	<0.0250	2.87	0.0395
	12/10/08	<0.025	<0.025	<0.025	<0.025	0.051	<0.025	<0.025	0.50	<0.025	<0.025	6.60	0.11	<0.025	1.10	<0.025
	03/27/09	<0.015	<0.015	<0.015	<0.015	0.053	<0.015	0.039	0.65	<0.015	<0.015	4.50	0.12	<0.015	1.90	0.025
	03/27/09 DUP	<0.015	<0.015	<0.015	<0.015	0.056	<0.015	0.039	0.67	<0.015	<0.015	4.80	0.13	<0.015	1.90	0.025
	06/18/09	<0.0025	<0.0025	<0.0025	<0.0025	0.0054	<0.0025	0.0053	0.082	<0.0025	<0.0025	0.68	0.0086	<0.0025	0.24	<0.0025
	06/18/09 DUP	<0.0025	<0.0025	<0.0025	<0.0025	0.0051	<0.0025	0.0054	0.08	<0.0025	<0.0025	0.66	0.0084	<0.0025	0.24	<0.0025
	09/18/09	<0.0025	<0.0025	<0.0025	<0.0025	0.012	<0.0025	0.036	0.17	0.0046	<0.0025	9.4	0.14	<0.0025	2	0.011
	09/18/09 DUP	<0.0025	<0.0025	<0.0025	<0.0025	0.012	<0.0025	0.036	0.17	0.0044	<0.0025	9.7	0.14	<0.0025	2	0.012
	12/18/09	<0.010	<0.010	<0.010	<0.010	0.087	<0.010	0.029	0.78	0.013	<0.010	3.2	0.057	<0.010	1.2	0.035
	12/18/09 DUP	<0.010	<0.010	<0.010	<0.010	0.084	<0.010	0.027	0.74	0.012	<0.010	3.1	0.053	<0.010	1.2	0.032
	03/19/10	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0083	0.045	<0.005	<0.005	1.9	0.019	<0.005	0.38	<0.005
	03/19/10 DUP	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	0.0083	0.044	<0.007	<0.007	1.8	0.018	<0.007	0.36	<0.007
	06/17/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0067	<0.00050	<0.00050	0.067	<0.00050	<0.00050	0.025	<0.00050
	06/17/10 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.0069	<0.00050	<0.00050	0.065	0.00052	<0.00050	0.024	<0.00050
	09/23/10	<0.0025	<0.0025	<0.0025	<0.0025	0.0087	<0.0025	0.021	0.110	0.0036	<0.0025	3.4	0.050	<0.0025	0.9200	0.012
	09/23/10 DUP	<0.0025	<0.0025	<0.0025	<0.0025	0.0085	<0.0025	0.021	0.110	0.0034	<0.0025	3.7	0.049	<0.00025	0.89	0.013
	12/09/10	<0.015	<0.015	<0.015	<0.015	0.0590	<0.015	0.038	0.590	<0.015	<0.015	6.2	0.068	<0.015	1.50	0.0480

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-19 (continued)	12/09/10 DUP	<0.0015	<0.0015	<0.0015	<0.0015	0.0580	<0.0015	0.037	0.590	<0.0015	<0.0015	6.0	0.067	<0.0015	1.5000	0.0480
	03/08/11	<0.0050	<0.0050	<0.0050	<0.0050	0.023	<0.0050	0.012	0.280	<0.0050	<0.0050	1.5	0.018	<0.0050	0.590	0.013
	06/10/11	<0.0009	<0.0009	<0.0009	<0.0009	0.022	<0.0009	0.0027	0.16	0.0014	<0.0009	0.24	0.0036	<0.0009	0.13	0.0056
	06/10/11 DUP	<0.0009	<0.0009	<0.0009	<0.0009	0.019	<0.0009	0.0023	0.14	0.0013	<0.0009	0.22	0.0033	<0.0009	0.12	0.005
	09/19/11	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	0.053	<0.0015	<0.0015	0.4	0.003	<0.0015	0.078	<0.0015
	09/19/11 DUP	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.053	<0.0020	<0.0020	0.41	0.0032	<0.0020	0.08	<0.0020
	12/09/11	<0.0015	<0.0015	<0.0015	<0.0015	0.0050	<0.0015	0.0043	0.11	<0.0015	<0.0015	0.73	0.01	<0.0015	0.22	0.0039
	12/09/2011 DUP	<0.0020	<0.0020	<0.0020	<0.0020	0.0054	<0.0020	0.0047	0.12	<0.0020	<0.0020	0.77	0.01	<0.0020	0.23	0.0039
	03/09/12	<0.0025	<0.0025	<0.0025	<0.0025	0.046	<0.0025	0.0260	0.82	0.0010	<0.0025	2.4	0.0500	<0.0025	1.2	0.07
	03/09/12 DUP	<0.0040	<0.0040	<0.0040	<0.0040	0.043	<0.0040	0.0240	0.77	0.0088	<0.0040	2.4	0.0460	<0.0040	1.2	0.06
	06/22/2012	<0.005	<0.005	<0.005	<0.005	0.074	<0.005	0.0170	1.00	0.0140	<0.005	1.3	0.0210	<0.005	1.0	0.06
	06/22/12 DUP	<0.005	<0.005	<0.005	<0.005	0.074	<0.005	0.0180	1.00	0.0130	<0.005	1.3	0.0220	<0.005	1.0	0.06
	09/14/12	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0057	0.3	<0.0050	<0.0050	2.2	0.031	<0.0050	0.34	0.008
	09/14/12 DUP	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0059	0.3	<0.0050	<0.0050	2.3	0.031	<0.0050	0.34	<0.0050
	12/14/12	<0.0015	0.0098	<0.0015	<0.0015	0.021	<0.0015	0.0018	0.33	0.0036	<0.0015	0.29	0.0032	<0.0015	0.14	0.0031
	12/14/12 DUP	<0.0010	0.0093	<0.0010	<0.0010	0.021	<0.0010	0.0017	0.34	0.0037	<0.0010	0.30	0.0031	<0.0010	0.14	0.0030
	03/15/13	<0.0015	0.0047	<0.0015	<0.0015	0.029	<0.0015	0.021	0.87	0.0055	<0.0015	3.2	0.067	<0.0015	1.6	0.0090
	03/15/13 DUP	<0.0015	0.0047	<0.0015	<0.0015	0.030	<0.0015	0.020	0.82	0.0061	<0.0015	3.2	0.068	<0.0015	1.5	0.0092
	06/14/13	<0.0090	<0.0090	<0.0090	<0.0090	0.025	<0.0090	0.013	0.73	<0.0090	<0.0090	2.5	0.029	<0.0090	1.0	<0.0090
	06/14/13 DUP	<0.0090	<0.0090	<0.0090	<0.0090	0.025	<0.0090	0.011	0.72	<0.0090	<0.0090	2.4	0.026	<0.0090	1.0	<0.0090
	09/20/13	<0.00050	0.0012	<0.00050	<0.00050	0.014	<0.00050	0.025	0.52	0.0045	<0.00050	3	0.061	<0.00050	1.1	0.01
	09/20/13 DUP	<0.0010	0.0011	<0.0010	<0.0010	0.012	<0.0010	0.021	0.49	0.0038	<0.0010	3.2	0.052	<0.0010	1.2	0.0090
	12/16/13	<0.015	<0.015	<0.015	<0.015	0.037	<0.015	0.022	0.68	<0.015	<0.015	3.0	0.036	<0.015	1.1	<0.015
12/16/13 DUP	<0.015	<0.015	<0.015	<0.015	0.036	<0.015	0.022	0.66	<0.015	<0.015	2.9	0.037	<0.015	1.1	<0.015	
3/21/2014	<0.00050	0.0014	<0.00050	<0.00050	0.0048	<0.00050	0.0024	0.13	0.0012	<0.00050	0.18	0.0016	<0.00050	0.051	0.0043	
3/21/2014 DUP	<0.00050	0.0014	<0.00050	<0.00050	0.0048	<0.00050	0.0022	0.13	0.0011	<0.00050	0.18	0.0016	<0.00050	0.051	0.0043	
6/26/2014	<0.0050	0.00089	<0.00050	<0.00050	0.00054	0.11	0.038	2	0.021	<0.00050	1.9	0.036	0.0008	1.5	0.0062	
6/26/14 DUP	<0.0050	0.0011	<0.00050	<0.00050	0.11	<0.00050	0.038	1.9	0.021	<0.00050	1.9	0.036	0.0007	1.6	0.0061	
9/30/2014	<0.015	<0.015	<0.015	<0.015	0.018	<0.015	0.038	0.52	<0.015	<0.015	4.4	0.061	<0.015	1.7	0.032	
9/30/2014 DUP	<0.015	<0.015	<0.015	<0.015	0.018	<0.015	0.037	0.51	<0.015	<0.015	4.4	0.060	<0.015	1.7	0.030	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-19 (continued)	12/12/2014	<0.0050	<0.0050	<0.0050	<0.0050	0.096	<0.0050	0.020	1.5	0.012	<0.0050	1.4	0.019	<0.0050	0.79	0.060
	12/12/2014 DUP	<0.0050	<0.0050	<0.0050	<0.0050	0.11	<0.0050	0.021	1.5	0.014	<0.0050	1.5	0.021	<0.0050	0.89	0.068
	3/18/2015	<0.0042	<0.0042	<0.0042	<0.0042	0.073	<0.0042	0.048	1.46	0.018	<0.0042	5.9	0.057	<0.0042	4.0	0.054
	3/18/2015 DUP	<0.0042	<0.0042	<0.0042	<0.0042	0.083	<0.0042	0.048	1.41	0.018	<0.0042	4.9	0.056	<0.0042	3.5	0.047
	6/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.022	<0.0005	0.049	0.63	0.0066	<0.00050	8.1	0.094	<0.00050	2.2	0.028
	6/18/2015 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.023	<0.00050	0.049	0.61	0.0075	<0.00050	8.0	0.99	<0.00050	2.1	0.031
	9/22/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.005	<0.0005	0.032	0.19	0.0020	<0.00050	7.2	0.07	<0.00050	0.8	0.007
	12/8/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.150	<0.0005	0.034	1.64	0.0164	<0.00050	2.9	0.04	<0.00050	1.6	0.087
	12/8/15 DUP	<0.00050	<0.00050	<0.00050	<0.00050	0.155	<0.00050	0.035	1.68	0.0172	<0.00050	3.0	0.04	<0.00050	1.6	0.090
	3/8/2016	<0.010	<0.040	<0.010	<0.010	0.0966	<0.010	0.042	1.52	0.0202	<0.010	4.08	0.0408	<0.010	2.61	0.0648
	3/8/16 DUP	<0.010	<0.040	<0.010	<0.010	0.093	<0.010	0.0428	1.46	0.0182	<0.010	3.76	0.0404	<0.010	2.56	0.0724
	6/16/2016	<0.010	<0.040	<0.010	<0.010	<0.010	<0.010	0.0222	0.507	<0.010	<0.010	3.25	0.0292	<0.010	1.03	0.0183
	6/16/2016 DUP	<0.0125	<0.050	<0.0125	<0.0125	0.0195	<0.0125	0.0238	0.505	<0.0125	<0.0125	3.46	0.0281	<0.0125	1.02	0.0176
	9/26/2016	<0.005	<0.020	<0.005	<0.005	0.0104	<0.005	0.0110	0.235	<0.005	<0.005	1.52	0.0145	<0.005	0.59	0.0101
	12/12/2016	<0.005	<0.020	<0.005	<0.005	0.0728	<0.005	0.0112	1.030	0.0107	<0.005	1.73	0.0109	<0.005	0.81	0.0282
	12/12/2016 DUP	<0.0025	<0.010	<0.0025	<0.0025	0.0787	<0.0025	0.0142	1.010	0.0116	<0.0025	1.53	0.0155	<0.0025	0.98	0.0319
	MW-19i	06/10/08	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00846	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00128
09/17/08		<0.00100	<0.000500	<0.000500	<0.00100	0.00193	0.00053	<0.000500	0.0271	<0.000500	<0.000500	0.00172	<0.000500	<0.000500	0.00577	<0.000500
12/10/08		<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.028	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0056	<0.00050
03/26/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0033	<0.00050
06/17/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0009	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.00067	<0.00050	<0.00050	0.0015	<0.00050
09/16/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0017	0.00064	<0.00050	0.028	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	0.00079
12/15/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0009	<0.00050	<0.00050	0.01	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	<0.00050
03/18/10		<0.00050	<0.00050	<0.00050	<0.00050	0.0011	0.00053	<0.00050	0.015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050
06/15/10		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0047	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
09/22/10		<0.0005	<0.0005	<0.0005	<0.0005	0.0012	0.00058	<0.0005	0.020	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0024	<0.0005
12/09/10		<0.0005	<0.0005	<0.0005	<0.0005	0.0010	<0.0005	<0.0005	0.014	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0010	<0.0005
03/09/11		<0.00050	<0.00050	<0.00050	<0.00050	0.00094	<0.00050	<0.00050	0.014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050
06/09/11		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00088	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
09/15/11		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	<0.00050
12/09/11		<0.00050	<0.00050	<0.00050	<0.00050	0.00072	<0.00050	<0.00050	0.0088	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0010	<0.00050
03/12/12		<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.01	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050
06/21/12		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
09/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0042	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00065	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-19i (continued)	12/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0023	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/14/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00065	<0.00050	<0.00050	0.0095	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050
	06/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00056	<0.00050	<0.00050	0.0068	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00060	<0.00050	<0.00050	0.0066	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/20/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0051	<0.00050	<0.00050	0.00083	<0.00050	<0.00050	0.0016	<0.00050
	9/27/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00056	<0.00050	<0.00050	0.0064	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/10/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0040	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/16/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0063	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/23/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00075	<0.00050	<0.00050	0.011	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/7/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.003	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0054	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0032	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/28/2016	<0.0050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0059	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MW-20i	06/10/08	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.018	<0.00100	<0.00100	0.00577	<0.00100	<0.00100	0.0032	<0.00100	
	09/17/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00212	<0.000500	<0.000500	0.0423	<0.000500	<0.000500	0.0128	<0.000500	0.011	<0.000500	
	12/11/08	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.047	<0.00050	<0.00050	0.011	<0.00050	0.0093	<0.00050	
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.036	<0.00050	<0.00050	0.0084	<0.00050	0.0064	<0.00050	
	06/16/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.03	<0.00050	<0.00050	0.0063	<0.00050	0.0051	<0.00050	
	09/17/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.034	<0.00050	<0.00050	0.0074	<0.00050	0.005	<0.00050	
	12/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0093	<0.00050	<0.00050	0.0011	<0.00050	0.001	<0.00050	
	03/18/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.047	<0.00050	<0.00050	0.011	<0.00050	0.007	<0.00050	
	06/15/10	<0.00050	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	0.013	<0.00050	<0.00050	0.0043	<0.00050	0.002	<0.00050	
	09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.043	<0.0005	<0.0005	0.0170	<0.0005	0.0100	<0.0005	
	12/09/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.013	<0.0005	<0.0005	0.0037	<0.0005	0.0020	<0.0005	
	03/11/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0096	<0.00050	<0.00050	0.0024	<0.00050	0.0023	<0.00050	
	06/08/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0029	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	09/15/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00096	<0.00050	<0.00050	0.021	<0.00050	<0.00050	0.0076	<0.00050	0.0045	<0.00050	<0.00050
	12/08/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.0064	<0.00050	0.0042	<0.00050	<0.00050
	03/07/12	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.03	<0.00050	<0.00050	0.0110	<0.00050	0.0059	<0.00050	<0.00050
	06/21/12	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.01	<0.0005	<0.0005	0.0026	<0.0005	0.0015	<0.0005	<0.0005
09/13/12	<0.00050	<0.00050	<0.00050	<0.00050	0.00083	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.0061	<0.00050	0.0038	<0.00050	<0.00050	
12/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0069	<0.00050	<0.00050	0.0014	<0.00050	0.00084	<0.00050	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-20i (continued)	03/14/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.028	<0.00050	<0.00050	0.0092	<0.00050	<0.00050	0.0060	<0.00050
	06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00072	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.0073	<0.00050	<0.00050	0.0037	<0.00050
	09/19/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.0039	<0.00050	<0.00050	0.0024	<0.00050
	12/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00090	<0.00050	<0.00050	0.016	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0019	<0.00050
	3/20/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0034	<0.00050	<0.00050	0.00056	<0.00050	<0.00050	<0.00050	<0.00050
	6/30/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.00058	<0.00050
	9/27/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00068	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0043	<0.00050	<0.00050	0.0026	<0.00050
	12/12/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0051	<0.00050	<0.00050	0.00068	<0.00050	<0.00050	<0.00050	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.0030	<0.00050	<0.00050	0.0017	<0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.0037	<0.00050	<0.00050	0.0022	<0.00050
	9/23/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00069	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.0041	<0.00050	<0.00050	0.0021	<0.00050
	12/7/2015	Not sampled; well monument under water.														
	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0068	<0.00050	<0.00050	0.0034	<0.00050	<0.00050	0.0018	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0074	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.0015	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0087	<0.00050	<0.00050	0.0040	<0.00050	<0.00050	0.0022	<0.00050
	12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.0005	<0.00050	<0.00050	<0.00050	<0.00050
	MW-21i-105	06/10/08	<0.00200	<0.00200	<0.00200	<0.00200	0.002	<0.00200	<0.00200	0.0158	<0.00200	<0.00200	0.0532	<0.00200	<0.00050	0.0251
09/18/08		<0.00100	<0.000500	<0.000500	<0.00100	0.00078	<0.000500	<0.000500	0.00542	<0.000500	<0.000500	0.00297	<0.000500	<0.000500	0.00177	<0.000500
12/11/08		<0.00050	<0.00050	<0.00050	<0.00050	0.0022	<0.00050	0.00088	0.061	<0.00050	<0.00050	0.033	0.00087	<0.00050	0.017	<0.00050
03/26/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.061	<0.00050	<0.00050	0.00076	<0.00050	<0.00050	0.0007	<0.00050
06/17/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.076	<0.00050	<0.00050	0.0043	0.0006	<0.00050	0.0034	<0.00050
09/17/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.073	<0.00050	<0.00050	0.011	0.00059	<0.00050	0.0067	<0.00050
12/16/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.06	<0.00050	<0.00050	0.014	0.00065	<0.00050	0.0093	<0.00050
03/18/10		<0.00050	<0.00050	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.06	<0.00050	<0.00050	0.006	0.00058	<0.00050	0.0076	<0.00050
06/15/10		<0.00050	<0.00050	<0.00050	<0.00050	0.0017	<0.00050	0.00063	0.06	<0.00050	<0.00080	0.029	0.00084	<0.00050	0.0220	<0.00050
09/22/10		<0.0005	<0.0005	<0.0005	<0.0005	0.0017	<0.0005	<0.0005	0.075	<0.0005	<0.0005	0.0052	0.0006	<0.00050	0.0051	<0.0005
12/08/10		<0.0005	<0.0005	<0.0005	<0.0005	0.0020	<0.0005	0.00052	0.072	<0.0005	<0.0005	0.0270	0.0009	<0.00050	0.014	<0.00050
03/09/11		<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	0.00069	0.061	<0.00050	<0.00050	0.032	0.0011	<0.00050	0.017	<0.00050
06/09/11		<0.0005	<0.0005	<0.0005	<0.0005	0.0016	<0.0005	0.00061	0.063	<0.0005	<0.0005	0.029	0.0007	<0.0005	0.017	<0.0005
09/15/11		<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	<0.00050	0.088	<0.00050	<0.00050	0.012	0.00059	<0.00050	0.012	<0.00050
12/08/11		<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.073	<0.00050	<0.00050	0.015	0.00058	<0.00050	0.0093	<0.00050
03/07/12		<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.04	<0.00050	<0.00050	0.0056	<0.00050	<0.00050	0.0057	<0.00050
06/20/12		<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	<0.0005	0.05	<0.0005	<0.0005	0.0014	<0.0005	<0.0005	0.0030	<0.0005
09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	0.00082	<0.00050	<0.00050	0.034	<0.00050	<0.00050	0.005	<0.00050	<0.00050	0.0063	<0.00050	
12/12/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.060	0.0010	<0.00050	0.013	<0.00050	<0.00050	0.015	<0.00050	
03/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00090	<0.00050	<0.00050	0.042	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0037	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-21i-105 (continued)	06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00120	<0.00050	<0.00050	0.048	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.0099	<0.00050
	09/18/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.051	<0.00050	<0.00050	0.0028	<0.00050	<0.00050	0.0042	<0.00050
	12/12/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.061	0.0016	<0.00050	0.004	<0.00050	<0.00050	0.0054	<0.00050
	3/20/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.052	<0.00050	<0.00050	0.0044	<0.00050	<0.00050	0.0068	<0.00050
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/26/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.0054	<0.00050	<0.00050	0.0033	<0.00050
	12/10/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00094	<0.00050	<0.00050	0.037	<0.00050	<0.00050	0.0054	<0.00050	<0.00050	0.0096	<0.00050
	3/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.013	<0.00050	<0.00050	0.0066	<0.00050	<0.00050	0.0054	<0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.021	<0.00050	<0.00050	0.0035	<0.00050	<0.00050	0.0040	<0.00050
	9/23/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00091	<0.00050	<0.00050	0.041	<0.00050	<0.00050	0.0034	<0.00050	<0.00050	0.0054	<0.00050
	12/7/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00079	<0.00050	<0.00050	0.029	<0.00050	<0.00050	0.0049	<0.00050	<0.00050	0.0081	<0.00050
	3/8/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	9/26/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0117	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.0051	<0.00050
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	MW-21i-40	09/18/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00748	<0.000500	0.00438	0.124	0.00077	<0.000500	0.107	0.00201	<0.000500	0.133
12/11/08		<0.00050	<0.00050	<0.00050	<0.00050	0.0066	<0.00050	0.0036	0.13	0.00084	<0.00050	0.10	0.0016	<0.00050	0.11	<0.00050
03/26/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0062	<0.00050	0.0036	0.13	0.00063	<0.00050	0.077	0.0013	<0.00050	0.088	<0.00050
06/17/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0066	<0.00050	0.0031	0.12	0.00079	<0.00050	0.071	0.0015	<0.00050	0.088	<0.00050
09/18/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0059	<0.00050	0.0032	0.12	0.001	<0.00050	0.075	0.0013	<0.00050	0.092	0.00055
12/16/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0057	<0.00050	0.0026	0.12	0.001	<0.00050	0.09	0.0012	<0.00050	0.089	<0.00050
03/18/10		<0.00050	<0.00050	<0.00050	<0.00050	0.0055	<0.00050	0.0028	0.12	0.001	<0.00050	0.084	0.0011	<0.00050	0.091	<0.00050
06/15/10		<0.00050	<0.00050	<0.00050	<0.00050	0.0054	<0.00050	0.0024	0.12	0.001	<0.00050	0.062	0.0012	<0.00050	0.064	<0.00050
09/22/10		<0.0005	<0.0005	<0.0005	<0.0005	0.0049	<0.0005	0.0022	0.110	0.00073	<0.0005	0.0680	0.001	<0.0005	0.0750	<0.0005
12/08/10		<0.0005	<0.0005	<0.0005	<0.0005	0.0051	<0.0005	0.0023	0.110	0.00077	<0.0005	0.0720	0.001	<0.0005	0.0690	<0.0005
03/10/11		<0.00050	<0.00050	<0.00050	<0.00050	0.0046	<0.00050	0.0019	0.100	0.00064	<0.00050	0.053	0.001	<0.00050	0.057	<0.00050
06/09/11		<0.0005	<0.0005	<0.0005	<0.0005	0.0047	<0.0005	0.0021	0.11	0.0007	<0.0005	0.05	0.00096	<0.0005	0.055	<0.0005
09/15/11		<0.00050	<0.00050	<0.00050	<0.00050	0.005	<0.00050	0.0019	0.11	0.00065	<0.00050	0.054	0.0011	<0.00050	0.057	<0.00050
12/08/11		<0.00050	<0.00050	<0.00050	<0.00050	0.0048	<0.00050	0.0021	0.11	0.00066	<0.00050	0.061	0.00096	<0.00050	0.06	<0.00050
03/07/12		<0.00050	<0.00050	<0.00050	<0.00050	0.005	<0.00050	0.0021	0.11	0.0008	<0.00050	0.0740	0.0015	<0.00050	0.0580	<0.00050
06/20/12		<0.0005	<0.0005	<0.0005	<0.0005	0.005	<0.0005	0.0020	0.16	0.0008	<0.0005	0.0190	0.0008	<0.0005	0.0230	<0.0005
09/12/12		<0.00050	<0.00050	<0.00050	<0.00050	0.005	<0.00050	0.0018	0.11	0.00063	<0.00050	0.05	0.0011	<0.00050	0.048	<0.00050
12/12/12		<0.00050	<0.00050	<0.00050	<0.00050	0.0053	<0.00050	0.0020	0.12	0.00069	<0.00050	0.074	0.0011	<0.00050	0.053	<0.00050
03/13/13		<0.00050	<0.00050	<0.00050	<0.00050	0.0046	<0.00050	0.0018	0.12	0.00060	<0.00050	0.043	0.00083	<0.00050	0.042	<0.00050
06/13/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.048	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0099	<0.00050	
09/18/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0047	<0.00050	0.0014	0.1	0.00053	<0.00050	0.038	0.00068	<0.00050	0.033	<0.00050	
12/12/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0046	<0.00050	0.0013	0.1	0.0010	<0.00050	0.041	0.00073	<0.00050	0.037	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)															
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride	
MW-21i-40 (continued)	3/20/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0045	<0.00050	0.0015	0.100	0.00061	<0.00050	0.040	0.00076	<0.00050	0.034	<0.00050	
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0043	<0.00050	0.0013	0.100	0.00051	<0.00050	0.033	0.00065	<0.00050	0.029	<0.00050	
	9/26/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0040	<0.00050	0.0014	0.100	0.086	<0.00050	0.031	0.00051	<0.00050	0.032	<0.00050	
	12/10/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0042	<0.00050	0.0014	0.100	0.00060	<0.00050	0.030	0.00051	<0.00050	0.032	<0.00050	
	3/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0038	<0.00050	0.0015	0.102	0.00051	<0.00050	0.044	<0.00050	<0.00050	0.037	<0.00050	
	6/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	0.00076	0.062	<0.00050	<0.00050	0.025	<0.00050	<0.00050	0.022	<0.00050	
	9/23/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0033	<0.00050	0.00095	0.084	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.027	<0.00050	
	12/7/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0028	<0.00050	0.0007	0.064	<0.00050	<0.00050	0.025	<0.00050	<0.00050	0.021	<0.00050	
	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.0586	<0.00050	<0.00050	0.0142	<0.00050	<0.00050	0.0151	<0.00050	
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0023	<0.00050	0.0008	0.0678	<0.00050	<0.00050	0.0181	<0.00050	<0.00050	0.0171	<0.00050	
	9/26/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0026	<0.00050	0.0009	0.0772	<0.00050	<0.00050	0.0201	<0.00050	<0.00050	0.0198	<0.00050	
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0024	<0.00050	0.0008	0.0742	<0.00050	<0.00050	0.0214	<0.00050	<0.00050	0.0194	<0.00050	
	MW-22i	06/10/08	<0.00100	<0.00100	<0.00100	<0.00100	0.00102	<0.00100	<0.00100	0.03	<0.00100	<0.00100	0.0103	<0.00100	<0.00100	0.03	<0.00100
		09/17/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00748	<0.000500	0.00438	0.124	0.00077	<0.000500	0.107	0.00201	<0.000500	0.133	<0.000500
12/11/08		<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	0.00073	0.063	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0068	<0.00050	
03/25/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	0.00064	0.05	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.014	<0.00050	
06/16/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	0.00052	0.039	<0.00050	<0.00050	0.0085	<0.00050	<0.00050	0.024	<0.00050	
09/17/09		<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	0.00057	0.04	<0.00050	<0.00050	0.0033	<0.00050	<0.00050	0.021	<0.00050	
12/15/09		<0.00050	<0.00050	<0.00050	<0.00050	0.0008	<0.00050	<0.00050	0.028	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.02	<0.00050	
03/18/10		<0.00050	<0.00050	<0.00050	<0.00050	0.0009	<0.00050	<0.00050	0.034	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.016	<0.00050	
06/14/10		<0.00050	<0.00050	<0.00050	<0.00050	0.0006	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.018	<0.00050	
09/22/10		<0.0005	<0.0005	<0.0005	<0.0005	0.00075	<0.0005	<0.0005	0.024	<0.0005	<0.0005	0.0036	<0.0005	<0.0005	0.0180	<0.0005	
12/08/10		<0.0005	<0.0005	<0.0005	<0.0005	0.00073	<0.0005	<0.0005	0.021	<0.0005	<0.0005	0.0035	<0.0005	<0.0005	0.0180	<0.0005	
03/11/11		<0.00050	<0.00050	<0.00050	<0.00050	0.00067	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.0036	<0.00050	<0.00050	0.017	<0.00050	
06/08/11		<0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	0.018	<0.0005	<0.0005	0.0018	<0.0005	<0.0005	0.012	<0.0005	
09/14/11		<0.00050	<0.00050	<0.00050	<0.00050	0.00055	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.011	<0.00050	
12/08/11		<0.00050	<0.00050	<0.00050	<0.00050	0.00058	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.0025	<0.00050	<0.00050	0.014	<0.00050	
03/06/12		<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0130	<0.00050	
06/20/12		<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	<0.0005	0.01	<0.0005	<0.0005	0.0019	<0.0005	<0.0005	0.0110	<0.0005	
09/12/12		<0.00050	<0.00050	<0.00050	<0.00050	0.00052	<0.00050	<0.00050	0.016	<0.00050	<0.00050	0.0015	<0.00050	<0.00050	0.01	<0.00050	
12/13/12		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.013	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.011	<0.00050	
03/13/13		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0022	<0.00050	<0.00050	0.011	<0.00050	
06/12/13		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0096	<0.00050	
09/18/13		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.011	<0.00050	
12/12/13		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0093	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0082	<0.00050	
3/19/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0096	<0.00050		
6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.009	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0057	<0.00050		

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-22i (continued)	9/26/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0088	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.0098	<0.00050
	12/10/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0092	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.011	<0.00050
	3/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0082	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.0087	<0.00050
	6/16/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0086	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.0090	<0.00050
	9/23/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	<0.00050	<0.00050	0.0100	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.0012	<0.00050
	12/7/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0080	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.011	<0.00050
	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.008	<0.00050	<0.00050	0.0022	<0.00050	<0.00050	0.012	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.007	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.008	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0081	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0090	<0.00050
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0086	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.0102	<0.00050
MW-23i	06/10/08	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
	06/10/08 DUP	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
	09/17/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500
	12/09/08	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	06/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00054	<0.00050	<0.00050	<0.00050	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/17/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	07/02/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	12/08/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	06/08/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	09/13/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/06/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/07/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	06/19/12	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	09/11/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00067	<0.00050	<0.00050	<0.00050	<0.00050
	12/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	06/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/18/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/11/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
3/19/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	

Please refer to notes at end of table.







Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-26	09/16/11	<0.0020	<0.0020	<0.0020	<0.0020	0.007	<0.0020	0.0022	0.12	0.0026	<0.0020	0.25	0.0057	<0.0020	0.49	<0.0020
	12/08/11	<0.0020	<0.0020	<0.0020	<0.0020	0.0071	<0.0020	0.0025	0.11	0.0022	<0.0020	0.3	0.0058	<0.0020	0.5	<0.0020
	03/06/12	<0.0020	<0.0020	<0.0020	<0.0020	0.008	<0.0020	0.0022	0.10	<0.0020	<0.0020	0.2100	0.0046	<0.0020	0.4500	<0.0020
	06/19/12	<0.002	<0.002	<0.002	<0.002	0.014	<0.002	0.0030	0.09	<0.002	<0.002	0.1600	0.0052	<0.002	0.4600	<0.002
	09/11/12	<0.0020	<0.0020	<0.0020	<0.0020	0.0063	<0.0020	0.0023	0.11	0.003	<0.0020	0.28	0.0043	<0.0020	0.46	<0.0020
	12/12/12	<0.0020	<0.0020	<0.0020	<0.0020	0.0056	<0.0020	<0.0020	0.12	0.0037	<0.0020	0.30	0.0038	<0.0020	0.47	<0.0020
	03/13/13	<0.0020	<0.0020	<0.0020	<0.0020	0.0049	<0.0020	<0.0020	0.083	<0.0020	<0.0020	0.21	0.0029	<0.0020	0.39	<0.0020
	06/12/13	<0.0020	<0.0020	<0.0020	<0.0020	0.0082	<0.0020	<0.0020	0.080	<0.0020	<0.0020	0.17	0.0045	<0.0020	0.36	<0.0020
	09/18/13	<0.0020	<0.0020	<0.0020	<0.0020	0.0057	<0.0020	<0.0020	0.096	0.0024	<0.0020	0.21	0.0032	<0.0020	0.41	<0.0020
	12/11/13	<0.0020	<0.0020	<0.0020	<0.0020	0.0078	<0.0020	<0.0020	0.075	<0.0020	<0.0020	0.15	0.0039	<0.0020	0.37	<0.0020
	3/19/2014	<0.0020	<0.0020	<0.0020	<0.0020	0.0049	<0.0020	<0.0020	0.095	0.0021	<0.0020	0.22	0.0029	<0.0020	0.35	<0.0020
	6/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	0.0064	0.049	0.00086	<0.00050	0.15	0.0021	<0.00050	0.2	<0.00050
	9/24/2014	<0.0020	<0.0020	<0.0020	<0.0020	0.0039	<0.0020	<0.0020	0.068	<0.0020	<0.0020	0.22	0.0031	<0.0020	0.34	<0.0020
	12/9/2014	<0.00090	<0.00090	<0.00090	<0.00090	0.0038	<0.00090	<0.00090	0.055	0.0013	<0.00090	0.16	0.0028	<0.00090	0.28	<0.00090
	3/17/2015	<0.0010	<0.0010	<0.0010	<0.0010	0.0058	<0.0010	0.0017	0.076	0.0018	<0.0010	0.27	0.0037	<0.0010	0.46	<0.0010
	6/16/2015	<0.0017	<0.0017	<0.0017	<0.0017	0.0050	<0.0017	<0.0017	0.078	<0.0017	<0.0017	0.21	0.0028	<0.0017	0.39	<0.0017
	9/21/2015	<0.0017	<0.0017	<0.0017	<0.0017	0.0043	<0.0017	<0.0017	0.072	0.0017	<0.0017	0.18	0.0027	<0.0017	0.33	<0.0017
	12/7/2015	<0.0012	<0.0012	<0.0012	<0.0012	0.0085	<0.0012	0.0017	0.075	0.0016	<0.0012	0.18	0.0035	<0.0012	0.39	<0.0012
	3/8/2016	<0.0012	<0.005	<0.0012	<0.0012	0.008	<0.0012	0.0015	0.0761	0.0018	<0.0012	0.171	0.0037	<0.0012	0.37	<0.0012
	6/15/2016	<0.001	<0.004	<0.001	<0.001	0.0046	<0.001	0.0014	0.0831	0.0022	<0.001	0.192	0.0022	<0.001	0.343	<0.001
9/27/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0039	<0.00050	0.0011	0.0611	0.0016	<0.00050	0.160	0.0024	<0.00050	0.288	<0.00050	
12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0089	<0.00050	0.0024	0.0859	0.0020	<0.00050	0.167	0.0033	<0.00050	0.410	<0.00050	
MW-32s	03/24/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00579	<0.00050	--	<0.00050	<0.00050
	08/18/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/14/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	03/06/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500
	09/17/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500
	12/09/08	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	06/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	07/02/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/22/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/07/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-32s (continued)	06/09/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	<0.0005	<0.0005	0.00094	<0.0005	<0.0005	0.0011	<0.0005
	09/15/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/08/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	06/21/12	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	09/13/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/11/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	03/14/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	06/11/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/20/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/16/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/25/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/11/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	3/19/2015	<0.00050	<0.00050	0.00077	<0.00050	0.0015	<0.00050	<0.00050	0.074	0.0025	<0.00050	<0.00050	0.0035	<0.00050	0.052	<0.00050
	6/17/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	12/7/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
6/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
12/14/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
MW-F	06/14/95	--	<0.010	<0.0050	<0.0050	<0.0050	0.005	<0.0050	0.015	<0.0050	--	<0.0050	<0.0050	--	<0.0050	<0.010
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	0.000754	<0.00050	<0.00050	0.00599	<0.00050	<0.00050	0.000506	<0.0010	--	0.00118	<0.00050
	05/29/01	<0.0010	<0.0050	<0.00050	<0.00050	0.00058	<0.00050	<0.00050	0.00647	<0.00050	<0.00050	<0.00050	<0.0010	--	0.000585	<0.00050
	09/24/01	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.0065	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	0.00144	<0.00050	<0.00050	0.0179	<0.00050	<0.00050	<0.00050	<0.0010	--	0.000709	<0.00050
	03/18/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/31/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	08/28/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00112	0.00065	<0.00050	0.00954	<0.00050	<0.00050	<0.00050	<0.00050	--	0.00069	<0.00050
	11/08/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00115	0.00081	<0.00050	0.00986	<0.00050	<0.00050	<0.00050	<0.00050	--	0.00065	<0.00050
	01/23/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/29/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00111	0.00083	<0.00050	0.0106	<0.00050	<0.00050	<0.00050	<0.00050	--	0.00062	<0.00050
	11/10/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	01/26/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/04/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	08/17/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MW-F (continued)	11/02/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/15/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	03/24/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00087	0.00064	<0.00050	0.00831	<0.00050	<0.00050	0.00052	<0.00050	--	0.00074	<0.00050
	05/17/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	08/18/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/14/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/07	<0.00100	<0.00050	<0.00050	<0.00100	0.0005	0.00052	<0.00050	0.00593	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050
	09/18/08	<0.00100	<0.000500	<0.000500	<0.00100	0.001	0.001	<0.000500	0.00857	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.00057	<0.000500
EW-1	04/25/91	--	<0.0020	--	--	0.035	0.02	--	0.75	--	--	9.1	0.28	--	0.44	0.0093
	11/17/93	--	<0.200	---	--	<0.100	<0.100	--	1.70	--	--	8.6	<0.100	--	0.48	<0.200
	09/01/95	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.14	<0.0250	<0.0250	2.4	0.074	--	0.34	<0.0500
	09/24/96	<0.0010	<0.0040	0.003	<0.0004	0.0085	0.0021	<0.00040	0.26	0.0062	<0.00040	0.049	0.034	--	0.029	0.089
	12/02/96	0.0007	<0.00050	0.0019	<0.00020	0.0057	0.005	0.001	0.53	0.0033	<0.00020	0.31	0.086	--	0.098	0.01
	11/12/97	<0.0025	<0.0050	<0.0025	<0.0025	0.00505	0.00338	<0.0025	0.0685	0.00491	<0.0025	0.111	0.0051	--	0.0474	0.0092
	08/11/99	<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0145	<0.0050	<0.0050	0.369	<0.0100	--	0.0399	<0.0050
	11/16/99	<0.0050	<0.0125	<0.0025	<0.0050	<0.0025	0.00315	<0.0025	0.0417	0.003	<0.0025	0.314	0.0069	--	0.0355	0.0051
	02/29/00	<0.0020	<0.0100	<0.0010	<0.0010	<0.0010	0.00642	<0.0010	0.0137	<0.0010	<0.0010	0.0973	0.00348	--	0.0208	<0.0010
	06/27/00	<0.0020	<0.0100	0.00212	<0.0010	<0.0010	0.00642	<0.0010	0.0175	<0.0010	<0.0010	0.293	0.00537	--	0.0351	<0.0010
	08/31/00	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0319	<0.0025	<0.0025	0.325	<0.0050	--	0.0384	<0.0025
	01/30/00	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0456	<0.0025	<0.0025	0.38	0.00586	--	0.0539	<0.0025
	02/27/01	<0.0020	<0.0100	0.00142	<0.0010	0.00251	0.00283	<0.0010	0.035	<0.0010	<0.0010	0.24	0.00798	--	0.0475	0.00243
	05/29/01	<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0224	<0.0050	<0.0050	0.338	<0.0100	--	0.0611	<0.0050
	09/25/01	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	<0.0050	<0.0050	0.32	0.0095	--	0.061	<0.0050
	12/17/01	<0.0020	<0.0100	<0.0010	<0.0010	0.00119	<0.0010	<0.0010	0.0258	<0.0010	<0.0010	0.217	0.0128	--	0.0471	<0.0010
	03/19/02	<0.0020	<0.0010	<0.0010	<0.0020	0.00104	<0.0010	<0.0010	0.0175	<0.0010	<0.0010	0.323	0.00566	--	0.0461	<0.0010
	05/30/02	<0.0020	<0.0010	0.00138	<0.0020	0.001	0.00168	<0.0010	0.0235	<0.0010	<0.0010	0.319	0.00646	--	0.0399	<0.0010
	08/29/02	<0.0020	<0.0010	0.00136	<0.0020	0.00244	0.00124	<0.0010	0.0204	<0.0010	<0.0010	0.307	0.00338	--	0.0378	<0.0010
	11/08/02	<0.0020	<0.0010	0.00146	<0.0020	0.00302	0.00396	<0.0010	0.0284	<0.0010	<0.0010	0.274	0.00554	--	0.0502	<0.0010
01/23/03	<0.0020	<0.0010	0.00136	<0.0020	0.00234	<0.0010	<0.0010	0.017	<0.0010	<0.0010	0.252	0.00506	--	0.0519	<0.0010	
05/30/03	<0.0020	<0.0010	0.00522	<0.0020	<0.0010	<0.0010	<0.0010	0.00612	<0.0010	<0.0010	0.255	0.00506	--	0.0411	<0.0010	
11/10/03	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.009	<0.0050	<0.0050	0.0858	<0.0050	--	0.0162	<0.0050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
EW-1 (continued)	01/27/04	<0.0010	<0.00050	0.00207	<0.0010	0.00087	0.00078	<0.00050	0.0052	<0.00050	<0.00050	0.151	0.00426	--	0.0376	<0.00050
	05/04/04	<0.0010	<0.0010	0.00473	<0.0010	<0.0010	0.00125	<0.0010	0.00436	<0.0010	<0.0010	0.168	0.00309	--	0.0308	<0.0010
	08/17/04	<0.0010	<0.00050	0.00376	<0.00050	0.00081	0.00186	<0.00050	0.00683	<0.00050	<0.00050	0.144	0.00173	--	0.0232	<0.00050
	11/17/04	<0.0025	<0.0025	0.004	<0.0025	<0.0025	<0.0025	<0.0025	0.0096	<0.0025	<0.0025	0.18	0.0036	--	0.033	<0.0025
	05/18/05	<0.0020	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.00828	<0.0010	<0.0010	0.207	<0.0010	--	0.0232	0.0023
	11/14/05	<0.00200	<0.00100	0.00106	<0.00200	0.00136	0.0027	<0.00100	0.0111	<0.00100	<0.00100	0.187	<0.00100	--	0.0261	<0.00100
	06/05/06	<0.00100	<0.00100	0.00240	<0.00100	<0.00100	<0.00100	<0.00100	0.00618	<0.00100	<0.00100	0.102	0.00355	--	0.0191	<0.00100
	12/06/06	<0.00100	<0.00050	0.00207	<0.00100	0.00113	<0.00050	<0.00050	0.00898	<0.00050	<0.00050	0.133	0.0021	--	0.0283	<0.00050
	09/12/07	<0.00100	<0.00050	0.00266	<0.00100	0.00051	0.00114	<0.00050	0.00628	<0.00050	<0.00050	0.0769	0.00147	--	0.0183	<0.00050
	03/06/08	<0.00100	<0.000500	0.00171 J	<0.00100	0.00064	0.00104	<0.000500	0.00575	<0.000500	<0.000500	0.0809	0.00145	<0.000500	0.0199	<0.000500
	09/19/08	<0.00500	<0.00250	<0.00250	<0.00500	<0.00250	<0.00250	<0.00250	0.0146	<0.00250	<0.00250	0.0861	<0.00250	<0.00250	0.0208	<0.00250
	03/26/09	<0.00050	<0.00050	0.0036	<0.00050	<0.00050	0.00076	<0.00050	0.0038	<0.00050	<0.00050	0.081	0.001	<0.00050	0.014	<0.00050
	09/17/09	<0.00050	<0.00050	0.0034	<0.00050	0.00063	<0.00050	<0.00050	0.0083	<0.00050	<0.00050	0.1	0.00074	<0.00050	0.017	<0.00050
	03/19/10	<0.00050	<0.00050	0.0035 BE	<0.00050	<0.00050	<0.00050	0.00052	0.0041	<0.00050	<0.00050	0.089	0.00150	<0.00050	0.022	<0.00050
	09/23/10	<0.00050	<0.00050	0.0017 BE	<0.00050	0.00086	0.00094	<0.00050	0.010	<0.00050	<0.00050	0.087	0.00064	<0.00050	0.017	<0.00050
	03/10/11	<0.00050	<0.00050	0.0052	<0.00050	<0.00050	<0.00050	<0.00050	0.003	<0.00050	<0.00050	0.067	0.00089	<0.00050	0.013	<0.00050
	09/16/11	<0.00050	<0.00050	0.0027	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.075	0.00069	<0.00050	0.0099	<0.00050
	03/12/12	<0.00050	<0.00050	0.0044	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00050	<0.00050	0.0520	0.0007	<0.00050	0.0130	<0.00050
	09/13/12	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.06	0.00058	<0.00050	0.0086	<0.00050
	03/15/12	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.078	0.00063	<0.00050	0.012	<0.00050
	09/19/13	<0.00050	<0.00050	0.0022	<0.00050	<0.00050	<0.00050	<0.00050	0.0053	<0.00050	<0.00050	0.063	0.00057	<0.00050	0.014	<0.00050
	3/20/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.032	0.0016	<0.00050	0.012	<0.00050
	9/27/2014	Insufficient water for sampling during monitoring event.														
9/21/2015	<0.00050	<0.00050	0.002	<0.00050	<0.00050	<0.00050	<0.00050	0.0039	<0.00050	<0.00050	0.0453	0.00056	<0.00050	0.0125	<0.00050	
3/8/2016	<0.00050	<0.0020	0.002	<0.00050	<0.00050	<0.00050	<0.00050	0.0029	<0.00050	<0.00050	0.0626	0.00083	<0.00050	0.0143	<0.00050	
9/29/2016	<0.00050	<0.0020	0.001	<0.00050	<0.00050	0.00150	<0.00050	0.0054	<0.00050	<0.00050	0.0386	<0.00050	<0.00050	0.0105	<0.00050	
S-1	08/10/99	<0.0010	<0.0050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00263	<0.00050	<0.00050	0.00781	0.0013	--	0.0206	<0.00050
	02/29/00	<0.0010	<0.0050	<0.00050	<0.00050	0.000761	<0.00050	<0.00050	0.00221	<0.00050	<0.00050	0.0606	0.00298	--	0.0244	<0.00050
	06/28/00	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	0.0027	0.0582	<0.0025	<0.0025	0.749	0.0145	--	0.232	<0.0025
	08/31/00	<0.0050	<0.0250	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.00498	<0.0025	<0.0025	0.313	0.00514	--	0.0604	<0.0025
	11/30/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00161	<0.00050	<0.00050	0.00978	0.00195	--	0.0298	<0.00050
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	0.000551	0.00166	<0.00050	<0.00050	0.0135	0.00226	--	0.0452	<0.00050
	05/30/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000974	<0.00050	<0.00050	0.00738	<0.0010	--	0.0126	<0.00050
	09/25/01	<0.0025	<0.0025	<0.0025	<0.0025	0.0026	<0.0025	0.004	0.0027	<0.0025	<0.0025	0.039	0.018	--	0.21	<0.0025

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)															
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride	
S-1 (continued)	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00421	<0.00050	--	0.00373	<0.00050	
	05/30/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00845	<0.00050	--	0.0104	<0.00050	
	11/07/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00234	<0.00050	<0.00050	0.00871	0.00102	--	0.0197	<0.00050	
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00078	<0.00050	<0.00050	0.00615	0.00056	--	0.013	<0.00050	
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0022	<0.000500	--	0.00867	<0.00050	
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00185	<0.0010	<0.0010	0.00422	<0.0010	--	0.0132	<0.0010	
	01/26/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00657	0.001	--	0.0155	<0.00050	
	05/04/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00117	<0.0010	<0.0010	0.00407	<0.0010	--	0.0106	<0.0010	
	11/15/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0028	<0.00050	<0.00050	0.0084	0.00082	--	0.018	<0.00050	
	02/01/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00075	<0.00050	<0.00050	0.00189	<0.00050	--	0.00287	<0.00050	
	05/18/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00224	<0.00050	<0.00050	0.00373	<0.00050	--	0.00839	<0.00050	
	05/23/07	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00363	<0.00100	<0.00100	0.00402	<0.00100	--	0.00685	<0.00100	
	12/13/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.00461	<0.00050	<0.00050	0.00487	<0.00050	--	0.00844	<0.00050	
	03/05/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00515	<0.000500	<0.000500	<0.000500	0.00414	<0.000500	<0.000500	<0.000500	<0.000500
	06/25/08	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00167	<0.00100	<0.00100	<0.00100	0.00137	<0.00100	<0.00100	<0.00100	<0.00100
	09/17/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00555	<0.000500	<0.000500	0.00281	<0.000500	<0.000500	0.00607	<0.000500	<0.000500
	12/09/08	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	0.0014	<0.00050	<0.00050
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0023	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.0027	<0.00050	<0.00050
	06/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00091	<0.00050	<0.00050	0.00081	<0.00050	<0.00050	0.0018	<0.00050	<0.00050
	09/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.005	<0.00050	<0.00050
	12/16/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.0061	<0.00050	<0.00050
	03/17/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.001	<0.00050	<0.00050
	07/02/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	09/22/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00066	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0015	<0.0005	<0.0005
12/08/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.0005	0.0008	<0.0005	<0.0005	0.0030	<0.0005	<0.0005	
03/09/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	
06/08/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00066	<0.0005	<0.0005	
09/14/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.0014	<0.00050	<0.00050	0.004	<0.00050	<0.00050	
12/06/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0013	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	

Please refer to notes at end of table.





Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS1-3(43) (continued)	02/27/01	<0.100	<0.500	<0.0500	<0.0500	0.697	<0.0500	0.164	14.0	<0.0500	<0.0500	0.148	<0.100	--	1.39	0.133
	05/31/01	<0.100	<0.500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	5.87	<0.0500	<0.0500	0.13	<0.100	--	0.599	<0.0500
	09/24/01	<0.013	<0.013	<0.013	<0.013	0.15	<0.013	0.032	4.70	<0.013	<0.013	0.31	<0.013	--	0.45	0.025
	12/18/01	<0.0500	<0.250	<0.0250	<0.0250	0.153	<0.0250	0.0333	3.60	<0.0250	<0.0250	0.276	<0.0500	--	0.568	<0.0250
	03/19/02	<0.100	<0.0500	<0.0500	<0.100	0.31	<0.0500	0.103	6.70	<0.0500	<0.0500	2.09	<0.0500	--	1.72	0.086
	05/29/02	<0.0500	<0.0250	<0.0250	<0.0500	0.188	<0.0250	0.039	4.70	<0.0250	<0.0250	0.47	<0.0250	--	0.624	0.0375
	08/29/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00372	<0.00050	0.00084	0.0947	0.00054	<0.00050	0.0349	0.00075	--	0.0357	0.00146
	11/11/02	<0.100	<0.0500	<0.0500	<0.100	0.183	<0.0500	<0.0500	4.81	<0.0500	<0.0500	0.757	<0.0500	--	0.831	0.051
	01/23/03	<0.100	<0.0500	<0.0500	<0.100	0.378	<0.0500	0.076	10.5	<0.0500	<0.0500	0.782	<0.0500	--	1.29	0.109
	05/28/03	<0.100	<0.0500	<0.0500	<0.100	0.402	<0.0500	0.072	9.51	<0.0500	<0.0500	0.27	<0.0500	--	0.841	0.114
	11/11/03	<0.0500	<0.0500	<0.0500	<0.0500	0.252	<0.0500	<0.0500	9.71	<0.0500	<0.0500	0.516	<0.0500	--	1.02	0.058
	01/27/04	<0.0500	<0.0250	<0.0250	<0.0500	0.29	<0.0250	0.0545	8.16	0.0535	<0.0250	0.393	<0.0250	--	0.808	0.095
	05/03/04	<0.100	<0.100	<0.100	<0.100	0.37	<0.100	<0.100	12.3	<0.100	<0.100	0.83	<0.100	--	1.52	0.111
	08/17/04	<0.100	<0.0500	<0.0500	<0.100	0.401	<0.0500	0.114	12.7	0.109	<0.0500	1.54	<0.0500	--	2.34	0.151
	11/15/04	<0.120	<0.120	<0.120	<0.120	0.27	<0.120	<0.120	9.60	<0.120	<0.120	1.40	<0.120	--	1.60	<0.120
	03/24/05	<0.100	<0.0500	<0.0500	<0.100	0.481	<0.0500	0.148	15.6	0.135	<0.0500	1.39	<0.0500	--	2.09	0.266
	05/16/05	<0.0500	<0.0250	<0.0250	<0.0500	0.327	<0.0250	0.089	9.7	0.083	<0.0250	0.802	<0.0250	--	1.41	0.157
	05/17/05	<0.100	<0.0500	<0.0500	<0.100	0.353	<0.0500	0.086	10.6	0.094	<0.0500	0.92	<0.0500	--	1.66	0.173
	11/17/05	<0.100	<0.0500	<0.0500	<0.100	0.392	<0.0500	0.121	13.4	0.133	<0.0500	1.31	<0.0500	--	2.28	0.186
	06/06/06	<0.100	<0.100	<0.100	<0.100	0.385	<0.100	<0.100	11.8	0.115	<0.100	0.628	<0.100	--	1.37	0.192
12/06/06	<0.100	<0.0500	<0.0500	<0.100	0.256	<0.0500	0.072	10.0	0.092	<0.0500	0.843	<0.0500	--	1.26	0.155	
05/22/07	<0.100	<0.100	<0.100	<0.100	0.439	<0.100	0.119	14.2	0.152	<0.100	0.91	<0.100	--	1.92	0.245	
09/11/07	<0.100	<0.050	<0.050	<0.100	0.303	<0.0500	0.109	11.7	0.128	<0.050	1.10	<0.050	--	2.06	0.189	
12/12/07	<0.100	<0.0500	<0.0500	<0.100	0.27	<0.0500	0.075	8.74	0.093	<0.0500	1.01	<0.0500	--	1.54	0.167	
03/05/08	<0.0500	<0.0250	<0.0250	<0.0500	0.37	<0.0250	0.128	6.74	0.22	<0.0250	1.48	0.036	<0.0250	2.35	0.234	
09/16/08	<0.100	<0.0500	<0.0500	<0.100	0.302	<0.0500	0.112	10.4	0.139	<0.0500	2.70	<0.0500	<0.0500	2.50	0.171	
12/08/08	<0.0040	<0.0040	<0.0040	<0.0040	0.19	<0.0040	0.063	6.00	0.078	<0.0040	1.30	0.019	<0.0040	1.20	0.10	
03/25/09	<0.015	<0.015	<0.015	<0.015	0.11	<0.015	0.066	3.50	0.034	<0.015	3.60	0.049	<0.015	2.10	0.049	
09/15/09	<0.015	<0.015	<0.015	<0.015	0.14	<0.015	0.074	4.2	0.045	<0.015	4.3	0.044	<0.015	2.3	0.084	
12/14/09	<0.015	<0.015	<0.015	<0.015	0.14	<0.015	0.046	4	0.055	<0.015	1.5	0.015	<0.015	1.1	0.067	
03/17/10	<0.015	<0.015	<0.015	<0.015	0.16	<0.015	0.063	4.6	0.044	<0.015	2.8	0.032	<0.015	1.9	0.078	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS1-3(43) (continued)	06/14/10	<0.025	<0.025	<0.025	<0.025	0.22	<0.025	0.046	5.4	0.069	<0.025	0.79	<0.025	<0.025	0.9	0.085
	09/21/10	<0.015	<0.015	<0.015	<0.015	0.130	<0.015	0.055	3.8	0.043	<0.015	2.9	0.037	<0.015	1.9	0.068
	12/07/10	<0.015	<0.015	<0.015	<0.015	0.190	<0.015	0.063	5.500	0.069	<0.015	2.5	0.023	<0.015	1.8	0.096
	03/08/11	<0.020	<0.020	<0.020	<0.020	0.170	<0.020	0.052	4.6	0.056	<0.020	1.4	<0.020	<0.020	1.3	0.086
	06/06/11	<0.015	<0.015	<0.015	<0.015	0.19	<0.015	0.036	4.7	0.071	<0.015	0.61	<0.015	<0.015	0.79	0.097
	09/13/11	<0.02	<0.02	<0.02	<0.02	0.29	<0.02	0.078	8	0.16	<0.02	0.9	<0.02	<0.02	1.8	0.16
	03/08/12	<0.0040	<0.040	<0.040	<0.040	0.340	<0.040	0.0620	9.50	0.1500	<0.040	0.2400	<0.040	<0.040	0.6900	0.89
	06/21/12	<0.020	<0.020	<0.020	<0.020	0.220	<0.020	0.0250	4.40	0.0760	<0.020	0.0740	<0.020	<0.020	0.2600	1.10
	09/12/12	<0.02	<0.02	<0.02	<0.02	0.28	<0.02	0.072	8.8	0.18	<0.02	0.36	<0.02	<0.02	0.97	0.89
	12/11/12	<0.02	<0.02	<0.02	<0.02	0.22	<0.02	0.040	6.1	0.11	<0.02	0.16	<0.02	<0.02	0.43	0.68
	03/12/13	<0.02	<0.02	<0.02	<0.02	0.22	<0.02	0.021	4.7	0.074	<0.02	0.11	<0.02	<0.02	0.34	1.6
	06/11/13	<0.02	<0.02	<0.02	<0.02	0.19	<0.02	<0.02	3.9	0.056	<0.02	0.078	<0.02	<0.02	0.26	1.1
	09/17/13	<0.015	<0.015	<0.015	<0.015	0.19	<0.015	0.021	4.6	0.066	<0.015	0.1	<0.015	<0.015	0.35	1.1
	12/10/13	<0.015	<0.015	<0.015	<0.015	0.21	<0.015	0.018	3.6	0.054	<0.015	0.095	<0.015	<0.015	0.27	1.8
	3/18/2014	<0.020	<0.020	<0.020	<0.020	0.15	<0.020	<0.020	3.6	0.040	<0.020	0.093	<0.020	<0.020	0.26	0.44
	6/26/2014	<0.007	<0.007	<0.007	<0.007	0.12	<0.007	0.014	2	0.014	<0.007	0.021	<0.007	<0.007	0.057	0.48
	9/23/2014	<0.015	<0.015	<0.015	<0.015	0.19	<0.015	0.035	4.7	0.069	<0.015	0.12	<0.015	<0.015	0.42	0.55
	12/12/2014	<0.007	<0.007	<0.007	<0.007	0.20	<0.007	0.023	4	0.052	<0.0070	0.10	<0.007	<0.007	0.35	0.81
	3/19/2015	<0.0125	<0.0125	<0.0125	<0.0125	0.13	<0.0125	<0.0125	2.5	0.017	<0.0125	0.03	<0.0125	<0.0125	0.13	0.25
	6/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	<0.00050	0.059	<0.00050	<0.00050	0.00084	<0.00050	<0.00050	0.0028	0.0031
9/21/2015	<0.0100	<0.0100	<0.0100	<0.0100	0.1240	<0.0100	0.014	2.810	0.025	<0.0100	0.05350	<0.0100	<0.0100	0.171	0.129	
12/8/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0920	<0.00050	<0.00050	1.580	0.012	<0.00050	0.02620	<0.00050	<0.00050	0.088	0.23	
3/9/2016	<0.010	<0.040	<0.010	<0.010	0.094	<0.010	<0.010	1.7	0.0124	<0.010	0.0241	<0.010	<0.010	0.082	0.209	
6/17/2016	<0.0083	<0.0333	<0.0083	<0.0083	0.163	<0.0083	0.0266	3.13	0.0361	<0.0083	0.0646	<0.0083	<0.0083	0.248	0.288	
9/30/2016	<0.0083	<0.0333	<0.0083	<0.0083	0.082	<0.0083	0.0135	1.98	0.0242	<0.0083	0.2300	<0.0083	<0.0083	0.366	0.052	
12/16/2016	<0.0084	<0.0334	<0.0084	<0.0084	0.093	<0.0084	0.0095	1.81	0.0201	<0.0084	0.0641	<0.0084	<0.0084	0.171	0.239	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS1-2(60)	06/28/00	<0.0100	<0.0500	<0.0050	<0.0050	0.0536	<0.0050	<0.0050	0.369	<0.0050	<0.0050	0.658	0.0197	--	0.24	<0.0050
	08/30/00	<0.0200	<0.100	<0.0100	<0.0100	0.0217	<0.0100	0.0131	0.267	<0.0100	<0.0100	2.59	0.108	--	0.586	<0.0100
	11/29/00	<0.0020	<0.0100	<0.0010	<0.0010	0.00158	<0.0010	0.00109	0.0577	<0.0010	<0.0010	0.121	0.00458	--	0.0403	<0.0010
	02/27/01	<0.0010	<0.0050	<0.0005	<0.0005	0.000838	<0.0005	0.000686	0.0329	<0.0005	<0.0005	0.0546	0.00206	--	0.0247	<0.0005
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	0.000662	<0.00050	0.000581	0.039	<0.00050	<0.00050	0.0694	<0.0010	--	0.0278	0.00052
	09/24/01	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.089	<0.013	<0.013	0.83	0.014	--	0.15	<0.013
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0204	<0.00050	<0.00050	0.0128	<0.0010	--	0.0157	<0.00050
	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00252	<0.00050	0.00099	0.068	<0.00050	<0.00050	0.0629	0.0012	--	0.034	0.00348
	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00078	<0.00050	<0.00050	0.0228	<0.00050	<0.00050	0.0234	<0.00050	--	0.0142	0.0006
	08/29/02	<0.0100	<0.0050	<0.0050	<0.0100	0.0306	<0.0050	0.0051	0.661	<0.0050	<0.0050	0.138	<0.0050	--	0.116	<0.0050
	11/11/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00299	<0.00050	0.00083	0.086	<0.00050	<0.00050	0.0382	0.00116	--	0.0389	<0.00050
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00153	<0.00050	0.00074	0.0426	<0.00050	<0.00050	0.0428	0.00078	--	0.0342	0.00104
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00287	<0.00050	0.00121	0.072	<0.00050	<0.00050	0.0511	0.00118	--	0.0476	0.00063
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	0.00184	<0.0010	<0.0010	0.0488	<0.0010	<0.0010	0.0459	<0.0010	--	0.036	<0.0010
	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	0.00206	<0.00050	0.00106	0.0723	0.00069	<0.00050	0.0409	0.00066	--	0.0431	0.00063
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	0.00407	<0.0010	0.00122	0.0707	<0.0010	<0.0010	0.0548	0.00136	--	0.0435	0.00253
	08/17/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/02/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/15/04	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	0.00068	0.039	<0.00050	<0.00050	0.031	<0.00050	--	0.028	0.00067
	02/01/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00131	<0.00050	<0.00050	0.0375	0.00056	<0.00050	0.0332	<0.00050	--	0.0217	0.0013
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	0.001	<0.00050	<0.00050	0.0406	<0.00050	<0.00050	0.0217	<0.00050	--	0.0198	<0.00050
	05/16/05 DUP	<0.0010	<0.00050	<0.00050	<0.0010	0.00102	<0.00050	<0.00050	0.0421	<0.00050	<0.00050	0.0214	<0.00050	--	0.0205	<0.00050
	08/18/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00728	<0.000500	0.00241	0.145	0.0012	<0.000500	0.0765 B	0.00146	--	0.0656	0.00516 B
	11/17/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00253	<0.000500	0.00099	0.087	0.00059	<0.000500	0.0348	<0.000500	--	0.0264	0.00093
	02/20/06	<0.00100	<0.000500	<0.000500	<0.00100	0.00617	<0.000500	0.00193	0.136	0.0011	<0.000500	0.0619	0.00093	--	0.0455	0.00417
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	0.00102	<0.00100	<0.00100	0.0337	<0.00100	<0.00100	0.0234	<0.00100	--	0.0187	<0.00100
	09/05/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00537	<0.00050	0.00175	0.115	0.00084	<0.00050	0.0559	0.0008	--	0.0375	0.00479
	12/06/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00339	<0.00050	0.00112	0.0909	0.00062	<0.00050	0.0395	<0.00050	--	0.0283	0.00215
	02/07/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00437	<0.00050	0.00137	0.116	0.00093	<0.00050	0.0559	0.00058	--	0.0407	0.003
	05/22/07	<0.00100	<0.00100	<0.00100	<0.00100	0.00118	<0.00100	<0.00100	0.0385	<0.00100	<0.00100	0.0316	<0.00100	--	0.0252	<0.00100
09/11/07	<0.00050	<0.00250	<0.00250	<0.00500	0.0266	<0.00250	0.00875	0.711	0.0072	<0.00250	0.0814	0.00295	--	0.216	0.0119	

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)															
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride	
MGMS1-1(110)	06/28/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00378	<0.00050	<0.00050	0.0039	<0.0010	--	0.00335	<0.00050	
	08/30/00	<0.0050	<0.0250	<0.0025	<0.0025	0.0037	<0.0025	0.00332	0.055	<0.0025	<0.0025	0.51	0.024	--	0.13	<0.0025	
	11/29/00	<0.0050	<0.0250	<0.0025	<0.0025	0.00421	<0.0025	0.00459	0.051	<0.0025	<0.0025	0.583	0.0232	--	0.166	<0.0025	
	02/27/01	<0.0050	<0.0250	<0.0025	<0.0025	0.00521	<0.0025	0.00339	0.0475	<0.0025	<0.0025	0.385	0.0165	--	0.105	<0.0025	
	05/31/01	<0.0100	<0.0500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0558	<0.0050	<0.0050	0.639	0.0138	--	0.141	<0.0050	
	09/24/01	<0.0013	<0.0013	<0.0013	<0.0013	0.0061	<0.0013	0.0029	0.057	<0.0013	<0.0013	0.58	0.02	--	0.12	<0.0013	
	12/18/01	<0.0050	<0.0250	<0.0025	<0.0025	0.00504	<0.0025	0.00268	0.0548	<0.0025	<0.0025	0.527	0.0202	--	0.131	<0.0025	
	03/19/02	<0.0050	<0.0025	<0.0025	<0.0050	0.00525	<0.0025	<0.0025	0.054	<0.0025	<0.0025	0.454	0.0108	--	0.098	<0.0025	
	05/29/02	<0.0050	<0.0025	<0.0025	<0.0050	0.0049	<0.0025	<0.0025	0.0623	<0.0025	<0.0025	0.299	0.0097	--	0.0651	<0.0025	
	08/29/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00543	<0.00050	0.00132	0.11	0.0008	<0.00050	0.0602	0.00362	--	0.0478	<0.00050	
	11/11/02	<0.0020	<0.0010	<0.0010	<0.0020	0.00474	<0.0010	0.0012	0.0461	<0.0010	<0.0010	0.208	0.00784	--	0.0661	<0.0010	
	01/23/03	<0.0020	<0.0010	<0.0010	<0.0020	0.00444	<0.0010	0.00124	0.0653	<0.0010	<0.0010	0.21	0.00654	--	0.0741	<0.0010	
	05/28/03	<0.0020	<0.0010	<0.0010	<0.0020	0.00396	<0.0010	<0.0010	0.0692	<0.0010	<0.0010	0.109	0.00248	--	0.0575	<0.0010	
	11/11/03	<0.0020	<0.0020	<0.0020	<0.0020	0.00414	<0.0020	<0.0020	0.0448	<0.0020	<0.0020	0.256	0.0036	--	0.0602	<0.0020	
	01/27/04	<0.0020	<0.0010	<0.0010	<0.0020	0.00422	<0.0010	0.0011	0.0671	<0.0010	<0.0010	0.167	0.00416	--	0.0697	<0.0010	
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	0.00366	<0.0010	<0.0010	0.0472	<0.0010	<0.0010	0.19	0.00218	--	0.0559	<0.0010	
	11/15/04	<0.0025	<0.0025	<0.0025	<0.0025	0.0037	<0.0025	<0.0025	0.095	<0.0025	<0.0025	0.076	<0.0025	--	0.064	<0.0025	
	06/20/05	<0.0020	<0.0010	<0.0010	<0.0020	0.00922	<0.0010	<0.0010	0.00258	0.283	0.0018	<0.0010	0.0236	0.00162	--	0.07	0.00124
	11/17/05	<0.00100	<0.000500	<0.000500	<0.00100	0.00293	<0.000500	<0.000500	0.0513	<0.000500	<0.000500	0.102	0.00195	--	0.0761	<0.000500	
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	0.00215	<0.00100	<0.00100	0.044	<0.00100	<0.00100	0.0944	0.00136	--	0.0668	<0.00100	
	12/06/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00581	<0.00050	0.0006	0.142	<0.00050	<0.00050	0.0538	0.00088	--	0.0746	0.00057	
	09/11/07	<0.00200	<0.00100	<0.00100	<0.00200	0.00378	<0.00100	0.0012	0.189	<0.00100	<0.00100	0.0316	<0.00100	--	0.0611	<0.00100	
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00373	<0.000500	0.00091	0.242	0.00237	<0.000500	0.0327	0.00064	<0.000500	0.0444	<0.000500	
	03/25/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0026	<0.00050	0.00087	0.16	0.0009	<0.00050	0.025	<0.00050	<0.00050	0.039	<0.00050	
	06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0023	<0.00050	0.00074	0.13	0.001	<0.00050	0.024	<0.00050	<0.00050	0.039	<0.00050	
	09/15/09	<0.0025	<0.0025	<0.0025	<0.0025	0.02	<0.0025	0.0027	0.62	0.004	<0.0025	0.024	<0.0025	<0.0025	0.075	<0.0025	
	03/17/10	<0.0025	<0.0025	<0.0025	<0.0025	0.02	<0.0025	0.0043	0.72	0.004	<0.0025	0.02	<0.0025	<0.0025	0.079	<0.0025	
09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0025	<0.0005	0.0011	0.1500	0.001	<0.0005	0.028	<0.0005	<0.0005	0.053	<0.0005		
03/10/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0014	<0.00050	0.00057	0.083	0.00052	<0.00050	0.026	<0.00050	<0.00050	0.031	<0.00050		
09/13/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0019	<0.00050	0.0012	0.11	0.00096	<0.00050	0.03	<0.00050	<0.00050	0.059	<0.00050		

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS1-1(110) (continued)	03/08/12	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.06	<0.00050	<0.00050	0.0220	<0.00050	<0.00050	0.0210	<0.00050
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	0.00093	<0.00050	0.00053	0.06	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.025	<0.00050
	03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00095	<0.00050	<0.00050	0.065	<0.00050	<0.00050	0.023	<0.00050	<0.00050	0.024	<0.00050
	09/17/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	0.00056	0.068	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.032	<0.00050
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.063	<0.00050	<0.00050	0.023	<0.00050	<0.00050	0.027	0.00065
	9/24/2014	Not sampled: 60 foot port accidentally sampled twice.														
	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0027	<0.00050	0.00069	0.13	<0.00050	<0.00050	0.024	<0.00050	<0.00050	0.0415	0.00082
	9/21/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.05	<0.00050	<0.00050	0.019	<0.00050	<0.00050	0.0204	<0.00050
	9/30/2016	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	0.06	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.0287	<0.00050
	MGMS2-4(40)	06/28/00	<0.0500	<0.250	<0.0250	<0.0250	0.0449	<0.0250	<0.0250	1.21	<0.0250	<0.0250	5.03	0.215	--	3.09
08/30/00		<0.0100	<0.0500	<0.0050	<0.0050	0.0234	<0.0050	0.0313	0.644	0.00728	<0.0050	2.98	0.152	--	1.85	<0.0050
11/29/00		<0.100	<0.500	<0.0500	<0.0500	0.0513	<0.0500	0.094	1.42	<0.0500	<0.0500	8.74	0.424	--	3.98	<0.0500
02/27/01		<0.0500	<0.250	<0.0250	<0.0250	0.0356	<0.0250	0.0662	0.753	<0.0250	<0.0250	7.36	0.28	--	3.36	<0.0250
05/31/01		<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.604	<0.0250	<0.0250	3.61	0.0944	--	2.05	<0.0250
09/24/01		<0.0050	<0.0050	<0.0050	<0.0050	0.028	<0.0050	0.026	0.78	0.013	<0.0050	2.60	0.17	--	1.70	<0.0050
12/18/01		<0.0500	<0.250	<0.0250	<0.0250	0.175	<0.0250	0.077	1.35	<0.0250	<0.0250	5.59	0.374	--	3.22	<0.0250
03/19/02		<0.0500	<0.0250	<0.0250	<0.0500	0.036	<0.0250	0.036	0.868	<0.0250	<0.0250	6.24	0.18	--	3.04	<0.0250
05/29/02		<0.0500	<0.0250	<0.0250	<0.0500	0.076	<0.0250	0.053	1.33	<0.0250	<0.0250	6.58	0.23	--	2.53	<0.0250
11/11/02		<0.0200	<0.0100	<0.0100	<0.0200	0.0198	<0.0100	0.0136	0.639	<0.0100	<0.0100	3.08	0.0894	--	1.82	<0.0100
01/23/03		<0.0200	<0.0100	<0.0100	<0.0200	0.0134	<0.0100	<0.0100	0.353	<0.0100	<0.0100	2.29	0.0526	--	1.48	<0.0100
05/28/03		<0.0100	<0.0050	<0.0050	<0.0100	0.0054	<0.0050	<0.0050	0.11	<0.0050	<0.0050	1.19	0.0191	--	0.474	<0.0050
11/11/03		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0541	<0.0100	<0.0100	1.82	0.014	--	0.398	<0.0100
01/27/04		<0.0200	<0.0100	<0.0100	<0.0200	0.0452	<0.0100	0.01	0.397	<0.0100	<0.0100	1.74	0.0558	--	0.688	<0.0100
05/03/04		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0412	<0.0100	<0.0100	0.599	<0.0100	--	0.20	<0.0100
08/17/04		<0.0100	<0.0050	<0.0050	<0.0100	0.0097	<0.0050	0.0061	0.158	<0.0050	<0.0050	1.53	0.0307	--	0.705	<0.0050
11/15/04		<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.31	<0.0250	<0.0250	2.90	<0.0250	--	1.30	<0.0250
03/24/05		<0.0200	<0.0100	<0.0100	<0.0200	0.0108	<0.0100	<0.0100	0.159	<0.0100	<0.0100	1.90	0.0258	--	0.834	<0.0100
05/16/05		<0.0200	<0.0100	<0.0100	<0.0200	0.0342	<0.0100	0.0282	0.489	<0.0100	<0.0100	2.54	0.0522	--	1.15	<0.0100
11/16/05		<0.0500	<0.0250	<0.0250	<0.0500	0.0435	<0.0250	<0.0250	0.396	<0.0250	<0.0250	4.24	0.0825	--	1.75	<0.0250
06/06/06	<0.0500	<0.0500	<0.0500	<0.0500	0.062	<0.0500	<0.0500	0.917	<0.0500	<0.0500	4.82	0.055	--	1.77	<0.0500	
12/05/06	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.37	<0.0250	<0.0250	3.09	0.0315	--	1.20	<0.0250	
05/21/07	<0.0200	<0.0200	<0.0200	<0.0200	0.0274	<0.0200	<0.0200	0.359	<0.0200	<0.0200	2.88	0.0382	--	1.08	<0.0200	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-4(40) (continued)	09/10/07	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.402	<0.0250	<0.0250	2.01	0.0525	--	1.60	<0.0250
	12/12/07	<0.0500	<0.0250	<0.0250	<0.0500	0.026	<0.0250	<0.0250	0.33	<0.0250	<0.0250	2.08	0.0355	--	0.914	<0.0250
	03/04/08 <sup>7</sup>	<0.00100	<0.000500	<0.000500	<0.00100	0.0204	<0.000500	0.0161	0.181	0.00771	<0.000500	1.81	0.0537	0.001	0.95	0.00468
	09/16/08	<0.0500	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	0.208	<0.0250	<0.0250	2.33	0.032	<0.0250	1.13	<0.0250
	12/08/08	Not sampled. Air leak in sampling point prohibited the collection of the sample.														
	03/24/09	<0.0020	<0.0020	<0.0020	<0.0020	0.0084	<0.0020	0.0036	0.10	0.002	<0.0020	0.99	0.014	<0.0020	0.43	<0.0020
	09/15/09	<0.0015	<0.0015	<0.0015	<0.0015	0.0031	<0.0015	<0.0015	0.052	<0.0015	<0.0015	0.44	0.0041	<0.0015	0.2	<0.0015
	12/14/09	<0.0015	<0.0015	<0.0015	<0.0015	0.054	<0.0015	0.016	0.36	0.0069	<0.0015	2.4	0.062	<0.0015	1	0.0026
	03/16/10	<0.007	<0.007	<0.007	<0.007	0.016	<0.007	<0.007	0.14	<0.007	<0.007	1.8	0.019	<0.007	0.81	<0.007
	06/14/10	<0.025	<0.025	<0.025	<0.025	0.072	<0.025	0.041	1.4	<0.025	<0.025	6.4	0.068	<0.025	1.5	0.043
	09/21/10	<0.0025	<0.0025	<0.0025	<0.0025	0.035	<0.0025	0.017	0.480	0.009	<0.0025	3.5	0.048	<0.0025	1.5	0.0054
	12/07/10	<0.015	<0.015	<0.015	<0.015	0.069	<0.015	0.026	0.700	<0.015	<0.015	4.1	0.083	<0.015	1.6	<0.015
	03/07/11	<0.015	<0.015	<0.015	<0.015	0.088	<0.015	0.030	0.930	<0.015	<0.015	3.7	0.091	<0.015	1.6	<0.015
	06/07/11	<0.015	<0.015	<0.015	<0.015	0.065	<0.015	0.03	1.6	0.017	<0.015	4.4	0.057	<0.015	1.4	0.048
	09/12/11	<0.015	<0.015	<0.015	<0.015	0.044	<0.015	0.028	7.4	0.02	<0.015	0.79	0.048	<0.015	0.38	0.058
	12/07/11	<0.015	<0.015	<0.015	<0.015	0.035	<0.015	<0.015	5.3	<0.015	<0.015	0.61	<0.015	<0.015	0.039	0.46
	03/08/12	<0.0020	<0.0020	<0.0020	<0.0020	0.038	<0.0020	0.0023	0.47	0.0028	<0.0020	0.0099	0.0052	<0.0020	0.0054	0.26
	06/19/12	<0.0005	0.0039	<0.0005	<0.0005	0.053	<0.0005	<0.0005	0.02	0.0013	<0.0005	0.0072	<0.0005	<0.0005	0.0025	0.06
	09/13/12	<0.0015	0.0018	<0.0015	<0.0015	0.039	<0.0015	0.0028	0.31	0.0032	<0.0015	0.089	0.005	<0.0015	0.08	0.44
	12/11/12	<0.00050	0.030	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	0.033	0.0013	<0.00050	0.010	<0.00050	<0.00050	0.0034	0.0040
	03/12/13	<0.00050	0.0082	<0.00050	<0.00050	0.028	<0.00050	0.0019	0.30	0.0020	<0.00050	0.0056	0.0025	<0.00050	0.0022	0.27
	06/11/13	<0.00050	0.015	<0.00050	<0.00050	0.0083	<0.00050	<0.00050	0.0079	<0.00050	<0.00050	0.00094	<0.00050	<0.00050	<0.00050	0.0048
	09/17/13	<0.00050	0.0094	<0.00050	<0.00050	0.028	<0.00050	0.0048	0.29	0.0014	<0.00050	0.016	0.0016	<0.00050	0.017	0.33
	12/16/13	<0.00050	0.0069	<0.00050	<0.00050	0.0097	<0.00050	<0.00050	0.0084	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0014	0.0034
	3/24/2014	<0.00050	0.0024	<0.00050	<0.00050	0.045	<0.00050	0.0029	0.084	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.0018	0.27
	6/26/2014	<0.00050	0.0061	<0.00050	<0.00050	0.031	<0.00050	0.01	0.088	0.00084	<0.00050	0.021	<0.00050	<0.00050	0.0220	0.09
	9/23/2014	<0.00050	0.0025	<0.00050	<0.00050	0.030	<0.00050	0.030	0.590	0.0024	<0.00050	0.17	0.0032	<0.00050	0.11	0.80
	12/12/2014	<0.00050	0.012	<0.00050	<0.00050	0.035	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.0034	<0.00050	<0.00050	0.0023	0.018
	3/20/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0043	<0.00050	0.0039	0.047	<0.00050	<0.00050	0.031	<0.00050	<0.00050	0.022	0.017
	6/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.014	<0.00050	0.0013	0.054	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.013	0.048
9/25/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.012	<0.00050	0.0042	0.105	0.0006	<0.00050	0.067	0.0009	<0.00050	0.046	0.058	
12/8/2015	<0.00050	0.0038	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.007	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.003	0.003	
3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0206	<0.00050	0.0016	0.036	<0.00050	<0.00050	0.0065	<0.00050	<0.00050	0.0062	0.036	
6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0249	<0.00050	0.0264	0.744	0.0028	<0.00050	0.223	0.0031	<0.00050	0.146	0.227	
9/29/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0121	<0.00050	<0.00050	0.115	<0.00050	<0.00050	0.033	<0.00050	<0.00050	0.025	0.142	
12/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0103	<0.00050	<0.00050	0.005	<0.00050	<0.00050	0.003	<0.00050	<0.00050	0.002	0.002	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-3(60)	06/28/00	<0.0050	<0.0250	<0.0025	<0.0025	0.0356	<0.0025	0.0083	0.433	<0.0025	<0.0025	0.11	0.0223	--	0.198	<0.0025
	08/30/00	<0.0100	<0.0500	<0.0050	<0.0050	0.036	<0.0050	0.013	1.12	<0.0050	<0.0050	0.164	0.032	--	0.136	<0.0050
	11/29/00	<0.0050	<0.0250	<0.0025	<0.0025	0.00508	<0.0025	0.00388	0.279	<0.0025	<0.0025	0.0268	<0.0050	--	0.038	<0.0025
	02/27/01	<0.002	<0.0100	<0.0010	<0.0010	0.0402	<0.0010	0.00265	0.0466	<0.0010	<0.0010	0.0207	0.0124	--	0.027	0.173
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	0.00247	<0.00050	0.0023	0.0391	<0.00050	<0.00050	0.113	0.00344	--	0.0756	0.00506
	09/24/01	<0.0025	<0.0025	<0.0025	<0.0025	0.014	<0.0025	0.011	0.18	0.0036	<0.0025	0.34	0.011	--	0.22	0.048
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	0.000607	<0.00050	0.00101	0.015	<0.00050	<0.00050	0.0644	0.00206	--	0.0477	<0.00050
	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	0.0054	<0.00050	0.00296	0.0629	0.00081	<0.00050	0.0919	0.00578	--	0.0801	0.0152
	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	0.00255	<0.00050	0.00202	0.0597	0.00082	<0.00050	0.119	0.0048	--	0.0676	0.00106
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	0.0101	<0.00050	0.0027	0.114	0.00112	<0.00050	0.111	0.00606	--	0.096	0.0228
	05/28/03	<0.0020	<0.0010	<0.0010	<0.0020	0.015	<0.0010	0.00328	0.178	0.00148	<0.0010	0.131	0.0093	--	0.126	0.0156
	11/11/03	<0.0020	<0.0020	<0.0020	<0.0020	0.0213	<0.0020	0.00456	0.208	<0.0020	<0.0020	0.223	0.00906	--	0.139	0.0206
	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	0.0172	<0.00050	0.00283	0.117	0.00157	<0.00050	0.0963	0.00538	--	0.0922	0.0177
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	0.00479	<0.0010	0.00196	0.0864	<0.0010	<0.0010	0.121	0.00331	--	0.084	<0.0010
	11/15/04	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.013	0.0044	0.22	0.0028	<0.0025	0.17	0.0064	--	0.14	0.011
	02/01/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00249	<0.00050	0.00147	0.092	0.00246	<0.00050	0.0977	0.00241	--	0.0739	0.001
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	0.00149	<0.00050	0.00151	0.0452	0.00059	<0.00050	0.0741	0.00161	--	0.0415	<0.00050
	08/18/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0276 B	<0.000500	<0.000500	0.0235 B	<0.000500	--	0.0130 B	<0.000500
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	0.0075	<0.000500	0.00205	0.0909	0.00116	<0.000500	0.107	0.0031	--	0.0783	0.00268
	02/20/06	<0.00100	<0.000500	<0.000500	<0.00100	0.00335	<0.000500	0.0016	0.065	0.00082	<0.000500	0.0995	0.00155	--	0.0623	0.00127
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.055	<0.00100	<0.00100	0.0763	0.00101	--	0.0362	<0.00100
	09/05/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00285	<0.00050	0.00113	0.0751	0.00073	<0.00050	0.073	0.00111	--	0.0456	0.00083
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00258	<0.00050	0.00144	0.077	0.00075	<0.00050	0.0987	0.00127	--	0.0612	0.00079
02/07/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00336	<0.00050	0.0013	0.0965	0.00079	<0.00050	0.0763	0.00164	--	0.055	0.00151	
05/21/07	<0.00100	<0.00100	<0.00100	<0.00100	0.00245	<0.00100	0.00133	0.0737	<0.00100	<0.00100	0.0991	0.00151	--	0.0545	<0.00100	
09/10/07	<0.0100	<0.00500	<0.00500	<0.0100	0.0312	<0.0050	0.0082	0.559	<0.00500	<0.00500	0.221	0.0108	--	0.192	0.0267	
12/12/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00149	<0.00050	0.00088	0.0786	0.00056	<0.00050	0.0661	0.00098	--	0.0368	0.00175	
03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00446	<0.000500	0.00219	0.164	0.00137	<0.000500	0.0897	0.00232	<0.000500	0.0722	0.00688	
09/16/08	<0.00500	<0.00250	<0.00250	<0.00500	0.0104	<0.00250	0.00365	0.166	<0.00250	<0.00250	0.111	0.00385	<0.00250	0.0964	0.00715	
12/08/08	<0.00080	<0.00080	<0.00080	<0.00080	0.011	<0.00080	0.003	0.16	0.0017	<0.00080	0.11	0.0032	<0.00080	0.08	0.01	

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-3(60) (continued)	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	0.0016	0.11	0.001	<0.00050	0.084	0.0022	<0.00050	0.053	0.0037
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0064	<0.00050	0.0023	0.091	0.0012	<0.00050	0.11	0.0024	<0.00050	0.072	0.0042
	12/14/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0021	<0.00050	0.0011	0.061	0.0008	<0.00050	0.084	0.0011	<0.00050	0.054	0.00096
	03/16/10	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	0.0036	0.14	0.0016	<0.00050	0.16	0.0082	<0.00050	0.11	0.012
	06/14/10	<0.00050	<0.00050	<0.00050	<0.00050	0.0012	<0.00050	0.00075	0.046	0.0006	<0.00050	0.073	0.00086	<0.00050	0.038	0.00088
	09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	0.011	<0.0005	0.003	0.130	0.0015	<0.0005	0.150	0.0058	<0.0005	0.1	0.0068
	12/07/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0041	<0.0005	0.0018	0.086	0.0012	<0.0005	0.120	0.0017	<0.0005	0.077	0.0016
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	0.00086	0.073	0.00062	<0.00050	0.061	0.0012	<0.00050	0.034	0.0014
	06/06/11	<0.0005	<0.0005	<0.0005	<0.0005	0.00064	<0.0005	<0.0005	0.022	<0.0005	<0.0005	0.064	0.00054	<0.0005	0.027	<0.0005
	09/12/11	<0.00050	<0.00050	<0.00050	<0.00050	0.01	<0.00050	0.0032	0.11	0.0014	<0.00050	0.17	0.006	<0.00050	0.1	0.002
	12/05/11	<0.00050	<0.00050	<0.00050	<0.00050	0.0026	<0.00050	0.00095	0.051	0.00054	<0.00050	0.084	0.0010	<0.00050	0.041	<0.00050
	03/08/12	<0.00050	<0.00050	<0.00050	<0.00050	0.010	<0.00050	0.0029	0.30	0.0019	<0.00050	0.0710	0.0015	<0.00050	0.0450	0.04
	06/19/12	<0.0005	<0.0005	<0.0005	<0.0005	0.002	<0.0005	0.0010	0.08	0.0009	<0.0005	0.0780	0.0008	<0.0005	0.0450	0.01
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0015	<0.00050	0.00056	0.048	<0.00050	<0.00050	0.044	<0.00050	<0.00050	0.02	0.0027
	12/11/12	<0.00050	<0.00050	<0.00050	<0.00050	0.0026	<0.00050	0.0025	0.059	0.0015	<0.00050	0.057	0.00062	<0.00050	0.036	0.016
	03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00074	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.016	<0.00050	<0.00050	0.0090	<0.00050
	06/11/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0024	<0.00050	0.0015	0.053	0.00058	<0.00050	0.029	0.00055	<0.00050	0.021	0.012
	09/17/13	<0.00050	<0.00050	<0.00050	<0.00050	0.0054	<0.00050	0.00098	0.073	0.00066	<0.00050	0.024	0.00060	<0.00050	0.013	0.029
	12/10/13	<0.00050	<0.00050	<0.00050	<0.00050	0.003	<0.00050	0.001	0.088	0.00088	<0.00050	0.023	0.00060	<0.00050	0.018	0.013
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00096	<0.00050	<0.00050	0.028	<0.00050	<0.00050	0.033	<0.00050	<0.00050	0.013	0.0017
	9/23/2014	Insufficient air pressure to inflate dedicated bladder; no sample collected.														
	12/12/2014	Insufficient air pressure to inflate dedicated bladder; no sample collected.														
	3/20/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.029	<0.00050	<0.00050	0.041	<0.00050	<0.00050	0.024	0.0052
	6/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0020	<0.00050	0.00056	0.038	<0.00050	<0.00050	0.035	<0.00050	<0.00050	0.024	0.0079
	9/25/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0025	<0.00050	0.00050	0.052	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.016	0.0097
	12/8/2015	Well Damaged, Unable to Sample														
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0011	<0.00050	<0.00050	0.0194	<0.00050	<0.00050	0.0172	<0.00050	<0.00050	0.0118	0.0034
	9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0020	<0.00050	<0.00050	0.0400	<0.00050	<0.00050	0.0096	<0.00050	<0.00050	0.0115	0.0096
	12/16/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.0017	<0.00050	<0.00050	0.0353	<0.00050	<0.00050	0.0407	<0.00050	<0.00050	0.0248	0.0014

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)															
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride	
MGMS2-2(110)	06/28/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0122	<0.00050	<0.00050	0.00604	<0.0010	--	0.0171	<0.00050	
	08/30/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00441	<0.00050	<0.00050	0.0164	<0.0010	--	0.0147	<0.00050	
	11/29/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000717	0.00823	<0.00050	0.013	<0.0010	--	0.0193	<0.00050	
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000756	0.00731	<0.00050	<0.00050	0.0152	<0.0010	--	0.0216	<0.00050
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000938	0.0107	<0.00050	<0.00050	0.0244	0.00114	--	0.0291	<0.00050
	09/24/01	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0006	0.0068	<0.00050	<0.00050	0.037	0.0011	--	0.034	<0.00050	
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	0.00491	<0.00050	<0.00050	0.0351	<0.0010	--	0.0275	<0.00050	
	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00061	0.00997	<0.00050	<0.00050	0.0356	0.00123	--	0.0246	<0.00050	
	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00121	0.0319	<0.00050	<0.00050	0.114	0.00239	--	0.051	0.00061	
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00101	0.0571	<0.00050	<0.00050	0.0478	0.00279	--	0.0441	0.00298	
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00061	<0.00050	0.00073	0.0639	<0.00050	<0.00050	0.0546	0.00198	--	0.0431	0.00113	
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	0.00114	<0.0010	<0.0010	0.0767	0.00107	<0.0010	0.0324	0.00219	--	0.0308	0.00203	
	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	0.001	<0.00050	<0.00050	0.049	<0.00050	<0.00050	0.0679	0.00117	--	0.03	0.001	
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.014	<0.0010	<0.0010	0.028	<0.0010	--	0.0136	<0.0010	
	11/15/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	0.00062	0.06	<0.00050	<0.00050	0.05	0.0016	--	0.03	<0.00050	
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0279	<0.00050	<0.00050	0.0215	0.00052	--	0.0109	<0.00050	
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0151	<0.000500	<0.000500	0.018	<0.000500	--	0.00842	<0.000500	
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0309	<0.00100	<0.00100	0.0139	<0.00100	--	0.00659	<0.00100	
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0362	<0.00050	<0.00050	0.0179	<0.00050	--	0.00827	<0.00050	
	09/10/07	<0.00500	<0.00250	<0.00250	<0.00500	<0.00250	<0.00250	0.0032	0.512	<0.00250	<0.00250	0.146	0.00565	--	0.0944	0.0149	
03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0595	<0.000500	<0.000500	0.0334	0.00075	<0.000500	0.0167	0.00282		
09/16/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	0.00071	0.077	<0.000500	<0.000500	0.044	0.00118	<0.000500	0.0238	0.00345		
03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.04	<0.00050	<0.00050	0.027	<0.00050	<0.00050	0.011	0.0025		
06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.031	<0.00050	<0.00050	0.02	0.00057	<0.00050	0.0089	0.0023		
09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.016	<0.00050		0.0067	0.0018		

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-2(110) (continued)	03/15/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.028	<0.00050	<0.00050	0.021	<0.00050	<0.00050	0.0081	0.0016
	09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.033	<0.0005	<0.0005	0.034	0.0006	<0.0005	0.014	0.0013
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.024	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.0086	0.001
	09/12/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.0083	<0.00050
	03/08/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.03	<0.00050	<0.00050	0.0230	<0.00050	<0.00050	0.0093	0.00
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.02	<0.00050	<0.00050	0.0083	0.0014
	03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.034	<0.00050	<0.00050	0.023	0.00052	<0.00050	0.010	0.0027
	09/17/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.03	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.0087	0.0022
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.021	<0.00050	<0.00050	0.013	<0.00050	<0.00050	0.0062	0.0025
	9/23/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.025	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0073	0.0049
	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.0079	<0.00050	<0.00050	0.0048	0.0046
	9/25/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0059	0.0041
	3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.0226	<0.00050	<0.00050	0.0071	<0.00050	<0.00050	0.008	0.01
	9/29/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	0.0168	<0.00050	<0.00050	0.0065	<0.00050	<0.00050	0.006	0.0058
MGMS2-1(132)	06/28/00	<0.0010	<0.0050	<0.00050	<0.00050	0.00125	<0.00050	0.00177	0.0276	<0.00050	<0.00050	0.0275	0.00206	--	0.0543	<0.00050
	08/30/00	<0.0010	<0.0050	<0.00050	<0.00050	0.000903	<0.00050	<0.00050	0.023	<0.00050	<0.00050	0.0778	0.00247	--	0.0529	<0.00050
	11/29/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	0.000569	0.0124	<0.00050	<0.00050	0.0253	<0.0010	--	0.0278	<0.00050
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	0.000537	<0.00050	0.000605	0.0114	<0.00050	<0.00050	0.0252	<0.001	--	0.0244	0.0026
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00886	<0.00050	<0.00050	0.0255	<0.0010	--	0.0244	<0.00050
	09/24/01	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00076	0.0076	<0.00050	<0.00050	0.029	0.0011	--	0.03	<0.00050
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	0.000773	0.00681	<0.00050	<0.00050	0.0268	0.00136	--	0.0238	<0.00050
	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00053	0.00862	<0.00050	<0.00050	0.0335	0.00077	--	0.0242	<0.00050
	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00129	0.0354	0.00052	<0.00050	0.117	0.0025	--	0.0536	0.00062
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00096	0.0574	<0.00050	<0.00050	0.0499	0.00235	--	0.0462	0.00319
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	0.00053	0.0272	<0.00050	<0.00050	0.0293	0.00098	--	0.024	0.00107
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0463	<0.0010	<0.0010	0.0288	0.00156	--	0.0297	0.00149
	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	0.001	<0.00050	0.00056	0.0376	<0.00050	<0.00050	0.028	0.001	--	0.0222	0.00151
	05/04/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0382	<0.0010	<0.0010	0.00755	<0.0010	--	0.00522	<0.0010
	11/15/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00058	0.062	<0.00050	<0.00050	0.038	0.0011	--	0.026	0.00085
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0295	<0.00050	<0.00050	0.0237	0.001	--	0.0152	0.00086
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00885	<0.000500	<0.000500	0.013	<0.000500	--	0.00606	<0.000500
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0231	<0.00100	<0.00100	0.0148	<0.00100	--	0.00671	<0.00100
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0276	<0.00050	<0.00050	0.0149	<0.00050	--	0.00789	<0.00050
09/10/07	<0.000500	<0.00250	<0.00250	<0.000500	0.00455	<0.00250	0.003	0.615	<0.00250	<0.00250	0.0932	0.01	--	0.061	0.0215	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS2-1(132) (continued)	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0373 J	<0.000500	<0.000500	0.0226 J	0.001	<0.000500	0.0129 J	0.0024
	09/16/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00053	<0.000500	0.001	0.101	0.00056	<0.000500	0.0383	0.00137	<0.000500	0.0261	0.00611
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.032	<0.00050	<0.00050	0.024	0.00057	<0.00050	0.011	0.0015
	06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.032	<0.00050	<0.00050	0.024	<0.00050	<0.00050	0.012	0.0016
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.018	<0.00050		0.008	0.0015
	03/15/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.028	<0.00050	<0.00050	0.023	<0.00050	<0.00050	0.010	0.0016
	09/21/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.028	<0.0005	<0.0005	0.031	<0.0005	<0.0005	0.012	0.0011
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.030	<0.00050	<0.00050	0.041	0.00056	<0.00050	0.013	0.00097
	03/08/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.03	<0.00050	<0.00050	0.0240	<0.00050	<0.00050	0.0094	0.00
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.009	0.002
	03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.024	<0.00050	<0.00050	0.019	<0.00050	<0.00050	0.0083	0.0019
	09/17/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.035	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.0081	0.0027
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0054	0.0026
	9/23/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.032	<0.00050	<0.00050	0.0098	<0.00050	<0.00050	0.0060	0.0055
	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.011	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0044	0.00075
	3/9/2016	<0.00050	<0.00050	<0.00050	<0.00050	0.00086	<0.00050	<0.00050	0.0368	<0.00050	<0.00050	0.0079	0.00069	<0.00050	0.0107	0.0124
	9/29/2016	<0.00050	<0.00050	<0.00050	<0.00050	0.00070	<0.00050	<0.00050	0.0314	<0.00050	<0.00050	0.0064	<0.00050	<0.00050	0.0079	0.0082
MGMS3-4(40)	08/30/00	<0.0100	<0.0500	<0.0050	<0.0050	0.0132	<0.0050	0.00501	0.858	0.0141	<0.0050	0.58	0.0108	--	0.205	0.00665
	11/29/00	<0.0200	<0.100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.82	0.0106	<0.0100	2.81	<0.0200	--	0.395	<0.0100
	02/27/01	<0.0500	<0.250	<0.0250	<0.0250	0.0394	<0.0250	0.0292	4.57	<0.0250	<0.0250	2.97	<0.0500	--	0.756	0.0793
	05/31/01	<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	2.92	0.0385	<0.0250	3.96	<0.0500	--	0.716	<0.0250
	09/24/01	<0.0025	<0.0025	<0.0025	<0.0025	0.0058	<0.0025	<0.0025	0.73	0.0054	<0.0025	1.40	0.0092	--	0.23	0.0035
	12/18/01	<0.0500	<0.250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	2.55	<0.0250	<0.0250	3.31	<0.0500	--	0.631	0.031
	03/19/02	<0.0200	<0.0100	<0.0100	<0.0200	0.0346	<0.0100	0.0154	3.37	0.0302	<0.0100	3.56	0.0238	--	0.707	0.057
	05/29/02	<0.0500	<0.0250	<0.0250	<0.0500	0.0715	<0.0250	0.026	5.18	0.0385	<0.0250	2.47	0.0335	--	0.728	0.086
	11/11/02	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	1.52	<0.0250	<0.0250	2.75	<0.0250	--	0.309	<0.0250
	01/23/03	<0.0200	<0.0100	<0.0100	<0.0200	0.137	<0.0100	0.0384	3.53	0.0326	<0.0100	2.38	0.118	--	1.40	0.0836
	05/28/03	<0.0500	<0.0250	<0.0250	<0.0500	0.056	<0.0250	0.0285	1.72	<0.0250	<0.0250	3.56	<0.0250	--	1.47	<0.0250
	11/11/03	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.672	<0.0100	<0.0100	0.0583	<0.0100	--	0.0324	<0.0100
	01/27/04	<0.0200	<0.0100	<0.0100	<0.0200	0.02	<0.0100	<0.0100	1.90	0.0194	<0.0100	1.35	0.0	--	0.246	0.02
	05/03/04	<0.0200	<0.0200	<0.0200	<0.0200	0.05	<0.0200	<0.0200	1.42	<0.0200	<0.0200	2.70	0.0342	--	0.913	0.0248
	08/17/04	<0.0200	<0.0100	<0.0100	<0.0200	0.0716	<0.0100	<0.0100	3.30	0.031	<0.0100	1.36	0.0292	--	0.569	0.0452
11/15/04	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	1.40	<0.0250	<0.0250	1.60	<0.0250	--	0.29	<0.0250	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS3-4(40) (continued)	03/24/05	<0.0200	<0.0100	<0.0100	<0.0200	0.0794	<0.0100	0.03	3.44	0.0342	<0.0100	2.33	0.0438	--	1.08	0.0602
	03/24/05 DUP	<0.0200	<0.0100	<0.0100	<0.0200	0.0832	<0.0100	0.0292	3.45	0.034	<0.0100	2.15	0.0	--	1.04	0.0586
	05/16/05	<0.0100	<0.0050	<0.0050	<0.0100	0.007	<0.0050	<0.0050	0.657	0.0113	<0.0050	1.13	0.01	--	0.224	<0.0050
	11/16/05	<0.0100	<0.00500	<0.00500	<0.0100	0.0058	<0.00500	<0.00500	0.794	0.0084	<0.00500	1.18	0.01	--	0.21	<0.00500
	03/14/06	<0.0500	<0.0500	<0.0500	<0.0500	0.051	<0.0500	<0.0500	4.13	<0.0500	<0.0500	1.41	<0.0500	--	0.484	<0.0500
	06/06/06	<0.0200	<0.0200	<0.0200	<0.0200	0.0204	<0.0200	<0.0200	2.29	0.0322	<0.0200	1.41	<0.0200	--	0.401	0.0236
	12/05/06	<0.0200	<0.0100	<0.0100	<0.0200	0.0298	<0.0100	<0.0100	3.57	0.029	<0.0100	1.02	<0.0100	--	0.36	0.0954
	05/22/07	<0.0200	<0.0200	<0.0200	<0.0200	0.0208	<0.0200	<0.0200	2.64	0.0202	<0.0200	0.952	<0.0200	--	0.349	0.0226
	09/10/07	<0.0500	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	2.34	<0.0250	<0.0250	0.499	<0.0250	--	0.215	0.0255
	12/12/07	<0.050	<0.0250	<0.0250	<0.0500	<0.0250	<0.0250	<0.0250	0.723	<0.0250	<0.0250	0.536	<0.0250	--	0.133	<0.0250
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	0.0324	0.00308	0.022	2.28	0.0254	0.00386	1.58	0.0275	<0.000500	0.972	0.0851
	09/16/08	<0.0500	<0.0250	<0.0250	<0.0500	0.0645	<0.0250	<0.0250	2.70	<0.0250	<0.0250	0.714	<0.0250	<0.0250	0.462	0.047
	12/08/08	<0.0090	<0.0090	<0.0090	<0.0090	0.024	<0.0090	<0.0090	1.80	0.020	<0.0090	0.35	<0.0090	<0.0090	0.16	0.09
	03/24/09	<0.0070	<0.0070	<0.0070	<0.0070	0.036	<0.0070	0.0079	1.60	0.012	<0.0070	0.6	0.011	<0.0070	0.28	0.033
	09/15/09	<0.0050	<0.0050	<0.0050	<0.0050	0.015	<0.0050	<0.0050	1.5	0.013	<0.0050	0.55	<0.0050	<0.0050	0.18	0.0082
	09/15/09 DUP	<0.0050	<0.0050	<0.0050	<0.0050	0.015	<0.0050	<0.0050	1.4	0.013	<0.0050	0.54	<0.0050	<0.0050	0.17	0.0098
	12/14/09	<0.0025	<0.0025	<0.0025	<0.0025	0.0081	<0.0025	<0.0025	0.75	0.0053	<0.0025	0.18	<0.0025	<0.0025	0.074	0.019
	03/17/10	<0.0025	<0.0025	<0.0025	<0.0025	0.052	<0.0025	0.014	1.8	0.018	0.0029	0.81	0.016	<0.0025	0.49	0.041
	03/17/10 DUP	<0.0050	<0.0050	<0.0050	<0.0050	0.051	<0.0050	0.014	1.6	0.018	<0.0050	0.78	0.016	<0.0050	0.47	0.039
	06/14/10	<0.00090	<0.00090	<0.00090	<0.00090	0.0024	<0.00090	<0.00090	0.23	0.0023	<0.00090	0.3	0.0022	<0.00090	0.088	0.0015
	09/20/10	<0.007	<0.007	<0.007	<0.007	0.032	<0.007	0.0086	1.800	0.016	<0.007	0.530	0.0079	<0.007	0.230	0.031
	09/20/10 DUP	<0.006	<0.006	<0.006	<0.006	0.031	<0.006	0.0074	1.700	0.015	<0.006	0.510	0.0074	<0.006	0.220	0.029
	12/07/10	<0.002	<0.002	<0.002	<0.002	0.005	<0.002	<0.002	0.460	0.004	<0.002	0.330	0.0022	<0.002	0.095	0.003
	03/07/11	<0.0020	<0.0020	<0.0020	<0.0020	0.020	<0.0020	0.0047	1.3	0.010	<0.0020	0.330	0.0040	<0.0020	0.140	0.053
	03/07/11 DUP	<0.0040	<0.0040	<0.0040	<0.0040	0.019	<0.0040	0.0049	1.2	0.010	<0.0040	0.320	<0.0040	<0.0040	0.140	0.046
	06/06/11	<0.003	<0.003	<0.003	<0.003	0.0065	<0.003	0.0041	0.78	0.007	<0.003	0.37	0.0054	<0.003	0.15	0.0085
	09/13/11	<0.0050	<0.0050	<0.0050	<0.0050	0.045	<0.0050	0.013	1.8	0.019	<0.0050	0.56	0.015	<0.0050	0.38	0.029
09/13/11 DUP	<0.0070	<0.0070	<0.0070	<0.0070	0.04	<0.0070	0.012	1.7	0.016	<0.0070	0.57	0.012	<0.0070	0.33	0.023	
12/06/11	<0.0050	<0.0050	<0.0050	<0.0050	0.014	<0.0050	<0.0050	1	0.0093	<0.0050	0.14	<0.0050	<0.0050	0.064	0.044	

Please refer to notes at end of table.



Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS3-3(60) (continued)	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0405	<0.00050	<0.00050	0.0208	<0.00050	--	0.00792	<0.00050
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	0.0005	<0.00050	<0.00050	0.0339	<0.00050	<0.00050	0.0203	<0.00050	--	0.0127	<0.00050
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00058	<0.00050	<0.00050	0.0883	0.00053	<0.00050	0.0169	<0.00050	--	0.0119	0.0007
	11/11/03	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.298	<0.0020	<0.0020	0.0361	<0.0020	--	0.023	<0.0020
	01/27/04	<0.0020	<0.0010	<0.0010	<0.0020	0.0012	<0.0010	<0.0010	0.274	0.00124	<0.0010	0.0252	<0.0010	--	0.0234	0.00128
	05/03/04	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.274	<0.0020	<0.0020	0.0466	<0.0020	--	0.027	<0.0020
	11/15/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.043	<0.00050	<0.00050	0.0088	<0.00050	--	0.0034	<0.00050
	02/01/05	<0.0020	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	0.179	0.00172	<0.0010	0.0156	<0.0010	--	0.01	<0.0010
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0338	<0.00050	<0.00050	0.0057	<0.00050	--	0.00239	<0.00050
	08/18/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0479	<0.000500	<0.000500	0.00439 B	<0.000500	--	0.00196 B	0.00066 B
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.00839	<0.000500	<0.000500	0.00259	<0.000500	--	0.00083	<0.000500
	02/21/06	<0.00500	<0.00250	<0.00250	<0.00500	0.00265	<0.00250	<0.00250	0.558	<0.00250	<0.00250	0.025	<0.00250	--	0.0144	0.0216
	03/14/06	<0.00100	<0.00100	<0.00100	<0.00100	0.00292	<0.00100	0.00137	0.0971	<0.00100	<0.00100	0.0506	<0.00100	--	0.0392	<0.00100
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00797	<0.00100	<0.00100	0.00284	<0.00100	--	0.00104	<0.00100
	09/05/06	<0.00100	<0.00050	<0.00050	<0.00100	0.00275	<0.00050	0.00117	0.108	0.00078	<0.00050	0.0473	0.00093	--	0.0342	0.00065
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0198	<0.00050	<0.00050	0.0105	<0.00050	--	0.00557	<0.00050
	02/07/07	<0.00100	<0.00050	<0.00050	<0.00100	0.00108	<0.00050	<0.00050	0.0443	<0.00050	<0.00050	0.0215	<0.00050	--	0.0154	<0.00050
	05/22/07	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0325	<0.00100	<0.00100	0.0452	<0.00100	--	0.0182	<0.00100
	09/10/07	<0.00200	<0.00100	<0.00100	<0.00200	0.00298	<0.00100	<0.00100	0.148	<0.00100	<0.00100	0.0288	<0.00100	--	0.0316	0.00167
	12/12/07	<0.00200	<0.00100	<0.00100	<0.00200	<0.00100	<0.00100	<0.00100	0.0115	<0.00100	<0.00100	0.00422	<0.00100	--	0.0019	0.00118
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	0.00158	<0.000500	0.00068	0.0721	0.0006	<0.000500	0.0272	0.0005	<0.000500	0.0227	0.00233
	12/08/08	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.044	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0092	0.0013
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.042	<0.00050	<0.00050	0.021	<0.00050	<0.00050	0.014	0.00091
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.0085	<0.00050	<0.00050	0.0043	0.00084
	12/14/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.00085	<0.00050
	03/17/10	<0.00050	<0.00050	<0.00050	<0.00050	0.00069	<0.00050	<0.00050	0.025	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.01	0.00057
	06/14/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0048	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.0011	0.00069
	09/20/10	<0.0005	<0.0005	<0.0005	<0.0005	0.00081	<0.0005	<0.0005	0.028	<0.0005	<0.0005	0.018	<0.0005	<0.0005	0.011	0.00052
12/07/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.009	<0.0005	<0.0005	0.003	<0.0005	<0.0005	0.002	0.00094	
03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.017	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.0046	0.00067	
06/06/11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0039	<0.0005	<0.0005	0.002	<0.0005	<0.0005	0.00073	<0.0005	

Please refer to notes at end of table.





Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS3-2(101) (continued)	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0253	<0.000500	<0.000500	0.00493	<0.000500	--	0.00166	0.00066
	03/14/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0231	<0.00100	<0.00100	0.00291	<0.00100	--	0.00114	0.00106
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0159	<0.00100	<0.00100	0.00356	<0.00100	--	0.00188	0.00106
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0326	<0.00050	<0.00050	0.00284	<0.00050	--	0.00117	0.00285
	09/10/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0404	<0.00050	<0.00050	0.00632	<0.00050	--	0.0037	0.0132
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0181	<0.000500	<0.000500	0.0034	<0.000500	<0.000500	0.00147	0.00564
	09/16/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0204	<0.000500	<0.000500	0.00634	<0.000500	<0.000500	0.0035	0.00424
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.015	<0.00050	<0.00050	0.003	<0.00050	<0.00050	0.0015	0.0023
	06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.0024	<0.00050	<0.00050	0.0012	0.0022
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.014	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.0021	0.0032
	03/17/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.007	<0.00050	<0.00050	0.0031	<0.00050	<0.00050	0.0018	0.0012
	09/20/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0055	<0.0005	<0.0005	0.003	<0.0005	<0.0005	0.0014	0.0012
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.0037	<0.00050	<0.00050	0.0022	0.00086
	03/08/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.0059	<0.00050	<0.00050	0.0045	<0.00050
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	<0.00050	0.0027	<0.00050	<0.00050	0.0013	<0.00050
	03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0069	<0.00050	<0.00050	0.0056	<0.00050	<0.00050	0.0044	0.00059
	09/16/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0039	<0.00050	<0.00050	0.0036	<0.00050	<0.00050	0.0021	<0.00050
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0068	<0.00050	<0.00050	0.0091	<0.00050	<0.00050	0.0065	<0.00050
	9/23/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0037	<0.00050	<0.00050	0.0030	<0.00050	<0.00050	0.0015	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0051	<0.00050	<0.00050	0.0044	<0.00050	<0.00050	0.0028	<0.00050
9/22/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0053	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.0026	0.00120	
3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0073	<0.00050	<0.00050	0.0075	<0.00050	<0.00050	0.0061	<0.00050	
9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0065	<0.00050	<0.00050	0.0044	<0.00050	<0.00050	0.0030	<0.00050	
MGMS3-1(132)	08/30/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.00558	<0.0010	--	0.000746	<0.00050
	11/29/00	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00204	<0.00050	<0.00050	0.000754	<0.0010	--	<0.00050	<0.00050
	02/27/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00108	<0.00050	<0.00050	0.00262	<0.0010	--	0.000722	<0.00050
	05/31/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00667	<0.00050	<0.00050	0.00313	<0.0010	--	0.00144	<0.00050
	09/24/01	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.0061	<0.00050	--	0.0019	<0.00050
	12/18/01	<0.0010	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00411	<0.00050	<0.00050	0.00875	<0.0010	--	0.00224	<0.00050
	03/19/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.00488	<0.00050	<0.00050	0.00963	<0.00050	--	0.00302	<0.00050
	05/29/02	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0118	<0.00050	<0.00050	0.0146	<0.00050	--	0.00428	<0.00050
	01/23/03	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0168	<0.00050	<0.00050	0.0114	<0.00050	--	0.00604	<0.00050
	05/28/03	<0.0010	<0.00050	<0.00050	<0.0010	0.00059	<0.00050	<0.00050	0.0933	0.00076	<0.00050	0.0163	<0.00050	--	0.0101	0.00083
	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0724	<0.0010	<0.0010	0.0122	<0.0010	--	0.008	<0.0010

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MGMS3-1(132) (continued)	01/27/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0349	0.001	<0.00050	0.0127	<0.00050	--	0.00947	<0.00050
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0119	<0.0010	<0.0010	<0.0010	<0.0010	--	0.0142	<0.0010
	11/15/04	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.20	<0.0025	<0.0025	0.0062	<0.0025	--	0.0034	<0.0025
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	0.0426	0.00079	<0.00050	0.00442	<0.00050	--	0.00223	<0.00050
	11/16/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0199	<0.000500	<0.000500	0.00241	<0.000500	--	0.0008	<0.000500
	03/14/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0203	<0.00100	<0.00100	0.00213	<0.00100	--	<0.00100	<0.00100
	06/06/06	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.0186	<0.00100	<0.00100	0.00157	<0.00100	--	<0.00100	0.00136
	12/05/06	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0241	<0.00050	<0.00050	0.00305	<0.00050	--	0.00108	0.00468
	09/10/07	<0.00100	<0.00050	<0.00050	<0.00100	<0.00050	<0.00050	<0.00050	0.0365	<0.00050	<0.00050	0.00469	<0.00050	--	0.00317	0.0168
	03/04/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.0218	<0.000500	<0.000500	0.00337	<0.000500	<0.000500	0.00164	0.00683
	09/16/08	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	0.026	<0.000500	<0.000500	0.00486	<0.000500	<0.000500	0.00352	0.00496
	03/24/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0063	<0.00050	<0.00050	0.0018	<0.00050	<0.00050	0.00079	0.0024
	03/24/09 DUP	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0058	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.00078	0.0023
	06/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.012	<0.00050	<0.00050	0.0043	<0.00050	<0.00050	0.0019	0.0016
	09/15/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0077	<0.00050	<0.00050	0.0021	<0.00050	<0.00050	0.0012	0.002
	03/17/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0072	<0.00050	<0.00050	0.0026	<0.00050	<0.00050	0.0019	0.00092
	09/20/10	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0065	<0.0005	<0.0005	0.0029	<0.0005	<0.0005	0.0023	0.0013
	03/07/11	<0.00050	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	<0.00050	0.018	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.0038	0.0043
	09/13/11	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0056	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.0034	0.00055
	03/08/12	<0.00050	<0.00050	<0.00050	<0.00050	0.001	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.0070	<0.00050	<0.00050	0.0069	0.00
	09/12/12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.006	<0.00050	<0.00050	0.0049	<0.00050	<0.00050	0.004	<0.00050
	03/12/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0094	<0.00050	<0.00050	0.0081	<0.00050	<0.00050	0.0072	0.00098
	09/16/13	<0.00050	<0.00050	<0.00050	<0.00050	0.00058	<0.00050	<0.00050	0.0098	<0.00050	<0.00050	0.0079	<0.00050	<0.00050	0.0081	0.00084
	3/18/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00062	<0.00050	0.00051	0.011	<0.00050	<0.00050	0.013	<0.00050	<0.00050	0.011	0.00076
	9/23/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00054	<0.00050	<0.00050	0.0089	<0.00050	<0.00050	0.0090	<0.00050	<0.00050	0.0079	<0.00050
	3/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.0093	<0.00050	<0.00050	0.0063	<0.00050	<0.00050	0.0060	0.00056
	9/22/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.00074	<0.00050	<0.00050	0.0133	<0.00050	<0.00050	0.0081	<0.00050	<0.00050	0.0082	0.00120
3/9/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.001	<0.00050	0.00056	0.0144	<0.00050	<0.00050	0.0135	0.00056	<0.00050	0.0127	0.0008	
9/30/2016	<0.00050	<0.0020	<0.00050	<0.00050	<b>0.00084</b>	<0.00050	<b>0.00054</b>	<b>0.0129</b>	<0.00050	<0.00050	<b>0.0138</b>	<0.00050	<0.00050	<b>0.0119</b>	<0.00050	

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)															
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride	
CMT1-1	11/11/03	<0.0010	<0.0010	0.00287	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	
	01/26/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	
	08/19/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	
	11/17/04	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050	
	03/23/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	
	05/17/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	
	11/17/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	--	<0.000500	<0.000500	
	05/26/06	Well Abandoned															
CMT1-2	11/11/03	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	
	01/26/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00075	<0.00050	--	0.00103	<0.00050	
	05/03/04	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	
	08/19/04	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	
	11/17/04	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0007	<0.00050	--	0.00088	<0.00050	
	02/01/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00137	<0.00050	--	0.00099	<0.00050
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00077	<0.00050	--	0.00069	<0.00050	
	11/17/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	0.0006	<0.000500	--	<0.000500	<0.000500	
	05/26/06	Well Abandoned															
CMT1-3	11/11/03	<0.0020	<0.0020	0.00356	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	--	<0.0020	<0.0020	
	01/26/04	<0.0010	<0.00050	0.0011	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	
	05/03/04	<0.0010	<0.0010	0.00297	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	
	08/19/04	<0.0010	<0.00050	0.00216	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	
	11/17/04	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	<0.0250	--	<0.0250	<0.0250	
	05/16/05	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	
	11/17/05	<0.00100	<0.000500	<0.000500	<0.00100	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	--	<0.000500	<0.000500	
	05/26/06	Well Abandoned															

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
EX	03/23/09	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.05	<0.0050	<0.0050	1.4	0.043	<0.0050	0.42	<0.0050
	06/18/09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0042	<0.00050	<0.00050	0.024	0.0011	<0.00050	0.011	<0.00050
	09/18/09	<0.00050	<0.00050	<0.00050	<0.00050	0.0041	<0.00050	0.0033	0.12	0.00076	<0.00050	2.1	0.038	<0.00050	0.38	0.0011
	12/18/09	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0056	<0.0025	<0.0025	0.7	0.0037	<0.0025	0.056	<0.0025
	03/16/10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.02	<0.00050	<0.00050	0.15	0.0032	<0.00050	0.033	<0.00050
	06/17/10	<0.00050	<0.00050	<0.00050	<0.00050	0.00097	<0.00050	<0.00050	0.092	<0.00050	<0.00050	0.15	0.0023	<0.00050	0.039	0.0022
	09/23/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0015	<0.0005	0.0016	0.090	0.00053	<0.0005	2.4	0.0200	<0.0005	0.220	0.0018
	12/21/10	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	<0.0005	0.0006	0.030	<0.00050	<0.0005	0.9	0.0067	<0.0005	0.099	0.00071
	03/31/11	<0.004	<0.004	<0.004	<0.004	0.0082	<0.004	0.0081	0.240	<0.004	<0.004	6.8	0.1100	<0.004	0.910	0.0051
	06/07/11	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.140	<0.004	<0.004	1.4	0.0150	<0.004	0.170	<0.004
	09/19/11	<0.0050	<0.0050	<0.0050	<0.0050	0.0079	<0.0050	0.011	0.29	<0.0050	<0.0050	4.1	0.073	<0.0050	0.46	0.014
	12/07/11	<0.0050	<0.0050	<0.0050	<0.0050	0.016	<0.0050	0.019	12	0.0093	<0.0050	<0.050	0.017	<0.0050	<0.050	0.14
	03/09/12	<0.0040	<0.0040	<0.0040	<0.0040	0.005	<0.0040	<0.0040	1.40	0.0086	<0.0040	0.0330	<0.0040	<0.0040	0.0100	0.29
	06/22/12	<0.0005	0.0055	<0.0005	<0.0005	0.003	<0.0005	0.0007	0.17	0.0013	<0.0005	0.0030	0.0006	<0.0005	0.0011	0.12
	09/14/12	<0.0015	0.0027	<0.0015	<0.0015	0.0015	<0.0015	<0.0015	0.32	<0.0015	<0.0015	0.003	<0.0015	<0.0015	<0.0015	0.042
	12/14/12	<0.00050	0.0014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.026	<0.00050	<0.00050	0.00087	<0.00050	<0.00050	<0.00050	0.012
	03/15/13	<0.00050	0.0028	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0095	<0.00050	<0.00050	0.0012	<0.00050	<0.00050	<0.00050	0.0044
	06/14/13	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0016	<0.00050	<0.00050	0.00079	<0.00050	<0.00050	<0.00050	<0.00050
	09/20/13	<0.00050	0.0019	<0.00050	<0.00050	0.0019	<0.00050	0.00054	0.071	0.00068	<0.00050	0.0041	<0.00050	<0.00050	0.0026	0.03
	12/16/13	<0.00050	0.0014	<0.00050	<0.00050	0.0038	<0.00050	<0.00050	0.034	<0.00050	<0.00050	0.002	<0.00050	<0.00050	0.0014	0.028
	3/24/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00080	<0.00050	<0.00050	0.030	<0.00050	<0.00050	0.020	<0.00050	<0.00050	0.0075	0.011
	6/23/2014	<0.00050	<0.00050	<0.00050	<0.00050	0.00290	<0.00050	0.0011	0.160	0.00097	<0.00050	0.029	<0.00050	<0.00050	0.0150	0.038
	9/30/2014	Insufficient water for sampling .														
	12/15/2014	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.010	<0.00050	<0.00050	0.022	<0.00050	<0.00050	0.0027	<0.00050
	3/19/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0035	<0.00050	0.0021	0.69	0.0019	<0.00050	0.17	0.0025	<0.00050	0.056	0.0028
	6/18/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0026	<0.00050	0.0026	0.42	0.0016	<0.00050	0.19	0.00088	<0.00050	0.042	0.0032
	9/22/2015	<0.00050	<0.00050	<0.00050	<0.00050	0.0029	<0.00050	0.0037	0.54	0.0026	<0.00050	0.30	0.00065	<0.00050	0.062	0.0244
	12/8/2015	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.43	<0.00050	<0.00050	0.09	<0.00050	<0.00050	0.021	0.0021
	3/8/2016	<0.0012	<0.0050	<0.0012	<0.0012	0.004	<0.0012	0.0029	1.16	0.0036	<0.0012	0.274	0.005	<0.0012	0.0711	0.0133
	6/17/2016	<0.0050	<0.02	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	1.04	<0.0050	<0.0050	0.592	<0.0050	<0.0050	0.0908	<0.0050
	9/28/2016	<0.0017	<0.0067	<0.0017	<0.0017	0.0046	<0.0017	0.0035	2.23	0.0038	<0.0017	0.039	0.0025	<0.0017	0.5490	0.1280
	12/12/2016	<0.00050	0.004	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.01	<0.00050	<0.00050	0.004	<0.00050	<0.00050	0.0010	0.0519

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MP-1	03/23/09	<0.0040	<0.0040	<0.0040	<0.0040	0.006	<0.0040	<0.0040	0.089	<0.0040	<0.0040	1.2	0.01	<0.0040	0.18	<0.0040
	06/18/09	<0.0040	<0.0040	<0.0040	<0.0040	0.0043	<0.0040	<0.0040	0.043	<0.0040	<0.0040	1.5	0.012	<0.0040	0.18	<0.0040
	09/18/09	<0.0040	<0.0040	<0.0040	<0.0040	0.014	<0.0040	<0.0040	0.24	0.0089	<0.0040	1.1	0.0082	<0.0040	0.31	0.0073
	12/18/09	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.058	<0.0040	<0.0040	1	0.0071	<0.0040	0.18	<0.0040
	03/16/10	<0.0030	<0.0030	<0.0030	<0.0030	0.022	<0.0030	0.0047	0.41	0.013	<0.0030	1.5	0.0086	<0.0030	0.4	0.01
	06/17/10	<0.0030	<0.0030	<0.0030	<0.0030	0.0032	<0.0030	<0.0030	0.12	<0.0030	<0.0030	0.8	0.0054	<0.0030	0.14	<0.0030
	09/23/10	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.041	<0.003	<0.003	0.730	0.004	<0.003	0.12	<0.003
	12/10/10	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.027	<0.003	<0.003	1.0	0.005	<0.003	0.15	<0.003
	03/14/11	<0.0030	<0.0030	<0.0030	<0.0030	0.0071	<0.0030	<0.0030	0.150	<0.0030	<0.0030	1.2	0.0064	<0.0030	0.180	0.0059
	06/07/11	<0.0025	<0.0025	<0.0025	<0.0025	0.0049	<0.0025	<0.0025	0.075	<0.0025	<0.0025	0.64	0.0033	<0.0025	0.13	<0.0025
	09/19/11	<0.0015	<0.0015	<0.0015	<0.0015	0.0024	<0.0015	<0.0015	0.041	<0.0015	<0.0015	0.3	0.0019	<0.0015	0.072	0.0016
	12/07/11	<0.0025	<0.0025	<0.0025	<0.0025	0.0026	<0.0025	<0.0025	0.049	0.0031	<0.0025	0.64	0.0031	<0.0025	0.12	<0.0025
	03/09/12	<0.0015	<0.0015	<0.0015	<0.0015	0.009	<0.0015	0.0028	0.44	0.0063	<0.0015	0.4900	0.0035	<0.0015	0.1400	0.02
	06/22/12	<0.0025	<0.0025	<0.0025	<0.0025	0.006	<0.0025	0.0028	0.53	0.0029	<0.0025	0.6900	0.0120	<0.0025	0.1200	0.05
	09/14/12	<0.0015	<0.0015	<0.0015	<0.0015	0.004	<0.0015	<0.0015	0.17	0.0022	<0.0015	0.34	0.002	<0.0015	0.083	0.0045
	12/14/12	<0.00090	<0.00090	<0.00090	<0.00090	0.0020	<0.00090	<0.00090	0.17	0.0017	<0.00090	0.23	0.0010	<0.00090	0.048	0.0018
	03/15/13	<0.00090	<0.00090	<0.00090	<0.00090	0.0051	<0.00090	0.00094	0.14	0.0025	<0.00090	0.23	0.0010	<0.00090	0.069	0.0018
	06/14/13	<0.00090	<0.00090	<0.00090	<0.00090	0.0045	<0.00090	0.0014	0.19	0.0016	<0.00090	0.33	0.0014	<0.00090	0.070	0.0018
	09/20/13	<0.00090	<0.00090	<0.00090	<0.00090	0.0029	<0.00090	<0.00090	0.077	0.0015	<0.00090	0.26	0.00095	<0.00090	0.066	<0.00090
	12/16/13	<0.00090	<0.00090	<0.00090	<0.00090	0.0017	<0.00090	0.0011	0.067	0.00092	<0.00090	0.29	0.0012	<0.00090	0.070	<0.00090
	3/24/2014	<0.0015	<0.0015	<0.0015	<0.0015	0.0022	<0.0015	<0.0015	0.24	<0.0015	<0.0015	0.36	0.0018	<0.0015	0.054	<0.0015
	6/23/2014	<0.0015	<0.0015	<0.0015	<0.0015	0.0049	<0.0015	0.0023	0.29	0.0017	<0.0015	1.2	0.0095	<0.0015	0.130	0.0050
	9/30/2014	<0.0020	<0.0020	<0.0020	<0.0020	0.0028	<0.0020	<0.0020	0.11	<0.0020	<0.0020	0.36	<0.0020	<0.0020	0.063	0.016
	12/15/2014	<0.0015	<0.0015	<0.0015	<0.0015	0.0017	<0.0015	<0.0015	0.058	<0.0015	<0.0015	0.32	<0.0015	<0.0015	0.059	<0.0015

Please refer to notes at end of table.

Appendix B  
Historical Groundwater Analytical Results  
NuStar Vancouver Facility  
Vancouver, Washington

Well Number	Sample Date	Concentrations in mg/L (ppm)														
		Bromo- form	Chloro- ethane	Chloro- form	Dibromo- chloro- methane	1,1- Dichloro- ethane	1,2- Dichloro- ethane	1,1- Dichloro- ethene	cis-1,2- Dichloro- ethene	trans-1,2- Dichloro- ethene	1,2- Dichloro- propane	Tetra- chloro- ethene	1,1,1- Trichloro- ethane	1,1,2- Trichloro- ethane	Trichloro- ethene	Vinyl Chloride
MP-1 (continued)	3/20/2015	<0.0010	<0.0010	<0.0010	<0.0010	0.0036	<0.0010	0.0015	0.19	0.0015	<0.0010	0.57	0.0010	<0.0010	0.096	0.025
	6/18/2015	<0.00084	<0.00084	<0.00084	<0.00084	0.0029	<0.00084	0.0015	0.091	0.00087	<0.00084	0.38	<0.00084	<0.00084	0.081	<0.00084
	9/22/2015	<0.0012	<0.0012	<0.0012	<0.0012	0.0018	<0.0012	0.0014	0.038	<0.0012	<0.0012	0.34	<0.0012	<0.0012	0.068	<0.0012
	12/8/2015	<0.0012	<0.0012	<0.0012	<0.0012	0.0018	<0.0012	0.0015	0.0509	<0.0012	<0.0012	0.308	<0.0012	<0.0012	0.0626	<0.0012
	3/8/2016	<0.00084	<0.0033	<0.00084	<0.00084	0.0075	<0.00084	0.0021	0.148	0.0012	<0.00084	0.433	<0.00084	<0.00084	0.100	<0.00084
	6/17/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.005	<0.00050	0.0015	0.125	0.00097	<0.00050	0.206	<0.00050	<0.00050	0.0673	<0.00050
	9/28/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.001	<0.00050	0.0031	0.041	<0.00050	<0.00050	0.099	<0.00050	<0.00050	0.0355	0.0033
	12/13/2016	<0.00050	<0.0020	<0.00050	<0.00050	0.001	<0.00050	0.0009	0.209	0.00055	<0.00050	0.003	<0.00050	<0.00050	0.0010	0.0043

Notes:

- HVOCs = Halogenated volatile organic compounds analysis by U.S. Environmental Protection Agency (EPA) Method 8260B; results reported in micrograms per liter (µg/L).
- TPH = Total petroleum hydrocarbons in the diesel and heavy oil range analysis by Washington Department of Ecology (WDOE) Method TPH-418.1 Results reported in milligrams per liter (mg/L).
- = Not sampled or not analyzed.
- < = Not detected at or above the specified laboratory method reporting limit (MRL).
- B = Estimated concentration based on data quality review - similar detection in associated equipment blank (less than 5x difference).
- J = Estimated concentration based on data quality review - similar detection in field blank (less than 5x difference).
- n-Propylbenzene, 1,1,1,2-Tetrachloro-ethane, and 1,1,2-Trichloroethane were detected during the first semi-annual 2008 monitoring event. Refer to Table 3 of the *First Semi-Annual 2008 Groundwater Monitoring Report* for detection concentrations.
- ND = Not detected and no reporting limit specified.
- B = Chloroform was detected in one or more field blank during the March 2009 and September 2009 sampling events. Chloroform was flagged with a "B" in samples where the concentration was five times or less than the maximum detection in the field blank.
- E = Chloroform was detected in the equipment blank during the March 2009 and September 2009 sampling events. Chloroform was flagged with an "E" in samples where the concentration was five times or less than the maximum detection in the equipment blank.

***Appendix C***

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**Laboratory Analytical Reports and Data Quality Review  
(on CD-ROM)**

## ***Appendix C – Laboratory Analytical Reports and Data Quality Review***

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This appendix documents the results of a quality assurance/quality control (QA/QC) review of the analytical data for groundwater samples collected during the September and December 2016 groundwater sampling events and air samples collected during the July, August, September, October, November, and December 2016 soil vapor extraction (SVE) effluent sampling events for the NuStar Terminals Services, Inc. (NuStar) Vancouver Facility (Facility) in Vancouver, Washington. TestAmerica Laboratories in Los Angeles, California and Pace Analytical (Pace) in Davis, California performed the analyses. A copy of each analytical laboratory report is included in this appendix.

The QA review included examination and validation of the laboratory summary report, including:

- Analytical methods;
- Detection limits;
- Sample holding times;
- Custody records;
- Surrogates, spikes, and blanks; and
- Duplicates.

The QA review did not include a review of raw data.

### **Analytical Methods**

Chemical analyses on collected water samples consisted of volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260B. Select groundwater samples were also analyzed for TOC by EPA Method 5310D and ethene by EPA Method RSK-175M. SVE effluent vapor samples were analyzed for VOCs using EPA Method TO15.

### **Quality Assurance Objectives and Review**

The general QA objectives for this project were to develop and implement procedures for obtaining, evaluating, and confirming the usability of data of a specified quality for monitoring groundwater quality trends and SVE monitoring data at the Facility. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility, samples collected must be representative of actual field conditions, and samples must be collected and analyzed using unbroken chain-of-custody procedures.



## **Appendix C – Laboratory Analytical Reports and Data Quality Review**

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Reporting limits and analytical results were compared to action levels for each parameter in the media of concern. Precision, accuracy, representativeness, completeness, and comparability parameters used to indicate data quality are defined below.

**Reporting Limits.** Detection limits are set by the laboratory and are based on instrumentation abilities, sample matrix, and suggested detection limits by the EPA or the Washington State Department of Ecology (Ecology). In some cases, the detection limits may be raised due to high concentrations of analytes in the samples or matrix interferences. Detection limits were generally consistent with industry standards and below promulgated regulatory standards when possible (if not raised, as previously discussed). Reporting limits were reviewed and are generally acceptable for this project. Reporting limits for individual samples are varied based on the magnitude of the chemical impact. It is not expected that any of the raised detection limits compromise the usability of the data.

**Holding Times.** Samples were analyzed within the holding times specified for the VOC analyses. The hold time for the RSK 175 analysis associated with the following samples collected during the December 2016 event (MW-19 and MW-24i) was outside of acceptable limits (of 14 days) by one day. There is the potential that these results could be biased low.

**Method Blanks.** A method, or laboratory, blank is a sample prepared in the laboratory along with the actual samples and analyzed for the same parameters at the same time. It is used to assess if detected contaminants may have been the result of contamination of the samples in the laboratory. No analytes were detected in the laboratory method blanks for the groundwater or air analyses.

**Laboratory Control Samples and Laboratory Control Sample Duplicate.** Laboratory Control Samples (LCS) were also analyzed by the laboratories to assess the accuracy of the analytical equipment. LCS are prepared from an analyte-free matrix that is then spiked with known levels of the constituents of interest (COI; i.e., a standard). The concentrations are measured and the results compared to the known spiked levels. This comparison is expressed as percent recovery. The LCS percent recovery was within control limits for the water samples. The LCS recovery associated with the air samples collected during the December 2016 SVE monitoring event was outside control limits for carbon tetrachloride. This analyte was biased high in the LCS but because the analyte was not detected in the associated project samples, no data were flagged.

In addition, a second laboratory control sample (the Laboratory Control Sample Duplicate [LCSD]) is prepared as above and analyzed. This is compared to the initial laboratory control sample to assess the precision of the analytical method (RPD). The RPD between the LCS and one of the LCSD samples associated with the September 2016 sample batch, was above the acceptable limit. A second LCSD was analyzed and was well within control limits; therefore, no data were flagged.

## **Appendix C – Laboratory Analytical Reports and Data Quality Review**

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**Matrix Spike Analyses.** Matrix Spike (MS) analyses are performed on samples submitted to the laboratory that are of the same matrix as the actual sample. The MS is spiked with known levels of the COI. These analyses are used to assess the potential for matrix interference with recovery or detection of the COI and the accuracy of the determination. The spiked sample results are compared to the expected result (i.e., sample concentration plus spike amount) and reported as percent recovery.

Several MS and MS duplicates (MSD) were analyzed during the batch analyses for both groundwater monitoring events. During the December 2016 monitoring event, recoveries for some Matrix Spike/ Matrix Spike Duplicate analytes were above control limits. This may indicate a bias for the samples that were spiked. Since the LCS recoveries were within control limits, no data were considered acceptable and no data were flagged.

The MS/MSD RPD's were within control limits.

No MS or MSD samples were analyzed as part of the air sample QC batch.

**Surrogate Recovery.** Surrogates are organic compounds that are similar in chemical composition to the COI and spiked into environmental and batch quality control samples prior to sample preparation and analysis. Surrogate recoveries for environmental samples are used to evaluate matrix interference on a sample-specific basis. Surrogate recoveries were within acceptable control limits.

**Field Duplicate.** A field duplicate is a second field sample collected from a selected monitoring well. Field duplicate samples serve as a check on laboratory quality as well as potential variability of the sample matrix. The field duplicate is analyzed and compared with the second sample to assess the precision of the analytical method. This comparison can be expressed by the RPD between the original and duplicate samples. With the exception of cis-DCE in MW-12 during the September and December 2016 monitoring events and PCE, TCE, and 1,1-dichloroethane in MW-12 during the September 2016 monitoring event, the analytes were below the RPD limit of +/-30 percent. The samples with analytes outside of the acceptable range are flagged with a D qualifier on the associated data tables. Field duplicates were not collected for air samples.

**Field Blank.** A field blank is a sample of analyte-free water poured into a clean sample container in the field, preserved, and shipped to the laboratory with field samples. Field blanks assess the potential for contamination from field conditions during sampling. No analytes were identified in the field blanks collected during the third and fourth quarter 2016 monitoring events.

## ***Appendix C – Laboratory Analytical Reports and Data Quality Review***

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**Equipment Blank.** An equipment blank is a sample of analyte-free water poured over or through decontaminated field sampling equipment during a sampling event. Equipment blanks assess the potential for contamination from the total sampling, sample preparation, and measurement process when decontaminated sampling equipment is used to collect samples. No analytes were identified in the equipment blanks collected during the third and fourth quarter 2016 monitoring events.

**Trip Blank.** A trip blank is a clean sample of a matrix that is taken from the laboratory to the sampling site and transported back to the laboratory without having been exposed to sampling procedures. Trip blanks assess contamination introduced during shipping and field-handling activities. No analytes were identified in the trip blanks collected during the third and fourth quarter 2016 monitoring events.

**Conclusion.** In conclusion, the overall QA objectives have been met, and the data are of adequate quality for use in this project.

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-20575-1  
Client Project/Site: NuStar Vapor Testing

For:  
Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
8/9/2016 3:51:32 PM

Sarah Murphy, Project Manager I  
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### LINKS

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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

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**Job ID: 320-20575-1**

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**Laboratory: TestAmerica Sacramento**

## Narrative

### Receipt

The samples were received on 7/27/2016 9:55 AM; the samples arrived in good condition.

### Air - GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Detection Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Client Sample ID: SVE-SOUTH-PRECARBON 72616

## Lab Sample ID: 320-20575-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	86		32		ppb v/v	80.8		TO-15	Total/NA
Tetrachloroethene	2600		32		ppb v/v	80.8		TO-15	Total/NA
Trichloroethene	180		32		ppb v/v	80.8		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	340		130		ug/m3 Air	80.8		TO-15	Total/NA
Tetrachloroethene	18000		220		ug/m3 Air	80.8		TO-15	Total/NA
Trichloroethene	970		170		ug/m3 Air	80.8		TO-15	Total/NA

## Client Sample ID: SVE-SOUTH-POST CARBON 72616

## Lab Sample ID: 320-20575-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	190		26		ppb v/v	64.1		TO-15	Total/NA
Tetrachloroethene	2200		26		ppb v/v	64.1		TO-15	Total/NA
1,1,1-Trichloroethane	40		19		ppb v/v	64.1		TO-15	Total/NA
Trichloroethene	250		26		ppb v/v	64.1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	760		100		ug/m3 Air	64.1		TO-15	Total/NA
Tetrachloroethene	15000		170		ug/m3 Air	64.1		TO-15	Total/NA
1,1,1-Trichloroethane	220		100		ug/m3 Air	64.1		TO-15	Total/NA
Trichloroethene	1400		140		ug/m3 Air	64.1		TO-15	Total/NA

## Client Sample ID: SVE-NORTH-EFFLUENT 72616

## Lab Sample ID: 320-20575-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	12		0.40		ppb v/v	1		TO-15	Total/NA
Toluene	0.53		0.40		ppb v/v	1		TO-15	Total/NA
Trichloroethene	1.1		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	84		2.7		ug/m3 Air	1		TO-15	Total/NA
Toluene	2.0		1.5		ug/m3 Air	1		TO-15	Total/NA
Trichloroethene	5.6		2.1		ug/m3 Air	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento



# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

**Client Sample ID: SVE-SOUTH-PRECARBON 72616**

**Lab Sample ID: 320-20575-1**

**Date Collected: 07/26/16 10:26**

**Matrix: Air**

**Date Received: 07/27/16 09:55**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		400		ppb v/v			08/04/16 19:40	80.8
Benzene	ND		32		ppb v/v			08/04/16 19:40	80.8
Benzyl chloride	ND		65		ppb v/v			08/04/16 19:40	80.8
Bromodichloromethane	ND		24		ppb v/v			08/04/16 19:40	80.8
Bromoform	ND		32		ppb v/v			08/04/16 19:40	80.8
Bromomethane	ND		65		ppb v/v			08/04/16 19:40	80.8
2-Butanone (MEK)	ND		65		ppb v/v			08/04/16 19:40	80.8
Carbon disulfide	ND		65		ppb v/v			08/04/16 19:40	80.8
Carbon tetrachloride	ND		65		ppb v/v			08/04/16 19:40	80.8
Chlorobenzene	ND		24		ppb v/v			08/04/16 19:40	80.8
Dibromochloromethane	ND		32		ppb v/v			08/04/16 19:40	80.8
Chloroethane	ND		65		ppb v/v			08/04/16 19:40	80.8
Chloroform	ND		24		ppb v/v			08/04/16 19:40	80.8
Chloromethane	ND		65		ppb v/v			08/04/16 19:40	80.8
1,2-Dibromoethane (EDB)	ND		65		ppb v/v			08/04/16 19:40	80.8
1,2-Dichlorobenzene	ND		32		ppb v/v			08/04/16 19:40	80.8
1,3-Dichlorobenzene	ND		32		ppb v/v			08/04/16 19:40	80.8
1,4-Dichlorobenzene	ND		32		ppb v/v			08/04/16 19:40	80.8
Dichlorodifluoromethane	ND		32		ppb v/v			08/04/16 19:40	80.8
1,1-Dichloroethane	ND		24		ppb v/v			08/04/16 19:40	80.8
1,2-Dichloroethane	ND		65		ppb v/v			08/04/16 19:40	80.8
1,1-Dichloroethene	ND		65		ppb v/v			08/04/16 19:40	80.8
<b>cis-1,2-Dichloroethene</b>	<b>86</b>		32		ppb v/v			08/04/16 19:40	80.8
trans-1,2-Dichloroethene	ND		32		ppb v/v			08/04/16 19:40	80.8
1,2-Dichloropropane	ND		32		ppb v/v			08/04/16 19:40	80.8
cis-1,3-Dichloropropene	ND		32		ppb v/v			08/04/16 19:40	80.8
trans-1,3-Dichloropropene	ND		32		ppb v/v			08/04/16 19:40	80.8
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		32		ppb v/v			08/04/16 19:40	80.8
Ethylbenzene	ND		32		ppb v/v			08/04/16 19:40	80.8
4-Ethyltoluene	ND		32		ppb v/v			08/04/16 19:40	80.8
Hexachlorobutadiene	ND		160		ppb v/v			08/04/16 19:40	80.8
2-Hexanone	ND		32		ppb v/v			08/04/16 19:40	80.8
Methylene Chloride	ND		32		ppb v/v			08/04/16 19:40	80.8
4-Methyl-2-pentanone (MIBK)	ND		32		ppb v/v			08/04/16 19:40	80.8
Styrene	ND		32		ppb v/v			08/04/16 19:40	80.8
1,1,2,2-Tetrachloroethane	ND		32		ppb v/v			08/04/16 19:40	80.8
<b>Tetrachloroethene</b>	<b>2600</b>		32		ppb v/v			08/04/16 19:40	80.8
Toluene	ND		32		ppb v/v			08/04/16 19:40	80.8
1,2,4-Trichlorobenzene	ND		160		ppb v/v			08/04/16 19:40	80.8
1,1,1-Trichloroethane	ND		24		ppb v/v			08/04/16 19:40	80.8
1,1,2-Trichloroethane	ND		32		ppb v/v			08/04/16 19:40	80.8
<b>Trichloroethene</b>	<b>180</b>		32		ppb v/v			08/04/16 19:40	80.8
Trichlorofluoromethane	ND		32		ppb v/v			08/04/16 19:40	80.8
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		32		ppb v/v			08/04/16 19:40	80.8
1,2,4-Trimethylbenzene	ND		65		ppb v/v			08/04/16 19:40	80.8
1,3,5-Trimethylbenzene	ND		32		ppb v/v			08/04/16 19:40	80.8
Vinyl acetate	ND		65		ppb v/v			08/04/16 19:40	80.8
Vinyl chloride	ND		32		ppb v/v			08/04/16 19:40	80.8

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

**Client Sample ID: SVE-SOUTH-PRECARBON 72616**

**Lab Sample ID: 320-20575-1**

Date Collected: 07/26/16 10:26

Matrix: Air

Date Received: 07/27/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		65		ppb v/v			08/04/16 19:40	80.8
o-Xylene	ND		32		ppb v/v			08/04/16 19:40	80.8
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		960		ug/m3 Air			08/04/16 19:40	80.8
Benzene	ND		100		ug/m3 Air			08/04/16 19:40	80.8
Benzyl chloride	ND		330		ug/m3 Air			08/04/16 19:40	80.8
Bromodichloromethane	ND		160		ug/m3 Air			08/04/16 19:40	80.8
Bromoform	ND		330		ug/m3 Air			08/04/16 19:40	80.8
Bromomethane	ND		250		ug/m3 Air			08/04/16 19:40	80.8
2-Butanone (MEK)	ND		190		ug/m3 Air			08/04/16 19:40	80.8
Carbon disulfide	ND		200		ug/m3 Air			08/04/16 19:40	80.8
Carbon tetrachloride	ND		410		ug/m3 Air			08/04/16 19:40	80.8
Chlorobenzene	ND		110		ug/m3 Air			08/04/16 19:40	80.8
Dibromochloromethane	ND		280		ug/m3 Air			08/04/16 19:40	80.8
Chloroethane	ND		170		ug/m3 Air			08/04/16 19:40	80.8
Chloroform	ND		120		ug/m3 Air			08/04/16 19:40	80.8
Chloromethane	ND		130		ug/m3 Air			08/04/16 19:40	80.8
1,2-Dibromoethane (EDB)	ND		500		ug/m3 Air			08/04/16 19:40	80.8
1,2-Dichlorobenzene	ND		190		ug/m3 Air			08/04/16 19:40	80.8
1,3-Dichlorobenzene	ND		190		ug/m3 Air			08/04/16 19:40	80.8
1,4-Dichlorobenzene	ND		190		ug/m3 Air			08/04/16 19:40	80.8
Dichlorodifluoromethane	ND		160		ug/m3 Air			08/04/16 19:40	80.8
1,1-Dichloroethane	ND		98		ug/m3 Air			08/04/16 19:40	80.8
1,2-Dichloroethane	ND		260		ug/m3 Air			08/04/16 19:40	80.8
1,1-Dichloroethene	ND		260		ug/m3 Air			08/04/16 19:40	80.8
<b>cis-1,2-Dichloroethene</b>	<b>340</b>		130		ug/m3 Air			08/04/16 19:40	80.8
trans-1,2-Dichloroethene	ND		130		ug/m3 Air			08/04/16 19:40	80.8
1,2-Dichloropropane	ND		150		ug/m3 Air			08/04/16 19:40	80.8
cis-1,3-Dichloropropene	ND		150		ug/m3 Air			08/04/16 19:40	80.8
trans-1,3-Dichloropropene	ND		150		ug/m3 Air			08/04/16 19:40	80.8
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		230		ug/m3 Air			08/04/16 19:40	80.8
Ethylbenzene	ND		140		ug/m3 Air			08/04/16 19:40	80.8
4-Ethyltoluene	ND		160		ug/m3 Air			08/04/16 19:40	80.8
Hexachlorobutadiene	ND		1700		ug/m3 Air			08/04/16 19:40	80.8
2-Hexanone	ND		130		ug/m3 Air			08/04/16 19:40	80.8
Methylene Chloride	ND		110		ug/m3 Air			08/04/16 19:40	80.8
4-Methyl-2-pentanone (MIBK)	ND		130		ug/m3 Air			08/04/16 19:40	80.8
Styrene	ND		140		ug/m3 Air			08/04/16 19:40	80.8
1,1,2,2-Tetrachloroethane	ND		220		ug/m3 Air			08/04/16 19:40	80.8
<b>Tetrachloroethene</b>	<b>18000</b>		220		ug/m3 Air			08/04/16 19:40	80.8
Toluene	ND		120		ug/m3 Air			08/04/16 19:40	80.8
1,2,4-Trichlorobenzene	ND		1200		ug/m3 Air			08/04/16 19:40	80.8
1,1,1-Trichloroethane	ND		130		ug/m3 Air			08/04/16 19:40	80.8
1,1,2-Trichloroethane	ND		180		ug/m3 Air			08/04/16 19:40	80.8
<b>Trichloroethene</b>	<b>970</b>		170		ug/m3 Air			08/04/16 19:40	80.8
Trichlorofluoromethane	ND		180		ug/m3 Air			08/04/16 19:40	80.8
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		250		ug/m3 Air			08/04/16 19:40	80.8
1,2,4-Trimethylbenzene	ND		320		ug/m3 Air			08/04/16 19:40	80.8

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

**Client Sample ID: SVE-SOUTH-PRECARBON 72616**

**Lab Sample ID: 320-20575-1**

Date Collected: 07/26/16 10:26

Matrix: Air

Date Received: 07/27/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trimethylbenzene	ND		160		ug/m3 Air			08/04/16 19:40	80.8
Vinyl acetate	ND		230		ug/m3 Air			08/04/16 19:40	80.8
Vinyl chloride	ND		83		ug/m3 Air			08/04/16 19:40	80.8
m,p-Xylene	ND		280		ug/m3 Air			08/04/16 19:40	80.8
o-Xylene	ND		140		ug/m3 Air			08/04/16 19:40	80.8

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		70 - 130		08/04/16 19:40	80.8
1,2-Dichloroethane-d4 (Surr)	104		70 - 130		08/04/16 19:40	80.8
Toluene-d8 (Surr)	100		70 - 130		08/04/16 19:40	80.8

**Client Sample ID: SVE-SOUTH-POST CARBON 72616**

**Lab Sample ID: 320-20575-2**

Date Collected: 07/26/16 10:31

Matrix: Air

Date Received: 07/27/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		320		ppb v/v			08/04/16 20:32	64.1
Benzene	ND		26		ppb v/v			08/04/16 20:32	64.1
Benzyl chloride	ND		51		ppb v/v			08/04/16 20:32	64.1
Bromodichloromethane	ND		19		ppb v/v			08/04/16 20:32	64.1
Bromoform	ND		26		ppb v/v			08/04/16 20:32	64.1
Bromomethane	ND		51		ppb v/v			08/04/16 20:32	64.1
2-Butanone (MEK)	ND		51		ppb v/v			08/04/16 20:32	64.1
Carbon disulfide	ND		51		ppb v/v			08/04/16 20:32	64.1
Carbon tetrachloride	ND		51		ppb v/v			08/04/16 20:32	64.1
Chlorobenzene	ND		19		ppb v/v			08/04/16 20:32	64.1
Dibromochloromethane	ND		26		ppb v/v			08/04/16 20:32	64.1
Chloroethane	ND		51		ppb v/v			08/04/16 20:32	64.1
Chloroform	ND		19		ppb v/v			08/04/16 20:32	64.1
Chloromethane	ND		51		ppb v/v			08/04/16 20:32	64.1
1,2-Dibromoethane (EDB)	ND		51		ppb v/v			08/04/16 20:32	64.1
1,2-Dichlorobenzene	ND		26		ppb v/v			08/04/16 20:32	64.1
1,3-Dichlorobenzene	ND		26		ppb v/v			08/04/16 20:32	64.1
1,4-Dichlorobenzene	ND		26		ppb v/v			08/04/16 20:32	64.1
Dichlorodifluoromethane	ND		26		ppb v/v			08/04/16 20:32	64.1
1,1-Dichloroethane	ND		19		ppb v/v			08/04/16 20:32	64.1
1,2-Dichloroethane	ND		51		ppb v/v			08/04/16 20:32	64.1
1,1-Dichloroethene	ND		51		ppb v/v			08/04/16 20:32	64.1
<b>cis-1,2-Dichloroethene</b>	<b>190</b>		26		ppb v/v			08/04/16 20:32	64.1
trans-1,2-Dichloroethene	ND		26		ppb v/v			08/04/16 20:32	64.1
1,2-Dichloropropane	ND		26		ppb v/v			08/04/16 20:32	64.1
cis-1,3-Dichloropropene	ND		26		ppb v/v			08/04/16 20:32	64.1
trans-1,3-Dichloropropene	ND		26		ppb v/v			08/04/16 20:32	64.1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		26		ppb v/v			08/04/16 20:32	64.1
Ethylbenzene	ND		26		ppb v/v			08/04/16 20:32	64.1
4-Ethyltoluene	ND		26		ppb v/v			08/04/16 20:32	64.1
Hexachlorobutadiene	ND		130		ppb v/v			08/04/16 20:32	64.1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

**Client Sample ID: SVE-SOUTH-POST CARBON 72616**

**Lab Sample ID: 320-20575-2**

Date Collected: 07/26/16 10:31

Matrix: Air

Date Received: 07/27/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Hexanone	ND		26		ppb v/v			08/04/16 20:32	64.1
Methylene Chloride	ND		26		ppb v/v			08/04/16 20:32	64.1
4-Methyl-2-pentanone (MIBK)	ND		26		ppb v/v			08/04/16 20:32	64.1
Styrene	ND		26		ppb v/v			08/04/16 20:32	64.1
1,1,2,2-Tetrachloroethane	ND		26		ppb v/v			08/04/16 20:32	64.1
<b>Tetrachloroethene</b>	<b>2200</b>		26		ppb v/v			08/04/16 20:32	64.1
Toluene	ND		26		ppb v/v			08/04/16 20:32	64.1
1,2,4-Trichlorobenzene	ND		130		ppb v/v			08/04/16 20:32	64.1
<b>1,1,1-Trichloroethane</b>	<b>40</b>		19		ppb v/v			08/04/16 20:32	64.1
1,1,2-Trichloroethane	ND		26		ppb v/v			08/04/16 20:32	64.1
<b>Trichloroethene</b>	<b>250</b>		26		ppb v/v			08/04/16 20:32	64.1
Trichlorofluoromethane	ND		26		ppb v/v			08/04/16 20:32	64.1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		26		ppb v/v			08/04/16 20:32	64.1
1,2,4-Trimethylbenzene	ND		51		ppb v/v			08/04/16 20:32	64.1
1,3,5-Trimethylbenzene	ND		26		ppb v/v			08/04/16 20:32	64.1
Vinyl acetate	ND		51		ppb v/v			08/04/16 20:32	64.1
Vinyl chloride	ND		26		ppb v/v			08/04/16 20:32	64.1
m,p-Xylene	ND		51		ppb v/v			08/04/16 20:32	64.1
o-Xylene	ND		26		ppb v/v			08/04/16 20:32	64.1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		760		ug/m3 Air			08/04/16 20:32	64.1
Benzene	ND		82		ug/m3 Air			08/04/16 20:32	64.1
Benzyl chloride	ND		270		ug/m3 Air			08/04/16 20:32	64.1
Bromodichloromethane	ND		130		ug/m3 Air			08/04/16 20:32	64.1
Bromoform	ND		270		ug/m3 Air			08/04/16 20:32	64.1
Bromomethane	ND		200		ug/m3 Air			08/04/16 20:32	64.1
2-Butanone (MEK)	ND		150		ug/m3 Air			08/04/16 20:32	64.1
Carbon disulfide	ND		160		ug/m3 Air			08/04/16 20:32	64.1
Carbon tetrachloride	ND		320		ug/m3 Air			08/04/16 20:32	64.1
Chlorobenzene	ND		89		ug/m3 Air			08/04/16 20:32	64.1
Dibromochloromethane	ND		220		ug/m3 Air			08/04/16 20:32	64.1
Chloroethane	ND		140		ug/m3 Air			08/04/16 20:32	64.1
Chloroform	ND		94		ug/m3 Air			08/04/16 20:32	64.1
Chloromethane	ND		110		ug/m3 Air			08/04/16 20:32	64.1
1,2-Dibromoethane (EDB)	ND		390		ug/m3 Air			08/04/16 20:32	64.1
1,2-Dichlorobenzene	ND		150		ug/m3 Air			08/04/16 20:32	64.1
1,3-Dichlorobenzene	ND		150		ug/m3 Air			08/04/16 20:32	64.1
1,4-Dichlorobenzene	ND		150		ug/m3 Air			08/04/16 20:32	64.1
Dichlorodifluoromethane	ND		130		ug/m3 Air			08/04/16 20:32	64.1
1,1-Dichloroethane	ND		78		ug/m3 Air			08/04/16 20:32	64.1
1,2-Dichloroethane	ND		210		ug/m3 Air			08/04/16 20:32	64.1
1,1-Dichloroethene	ND		200		ug/m3 Air			08/04/16 20:32	64.1
<b>cis-1,2-Dichloroethene</b>	<b>760</b>		100		ug/m3 Air			08/04/16 20:32	64.1
trans-1,2-Dichloroethene	ND		100		ug/m3 Air			08/04/16 20:32	64.1
1,2-Dichloropropane	ND		120		ug/m3 Air			08/04/16 20:32	64.1
cis-1,3-Dichloropropene	ND		120		ug/m3 Air			08/04/16 20:32	64.1
trans-1,3-Dichloropropene	ND		120		ug/m3 Air			08/04/16 20:32	64.1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		180		ug/m3 Air			08/04/16 20:32	64.1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

**Client Sample ID: SVE-SOUTH-POST CARBON 72616**

**Lab Sample ID: 320-20575-2**

Date Collected: 07/26/16 10:31

Matrix: Air

Date Received: 07/27/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		110		ug/m3 Air			08/04/16 20:32	64.1
4-Ethyltoluene	ND		130		ug/m3 Air			08/04/16 20:32	64.1
Hexachlorobutadiene	ND		1400		ug/m3 Air			08/04/16 20:32	64.1
2-Hexanone	ND		110		ug/m3 Air			08/04/16 20:32	64.1
Methylene Chloride	ND		89		ug/m3 Air			08/04/16 20:32	64.1
4-Methyl-2-pentanone (MIBK)	ND		110		ug/m3 Air			08/04/16 20:32	64.1
Styrene	ND		110		ug/m3 Air			08/04/16 20:32	64.1
1,1,2,2-Tetrachloroethane	ND		180		ug/m3 Air			08/04/16 20:32	64.1
<b>Tetrachloroethene</b>	<b>15000</b>		170		ug/m3 Air			08/04/16 20:32	64.1
Toluene	ND		97		ug/m3 Air			08/04/16 20:32	64.1
1,2,4-Trichlorobenzene	ND		950		ug/m3 Air			08/04/16 20:32	64.1
<b>1,1,1-Trichloroethane</b>	<b>220</b>		100		ug/m3 Air			08/04/16 20:32	64.1
1,1,2-Trichloroethane	ND		140		ug/m3 Air			08/04/16 20:32	64.1
<b>Trichloroethene</b>	<b>1400</b>		140		ug/m3 Air			08/04/16 20:32	64.1
Trichlorofluoromethane	ND		140		ug/m3 Air			08/04/16 20:32	64.1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		200		ug/m3 Air			08/04/16 20:32	64.1
1,2,4-Trimethylbenzene	ND		250		ug/m3 Air			08/04/16 20:32	64.1
1,3,5-Trimethylbenzene	ND		130		ug/m3 Air			08/04/16 20:32	64.1
Vinyl acetate	ND		180		ug/m3 Air			08/04/16 20:32	64.1
Vinyl chloride	ND		66		ug/m3 Air			08/04/16 20:32	64.1
m,p-Xylene	ND		220		ug/m3 Air			08/04/16 20:32	64.1
o-Xylene	ND		110		ug/m3 Air			08/04/16 20:32	64.1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	83		70 - 130					08/04/16 20:32	64.1
1,2-Dichloroethane-d4 (Surr)	103		70 - 130					08/04/16 20:32	64.1
Toluene-d8 (Surr)	100		70 - 130					08/04/16 20:32	64.1

**Client Sample ID: SVE-NORTH-EFFLUENT 72616**

**Lab Sample ID: 320-20575-3**

Date Collected: 07/26/16 10:41

Matrix: Air

Date Received: 07/27/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			08/04/16 21:29	1
Benzene	ND		0.40		ppb v/v			08/04/16 21:29	1
Benzyl chloride	ND		0.80		ppb v/v			08/04/16 21:29	1
Bromodichloromethane	ND		0.30		ppb v/v			08/04/16 21:29	1
Bromoform	ND		0.40		ppb v/v			08/04/16 21:29	1
Bromomethane	ND		0.80		ppb v/v			08/04/16 21:29	1
2-Butanone (MEK)	ND		0.80		ppb v/v			08/04/16 21:29	1
Carbon disulfide	ND		0.80		ppb v/v			08/04/16 21:29	1
Carbon tetrachloride	ND		0.80		ppb v/v			08/04/16 21:29	1
Chlorobenzene	ND		0.30		ppb v/v			08/04/16 21:29	1
Dibromochloromethane	ND		0.40		ppb v/v			08/04/16 21:29	1
Chloroethane	ND		0.80		ppb v/v			08/04/16 21:29	1
Chloroform	ND		0.30		ppb v/v			08/04/16 21:29	1
Chloromethane	ND		0.80		ppb v/v			08/04/16 21:29	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

**Client Sample ID: SVE-NORTH-EFFLUENT 72616**

**Lab Sample ID: 320-20575-3**

Date Collected: 07/26/16 10:41

Matrix: Air

Date Received: 07/27/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			08/04/16 21:29	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			08/04/16 21:29	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			08/04/16 21:29	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			08/04/16 21:29	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			08/04/16 21:29	1
1,1-Dichloroethane	ND		0.30		ppb v/v			08/04/16 21:29	1
1,2-Dichloroethane	ND		0.80		ppb v/v			08/04/16 21:29	1
1,1-Dichloroethene	ND		0.80		ppb v/v			08/04/16 21:29	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			08/04/16 21:29	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			08/04/16 21:29	1
1,2-Dichloropropane	ND		0.40		ppb v/v			08/04/16 21:29	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			08/04/16 21:29	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			08/04/16 21:29	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			08/04/16 21:29	1
Ethylbenzene	ND		0.40		ppb v/v			08/04/16 21:29	1
4-Ethyltoluene	ND		0.40		ppb v/v			08/04/16 21:29	1
Hexachlorobutadiene	ND		2.0		ppb v/v			08/04/16 21:29	1
2-Hexanone	ND		0.40		ppb v/v			08/04/16 21:29	1
Methylene Chloride	ND		0.40		ppb v/v			08/04/16 21:29	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			08/04/16 21:29	1
Styrene	ND		0.40		ppb v/v			08/04/16 21:29	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			08/04/16 21:29	1
<b>Tetrachloroethene</b>	<b>12</b>		0.40		ppb v/v			08/04/16 21:29	1
<b>Toluene</b>	<b>0.53</b>		0.40		ppb v/v			08/04/16 21:29	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			08/04/16 21:29	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			08/04/16 21:29	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			08/04/16 21:29	1
<b>Trichloroethene</b>	<b>1.1</b>		0.40		ppb v/v			08/04/16 21:29	1
Trichlorofluoromethane	ND		0.40		ppb v/v			08/04/16 21:29	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			08/04/16 21:29	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			08/04/16 21:29	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			08/04/16 21:29	1
Vinyl acetate	ND		0.80		ppb v/v			08/04/16 21:29	1
Vinyl chloride	ND		0.40		ppb v/v			08/04/16 21:29	1
m,p-Xylene	ND		0.80		ppb v/v			08/04/16 21:29	1
o-Xylene	ND		0.40		ppb v/v			08/04/16 21:29	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			08/04/16 21:29	1
Benzene	ND		1.3		ug/m3 Air			08/04/16 21:29	1
Benzyl chloride	ND		4.1		ug/m3 Air			08/04/16 21:29	1
Bromodichloromethane	ND		2.0		ug/m3 Air			08/04/16 21:29	1
Bromoform	ND		4.1		ug/m3 Air			08/04/16 21:29	1
Bromomethane	ND		3.1		ug/m3 Air			08/04/16 21:29	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			08/04/16 21:29	1
Carbon disulfide	ND		2.5		ug/m3 Air			08/04/16 21:29	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			08/04/16 21:29	1
Chlorobenzene	ND		1.4		ug/m3 Air			08/04/16 21:29	1
Dibromochloromethane	ND		3.4		ug/m3 Air			08/04/16 21:29	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

**Client Sample ID: SVE-NORTH-EFFLUENT 72616**

**Lab Sample ID: 320-20575-3**

Date Collected: 07/26/16 10:41

Matrix: Air

Date Received: 07/27/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		2.1		ug/m3 Air			08/04/16 21:29	1
Chloroform	ND		1.5		ug/m3 Air			08/04/16 21:29	1
Chloromethane	ND		1.7		ug/m3 Air			08/04/16 21:29	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			08/04/16 21:29	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			08/04/16 21:29	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			08/04/16 21:29	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			08/04/16 21:29	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			08/04/16 21:29	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			08/04/16 21:29	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			08/04/16 21:29	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			08/04/16 21:29	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			08/04/16 21:29	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			08/04/16 21:29	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			08/04/16 21:29	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			08/04/16 21:29	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			08/04/16 21:29	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			08/04/16 21:29	1
Ethylbenzene	ND		1.7		ug/m3 Air			08/04/16 21:29	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			08/04/16 21:29	1
Hexachlorobutadiene	ND		21		ug/m3 Air			08/04/16 21:29	1
2-Hexanone	ND		1.6		ug/m3 Air			08/04/16 21:29	1
Methylene Chloride	ND		1.4		ug/m3 Air			08/04/16 21:29	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			08/04/16 21:29	1
Styrene	ND		1.7		ug/m3 Air			08/04/16 21:29	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			08/04/16 21:29	1
<b>Tetrachloroethene</b>	<b>84</b>		2.7		ug/m3 Air			08/04/16 21:29	1
<b>Toluene</b>	<b>2.0</b>		1.5		ug/m3 Air			08/04/16 21:29	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			08/04/16 21:29	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			08/04/16 21:29	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			08/04/16 21:29	1
<b>Trichloroethene</b>	<b>5.6</b>		2.1		ug/m3 Air			08/04/16 21:29	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			08/04/16 21:29	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			08/04/16 21:29	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			08/04/16 21:29	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			08/04/16 21:29	1
Vinyl acetate	ND		2.8		ug/m3 Air			08/04/16 21:29	1
Vinyl chloride	ND		1.0		ug/m3 Air			08/04/16 21:29	1
m,p-Xylene	ND		3.5		ug/m3 Air			08/04/16 21:29	1
o-Xylene	ND		1.7		ug/m3 Air			08/04/16 21:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		70 - 130					08/04/16 21:29	1
1,2-Dichloroethane-d4 (Surr)	104		70 - 130					08/04/16 21:29	1
Toluene-d8 (Surr)	99		70 - 130					08/04/16 21:29	1

TestAmerica Sacramento

# Surrogate Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (70-130)	12DCE (70-130)	TOL (70-130)
320-20575-1	SVE-SOUTH-PRECARBON 72616	90	104	100
320-20575-2	SVE-SOUTH-POST CARBON 72616	83	103	100
320-20575-3	SVE-NORTH-EFFLUENT 72616	97	104	99
LCS 320-120740/4	Lab Control Sample	109	112	101
LCSD 320-120740/26	Lab Control Sample Dup	105	110	96
MB 320-120740/9	Method Blank	87	102	101

#### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)



# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 320-120740/9

Matrix: Air

Analysis Batch: 120740

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			08/04/16 18:46	1
Benzene	ND		0.40		ppb v/v			08/04/16 18:46	1
Benzyl chloride	ND		0.80		ppb v/v			08/04/16 18:46	1
Bromodichloromethane	ND		0.30		ppb v/v			08/04/16 18:46	1
Bromoform	ND		0.40		ppb v/v			08/04/16 18:46	1
Bromomethane	ND		0.80		ppb v/v			08/04/16 18:46	1
2-Butanone (MEK)	ND		0.80		ppb v/v			08/04/16 18:46	1
Carbon disulfide	ND		0.80		ppb v/v			08/04/16 18:46	1
Carbon tetrachloride	ND		0.80		ppb v/v			08/04/16 18:46	1
Chlorobenzene	ND		0.30		ppb v/v			08/04/16 18:46	1
Dibromochloromethane	ND		0.40		ppb v/v			08/04/16 18:46	1
Chloroethane	ND		0.80		ppb v/v			08/04/16 18:46	1
Chloroform	ND		0.30		ppb v/v			08/04/16 18:46	1
Chloromethane	ND		0.80		ppb v/v			08/04/16 18:46	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			08/04/16 18:46	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			08/04/16 18:46	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			08/04/16 18:46	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			08/04/16 18:46	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			08/04/16 18:46	1
1,1-Dichloroethane	ND		0.30		ppb v/v			08/04/16 18:46	1
1,2-Dichloroethane	ND		0.80		ppb v/v			08/04/16 18:46	1
1,1-Dichloroethene	ND		0.80		ppb v/v			08/04/16 18:46	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			08/04/16 18:46	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			08/04/16 18:46	1
1,2-Dichloropropane	ND		0.40		ppb v/v			08/04/16 18:46	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			08/04/16 18:46	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			08/04/16 18:46	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			08/04/16 18:46	1
Ethylbenzene	ND		0.40		ppb v/v			08/04/16 18:46	1
4-Ethyltoluene	ND		0.40		ppb v/v			08/04/16 18:46	1
Hexachlorobutadiene	ND		2.0		ppb v/v			08/04/16 18:46	1
2-Hexanone	ND		0.40		ppb v/v			08/04/16 18:46	1
Methylene Chloride	ND		0.40		ppb v/v			08/04/16 18:46	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			08/04/16 18:46	1
Styrene	ND		0.40		ppb v/v			08/04/16 18:46	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			08/04/16 18:46	1
Tetrachloroethene	ND		0.40		ppb v/v			08/04/16 18:46	1
Toluene	ND		0.40		ppb v/v			08/04/16 18:46	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			08/04/16 18:46	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			08/04/16 18:46	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			08/04/16 18:46	1
Trichloroethene	ND		0.40		ppb v/v			08/04/16 18:46	1
Trichlorofluoromethane	ND		0.40		ppb v/v			08/04/16 18:46	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			08/04/16 18:46	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			08/04/16 18:46	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			08/04/16 18:46	1
Vinyl acetate	ND		0.80		ppb v/v			08/04/16 18:46	1
Vinyl chloride	ND		0.40		ppb v/v			08/04/16 18:46	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-120740/9**  
**Matrix: Air**  
**Analysis Batch: 120740**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
m,p-Xylene	ND		0.80		ppb v/v			08/04/16 18:46	1
o-Xylene	ND		0.40		ppb v/v			08/04/16 18:46	1
Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	ND		12		ug/m3 Air			08/04/16 18:46	1
Benzene	ND		1.3		ug/m3 Air			08/04/16 18:46	1
Benzyl chloride	ND		4.1		ug/m3 Air			08/04/16 18:46	1
Bromodichloromethane	ND		2.0		ug/m3 Air			08/04/16 18:46	1
Bromoform	ND		4.1		ug/m3 Air			08/04/16 18:46	1
Bromomethane	ND		3.1		ug/m3 Air			08/04/16 18:46	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			08/04/16 18:46	1
Carbon disulfide	ND		2.5		ug/m3 Air			08/04/16 18:46	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			08/04/16 18:46	1
Chlorobenzene	ND		1.4		ug/m3 Air			08/04/16 18:46	1
Dibromochloromethane	ND		3.4		ug/m3 Air			08/04/16 18:46	1
Chloroethane	ND		2.1		ug/m3 Air			08/04/16 18:46	1
Chloroform	ND		1.5		ug/m3 Air			08/04/16 18:46	1
Chloromethane	ND		1.7		ug/m3 Air			08/04/16 18:46	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			08/04/16 18:46	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			08/04/16 18:46	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			08/04/16 18:46	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			08/04/16 18:46	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			08/04/16 18:46	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			08/04/16 18:46	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			08/04/16 18:46	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			08/04/16 18:46	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			08/04/16 18:46	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			08/04/16 18:46	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			08/04/16 18:46	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			08/04/16 18:46	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			08/04/16 18:46	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			08/04/16 18:46	1
Ethylbenzene	ND		1.7		ug/m3 Air			08/04/16 18:46	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			08/04/16 18:46	1
Hexachlorobutadiene	ND		21		ug/m3 Air			08/04/16 18:46	1
2-Hexanone	ND		1.6		ug/m3 Air			08/04/16 18:46	1
Methylene Chloride	ND		1.4		ug/m3 Air			08/04/16 18:46	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			08/04/16 18:46	1
Styrene	ND		1.7		ug/m3 Air			08/04/16 18:46	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			08/04/16 18:46	1
Tetrachloroethene	ND		2.7		ug/m3 Air			08/04/16 18:46	1
Toluene	ND		1.5		ug/m3 Air			08/04/16 18:46	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			08/04/16 18:46	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			08/04/16 18:46	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			08/04/16 18:46	1
Trichloroethene	ND		2.1		ug/m3 Air			08/04/16 18:46	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			08/04/16 18:46	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			08/04/16 18:46	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-120740/9**  
**Matrix: Air**  
**Analysis Batch: 120740**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			08/04/16 18:46	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			08/04/16 18:46	1
Vinyl acetate	ND		2.8		ug/m3 Air			08/04/16 18:46	1
Vinyl chloride	ND		1.0		ug/m3 Air			08/04/16 18:46	1
m,p-Xylene	ND		3.5		ug/m3 Air			08/04/16 18:46	1
o-Xylene	ND		1.7		ug/m3 Air			08/04/16 18:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		70 - 130		08/04/16 18:46	1
1,2-Dichloroethane-d4 (Surr)	102		70 - 130		08/04/16 18:46	1
Toluene-d8 (Surr)	101		70 - 130		08/04/16 18:46	1

**Lab Sample ID: LCS 320-120740/4**  
**Matrix: Air**  
**Analysis Batch: 120740**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	17.0		ppb v/v		85	71 - 131
Benzene	20.0	17.1		ppb v/v		86	68 - 128
Benzyl chloride	20.0	15.7		ppb v/v		78	58 - 120
Bromodichloromethane	20.0	18.0		ppb v/v		90	65 - 130
Bromoform	20.0	17.4		ppb v/v		87	64 - 144
Bromomethane	20.0	25.1		ppb v/v		126	70 - 131
2-Butanone (MEK)	20.0	17.3		ppb v/v		87	71 - 131
Carbon disulfide	20.0	16.2		ppb v/v		81	63 - 123
Carbon tetrachloride	20.0	18.5		ppb v/v		92	67 - 127
Chlorobenzene	20.0	17.7		ppb v/v		89	70 - 132
Dibromochloromethane	20.0	16.7		ppb v/v		83	68 - 128
Chloroethane	20.0	19.9		ppb v/v		100	70 - 131
Chloroform	20.0	17.3		ppb v/v		87	69 - 129
Chloromethane	20.0	18.7		ppb v/v		94	67 - 127
1,2-Dibromoethane (EDB)	20.0	16.7		ppb v/v		83	68 - 131
1,2-Dichlorobenzene	20.0	18.4		ppb v/v		92	73 - 143
1,3-Dichlorobenzene	20.0	19.1		ppb v/v		95	77 - 136
1,4-Dichlorobenzene	20.0	19.2		ppb v/v		96	73 - 143
Dichlorodifluoromethane	20.0	16.1		ppb v/v		81	69 - 129
1,1-Dichloroethane	20.0	16.9		ppb v/v		85	65 - 125
1,2-Dichloroethane	20.0	18.0		ppb v/v		90	71 - 131
1,1-Dichloroethene	20.0	15.6		ppb v/v		78	53 - 128
cis-1,2-Dichloroethene	20.0	16.2		ppb v/v		81	68 - 128
trans-1,2-Dichloroethene	20.0	16.9		ppb v/v		85	70 - 130
1,2-Dichloropropane	20.0	18.6		ppb v/v		93	74 - 128
cis-1,3-Dichloropropene	20.0	19.9		ppb v/v		100	78 - 132
trans-1,3-Dichloropropene	20.0	15.5		ppb v/v		78	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	17.4		ppb v/v		87	64 - 124
Ethylbenzene	20.0	18.3		ppb v/v		91	76 - 136
4-Ethyltoluene	20.0	17.9		ppb v/v		90	62 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-120740/4

Matrix: Air

Analysis Batch: 120740

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	16.5		ppb v/v		82	42 - 150
2-Hexanone	20.0	17.0		ppb v/v		85	70 - 128
Methylene Chloride	20.0	16.0		ppb v/v		80	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	18.1		ppb v/v		91	73 - 133
Styrene	20.0	19.8		ppb v/v		99	76 - 144
1,1,2,2-Tetrachloroethane	20.0	18.4		ppb v/v		92	75 - 135
Tetrachloroethene	20.0	15.9		ppb v/v		80	56 - 138
Toluene	20.0	17.8		ppb v/v		89	71 - 132
1,2,4-Trichlorobenzene	20.0	19.1		ppb v/v		95	59 - 150
1,1,1-Trichloroethane	20.0	17.3		ppb v/v		86	65 - 124
1,1,2-Trichloroethane	20.0	17.4		ppb v/v		87	71 - 131
Trichloroethene	20.0	17.3		ppb v/v		87	64 - 127
Trichlorofluoromethane	20.0	18.3		ppb v/v		91	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	15.4		ppb v/v		77	50 - 132
1,2,4-Trimethylbenzene	20.0	19.3		ppb v/v		97	61 - 145
1,3,5-Trimethylbenzene	20.0	18.1		ppb v/v		90	65 - 136
Vinyl acetate	20.0	20.4		ppb v/v		102	77 - 134
Vinyl chloride	20.0	17.3		ppb v/v		87	69 - 129
m,p-Xylene	40.0	38.6		ppb v/v		96	75 - 138
o-Xylene	20.0	19.5		ppb v/v		98	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	40.4		ug/m3 Air		85	71 - 131
Benzene	64	54.8		ug/m3 Air		86	68 - 128
Benzyl chloride	100	81.2		ug/m3 Air		78	58 - 120
Bromodichloromethane	130	120		ug/m3 Air		90	65 - 130
Bromoform	210	180		ug/m3 Air		87	64 - 144
Bromomethane	78	97.6		ug/m3 Air		126	70 - 131
2-Butanone (MEK)	59	51.1		ug/m3 Air		87	71 - 131
Carbon disulfide	62	50.6		ug/m3 Air		81	63 - 123
Carbon tetrachloride	130	116		ug/m3 Air		92	67 - 127
Chlorobenzene	92	81.7		ug/m3 Air		89	70 - 132
Dibromochloromethane	170	142		ug/m3 Air		83	68 - 128
Chloroethane	53	52.6		ug/m3 Air		100	70 - 131
Chloroform	98	84.6		ug/m3 Air		87	69 - 129
Chloromethane	41	38.7		ug/m3 Air		94	67 - 127
1,2-Dibromoethane (EDB)	150	128		ug/m3 Air		83	68 - 131
1,2-Dichlorobenzene	120	111		ug/m3 Air		92	73 - 143
1,3-Dichlorobenzene	120	115		ug/m3 Air		95	77 - 136
1,4-Dichlorobenzene	120	115		ug/m3 Air		96	73 - 143
Dichlorodifluoromethane	99	79.8		ug/m3 Air		81	69 - 129
1,1-Dichloroethane	81	68.4		ug/m3 Air		85	65 - 125
1,2-Dichloroethane	81	73.0		ug/m3 Air		90	71 - 131
1,1-Dichloroethene	79	62.0		ug/m3 Air		78	53 - 128
cis-1,2-Dichloroethene	79	64.3		ug/m3 Air		81	68 - 128
trans-1,2-Dichloroethene	79	67.0		ug/m3 Air		85	70 - 130
1,2-Dichloropropane	92	86.1		ug/m3 Air		93	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-120740/4**

**Matrix: Air**

**Analysis Batch: 120740**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	90.4		ug/m3 Air		100	78 - 132
trans-1,3-Dichloropropene	91	70.6		ug/m3 Air		78	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	122		ug/m3 Air		87	64 - 124
Ethylbenzene	87	79.4		ug/m3 Air		91	76 - 136
4-Ethyltoluene	98	88.0		ug/m3 Air		90	62 - 136
Hexachlorobutadiene	210	176		ug/m3 Air		82	42 - 150
2-Hexanone	82	69.7		ug/m3 Air		85	70 - 128
Methylene Chloride	69	55.4		ug/m3 Air		80	65 - 125
4-Methyl-2-pentanone (MIBK)	82	74.3		ug/m3 Air		91	73 - 133
Styrene	85	84.5		ug/m3 Air		99	76 - 144
1,1,2,2-Tetrachloroethane	140	126		ug/m3 Air		92	75 - 135
Tetrachloroethene	140	108		ug/m3 Air		80	56 - 138
Toluene	75	67.3		ug/m3 Air		89	71 - 132
1,2,4-Trichlorobenzene	150	142		ug/m3 Air		95	59 - 150
1,1,1-Trichloroethane	110	94.3		ug/m3 Air		86	65 - 124
1,1,2-Trichloroethane	110	95.0		ug/m3 Air		87	71 - 131
Trichloroethene	110	93.1		ug/m3 Air		87	64 - 127
Trichlorofluoromethane	110	103		ug/m3 Air		91	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	118		ug/m3 Air		77	50 - 132
1,2,4-Trimethylbenzene	98	94.9		ug/m3 Air		97	61 - 145
1,3,5-Trimethylbenzene	98	88.9		ug/m3 Air		90	65 - 136
Vinyl acetate	70	71.7		ug/m3 Air		102	77 - 134
Vinyl chloride	51	44.3		ug/m3 Air		87	69 - 129
m,p-Xylene	170	167		ug/m3 Air		96	75 - 138
o-Xylene	87	84.8		ug/m3 Air		98	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	109		70 - 130
1,2-Dichloroethane-d4 (Surr)	112		70 - 130
Toluene-d8 (Surr)	101		70 - 130

**Lab Sample ID: LCSD 320-120740/26**

**Matrix: Air**

**Analysis Batch: 120740**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	15.8		ppb v/v		79	71 - 131	7	25
Benzene	20.0	16.6		ppb v/v		83	68 - 128	3	25
Benzyl chloride	20.0	15.1		ppb v/v		75	58 - 120	4	25
Bromodichloromethane	20.0	17.7		ppb v/v		89	65 - 130	2	25
Bromoform	20.0	17.6		ppb v/v		88	64 - 144	1	25
Bromomethane	20.0	23.6		ppb v/v		118	70 - 131	6	25
2-Butanone (MEK)	20.0	16.4		ppb v/v		82	71 - 131	5	25
Carbon disulfide	20.0	15.7		ppb v/v		78	63 - 123	3	25
Carbon tetrachloride	20.0	19.0		ppb v/v		95	67 - 127	3	25
Chlorobenzene	20.0	17.4		ppb v/v		87	70 - 132	2	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-120740/26

Matrix: Air

Analysis Batch: 120740

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	20.0	17.2		ppb v/v		86	68 - 128	3	25
Chloroethane	20.0	19.2		ppb v/v		96	70 - 131	4	25
Chloroform	20.0	17.1		ppb v/v		85	69 - 129	1	25
Chloromethane	20.0	16.7		ppb v/v		84	67 - 127	11	25
1,2-Dibromoethane (EDB)	20.0	16.6		ppb v/v		83	68 - 131	0	25
1,2-Dichlorobenzene	20.0	16.8		ppb v/v		84	73 - 143	9	25
1,3-Dichlorobenzene	20.0	17.4		ppb v/v		87	77 - 136	9	25
1,4-Dichlorobenzene	20.0	17.5		ppb v/v		87	73 - 143	9	25
Dichlorodifluoromethane	20.0	17.6		ppb v/v		88	69 - 129	9	25
1,1-Dichloroethane	20.0	16.4		ppb v/v		82	65 - 125	3	25
1,2-Dichloroethane	20.0	17.9		ppb v/v		89	71 - 131	1	25
1,1-Dichloroethene	20.0	15.4		ppb v/v		77	53 - 128	2	25
cis-1,2-Dichloroethene	20.0	16.0		ppb v/v		80	68 - 128	1	25
trans-1,2-Dichloroethene	20.0	16.6		ppb v/v		83	70 - 130	2	25
1,2-Dichloropropane	20.0	18.5		ppb v/v		93	74 - 128	0	25
cis-1,3-Dichloropropene	20.0	18.9		ppb v/v		95	78 - 132	5	25
trans-1,3-Dichloropropene	20.0	15.6		ppb v/v		78	56 - 136	0	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	17.5		ppb v/v		87	64 - 124	0	25
Ethylbenzene	20.0	17.4		ppb v/v		87	76 - 136	5	25
4-Ethyltoluene	20.0	16.0		ppb v/v		80	62 - 136	11	25
Hexachlorobutadiene	20.0	15.1		ppb v/v		76	42 - 150	8	25
2-Hexanone	20.0	15.9		ppb v/v		79	70 - 128	7	25
Methylene Chloride	20.0	15.0		ppb v/v		75	65 - 125	6	25
4-Methyl-2-pentanone (MIBK)	20.0	16.0		ppb v/v		80	73 - 133	12	25
Styrene	20.0	18.2		ppb v/v		91	76 - 144	9	25
1,1,2,2-Tetrachloroethane	20.0	16.3		ppb v/v		81	75 - 135	12	25
Tetrachloroethene	20.0	16.8		ppb v/v		84	56 - 138	5	25
Toluene	20.0	17.0		ppb v/v		85	71 - 132	5	25
1,2,4-Trichlorobenzene	20.0	16.9		ppb v/v		85	59 - 150	12	25
1,1,1-Trichloroethane	20.0	17.6		ppb v/v		88	65 - 124	2	25
1,1,2-Trichloroethane	20.0	17.2		ppb v/v		86	71 - 131	1	25
Trichloroethene	20.0	18.1		ppb v/v		90	64 - 127	4	25
Trichlorofluoromethane	20.0	18.5		ppb v/v		93	68 - 128	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	15.2		ppb v/v		76	50 - 132	1	25
1,2,4-Trimethylbenzene	20.0	17.0		ppb v/v		85	61 - 145	12	25
1,3,5-Trimethylbenzene	20.0	16.8		ppb v/v		84	65 - 136	8	25
Vinyl acetate	20.0	19.3		ppb v/v		97	77 - 134	5	25
Vinyl chloride	20.0	16.9		ppb v/v		84	69 - 129	3	25
m,p-Xylene	40.0	36.0		ppb v/v		90	75 - 138	7	25
o-Xylene	20.0	17.9		ppb v/v		90	77 - 132	9	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	37.5		ug/m3 Air		79	71 - 131	7	25
Benzene	64	53.0		ug/m3 Air		83	68 - 128	3	25
Benzyl chloride	100	78.0		ug/m3 Air		75	58 - 120	4	25
Bromodichloromethane	130	119		ug/m3 Air		89	65 - 130	2	25
Bromoform	210	182		ug/m3 Air		88	64 - 144	1	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-120740/26**  
**Matrix: Air**  
**Analysis Batch: 120740**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	78	91.7		ug/m3 Air		118	70 - 131	6	25
2-Butanone (MEK)	59	48.4		ug/m3 Air		82	71 - 131	5	25
Carbon disulfide	62	48.9		ug/m3 Air		78	63 - 123	3	25
Carbon tetrachloride	130	120		ug/m3 Air		95	67 - 127	3	25
Chlorobenzene	92	79.9		ug/m3 Air		87	70 - 132	2	25
Dibromochloromethane	170	146		ug/m3 Air		86	68 - 128	3	25
Chloroethane	53	50.7		ug/m3 Air		96	70 - 131	4	25
Chloroform	98	83.4		ug/m3 Air		85	69 - 129	1	25
Chloromethane	41	34.5		ug/m3 Air		84	67 - 127	11	25
1,2-Dibromoethane (EDB)	150	128		ug/m3 Air		83	68 - 131	0	25
1,2-Dichlorobenzene	120	101		ug/m3 Air		84	73 - 143	9	25
1,3-Dichlorobenzene	120	104		ug/m3 Air		87	77 - 136	9	25
1,4-Dichlorobenzene	120	105		ug/m3 Air		87	73 - 143	9	25
Dichlorodifluoromethane	99	87.2		ug/m3 Air		88	69 - 129	9	25
1,1-Dichloroethane	81	66.6		ug/m3 Air		82	65 - 125	3	25
1,2-Dichloroethane	81	72.3		ug/m3 Air		89	71 - 131	1	25
1,1-Dichloroethene	79	60.9		ug/m3 Air		77	53 - 128	2	25
cis-1,2-Dichloroethene	79	63.6		ug/m3 Air		80	68 - 128	1	25
trans-1,2-Dichloroethene	79	65.9		ug/m3 Air		83	70 - 130	2	25
1,2-Dichloropropane	92	85.6		ug/m3 Air		93	74 - 128	0	25
cis-1,3-Dichloropropene	91	85.8		ug/m3 Air		95	78 - 132	5	25
trans-1,3-Dichloropropene	91	70.6		ug/m3 Air		78	56 - 136	0	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	122		ug/m3 Air		87	64 - 124	0	25
Ethylbenzene	87	75.6		ug/m3 Air		87	76 - 136	5	25
4-Ethyltoluene	98	78.6		ug/m3 Air		80	62 - 136	11	25
Hexachlorobutadiene	210	162		ug/m3 Air		76	42 - 150	8	25
2-Hexanone	82	65.1		ug/m3 Air		79	70 - 128	7	25
Methylene Chloride	69	52.1		ug/m3 Air		75	65 - 125	6	25
4-Methyl-2-pentanone (MIBK)	82	65.5		ug/m3 Air		80	73 - 133	12	25
Styrene	85	77.5		ug/m3 Air		91	76 - 144	9	25
1,1,2,2-Tetrachloroethane	140	112		ug/m3 Air		81	75 - 135	12	25
Tetrachloroethene	140	114		ug/m3 Air		84	56 - 138	5	25
Toluene	75	64.1		ug/m3 Air		85	71 - 132	5	25
1,2,4-Trichlorobenzene	150	126		ug/m3 Air		85	59 - 150	12	25
1,1,1-Trichloroethane	110	96.0		ug/m3 Air		88	65 - 124	2	25
1,1,2-Trichloroethane	110	93.8		ug/m3 Air		86	71 - 131	1	25
Trichloroethene	110	97.0		ug/m3 Air		90	64 - 127	4	25
Trichlorofluoromethane	110	104		ug/m3 Air		93	68 - 128	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	117		ug/m3 Air		76	50 - 132	1	25
1,2,4-Trimethylbenzene	98	83.8		ug/m3 Air		85	61 - 145	12	25
1,3,5-Trimethylbenzene	98	82.4		ug/m3 Air		84	65 - 136	8	25
Vinyl acetate	70	68.0		ug/m3 Air		97	77 - 134	5	25
Vinyl chloride	51	43.1		ug/m3 Air		84	69 - 129	3	25
m,p-Xylene	170	156		ug/m3 Air		90	75 - 138	7	25
o-Xylene	87	77.8		ug/m3 Air		90	77 - 132	9	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-120740/26

Matrix: Air

Analysis Batch: 120740

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	105		70 - 130
1,2-Dichloroethane-d4 (Surr)	110		70 - 130
Toluene-d8 (Surr)	96		70 - 130

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# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Air - GC/MS VOA

### Analysis Batch: 120740

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-20575-1	SVE-SOUTH-PRECARBON 72616	Total/NA	Air	TO-15	
320-20575-2	SVE-SOUTH-POST CARBON 72616	Total/NA	Air	TO-15	
320-20575-3	SVE-NORTH-EFFLUENT 72616	Total/NA	Air	TO-15	
MB 320-120740/9	Method Blank	Total/NA	Air	TO-15	
LCS 320-120740/4	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-120740/26	Lab Control Sample Dup	Total/NA	Air	TO-15	

# Lab Chronicle

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

**Client Sample ID: SVE-SOUTH-PRECARBON 72616**

**Lab Sample ID: 320-20575-1**

**Date Collected: 07/26/16 10:26**

**Matrix: Air**

**Date Received: 07/27/16 09:55**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		80.8	4.86 mL	250 mL	120740	08/04/16 19:40	AP1	TAL SAC

**Client Sample ID: SVE-SOUTH-POST CARBON 72616**

**Lab Sample ID: 320-20575-2**

**Date Collected: 07/26/16 10:31**

**Matrix: Air**

**Date Received: 07/27/16 09:55**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		64.1	7.84 mL	250 mL	120740	08/04/16 20:32	AP1	TAL SAC

**Client Sample ID: SVE-NORTH-EFFLUENT 72616**

**Lab Sample ID: 320-20575-3**

**Date Collected: 07/26/16 10:41**

**Matrix: Air**

**Date Received: 07/27/16 09:55**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	483 mL	250 mL	120740	08/04/16 21:29	AP1	TAL SAC

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Certification Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-16 *
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-16
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	08-31-17
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
USDA	Federal		P330-11-00092	04-17-17

\* Certification renewal pending - certification considered valid.

TestAmerica Sacramento

# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-20575-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-20575-1	SVE-SOUTH-PRECARBON 72616	Air	07/26/16 10:26	07/27/16 09:55
320-20575-2	SVE-SOUTH-POST CARBON 72616	Air	07/26/16 10:31	07/27/16 09:55
320-20575-3	SVE-NORTH-EFFLUENT 72616	Air	07/26/16 10:41	07/27/16 09:55

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West Sacramento, CA 95605  
phone 916.374.4378 fax 916.372.1059

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

TestAmerica Laboratories, Inc.

<b>Client Contact Information</b> Apex Company Name: Apex Companies Address: 3015 SW 1st Ave City/State/Zip: Portland, OR 97201 Phone: 503 924 4704 FAX:		<b>Project Manager:</b> Stephanie Salisbury Phone: 503 924 4704 x 1928 Email: S.Salisbury@apercos.com		<b>Samples Collected By:</b> Joel Matthecheck COC No: _____ of _____ COCs	
<b>Site Contact:</b> TA Contact: _____ Analysis Turnaround Time Standard (Specific): X (10-day) Rush (Specify):		Other (Please specify in notes section) Landfill Gas Soil Gas Ambient Air Indoor Air		For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.: (See below for Add'l Items)	
<b>Sample Identification</b> Sample Date(s) Time Start Time Stop Canister Vacuum in Field, 'Hg (Start) Canister Vacuum in Field, 'Hg (Stop)		TO-15 (Med / Std / Low / SIM) MA-APH EPA 3C EPA 25C / 25.3 ASTM D-1946 / 1945 / 3688 EPA 15/16 TO-3 Other (Please specify in notes section)		Sample Specific Notes: To-15 ↓	
SUE - South - Precarbon 72616 SUE - South - Post carbon 72616 SUE - North - effluent 72616		Canister ID Flow Controller ID		Other (Please specify in notes section)	
		Temperature (Fahrenheit) Start Interior Stop Ambient		320-20575 Chain of Custody	
		Temperature (Fahrenheit) Start Interior Stop Ambient			
Special Instructions/QC Requirements & Comments: Relinquished send lab results to: S.Salisbury@apercos.com, Analyze via TO-15					
Samples Shipped by: Joel Matthecheck Date / Time: 7/26/16 1310		Samples Received by: _____ Date / Time: 7/26/16 1700			
Samples Relinquished by: _____ Date / Time:		Received by: _____ Date / Time: 7/27/16 1600			
Relinquished by: _____ Date / Time:		Received by: _____ Date / Time:			
Lab Use Only: _____ Shipper Name:		Condition:			



JOB # 320-20575  
 Sample # 1

Client/Project:		VFR ID:	
Canister Serial #:	34001560	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	14.28	08/01/16	SV	
FINAL PRESSURE (PSIA)	22.46	08/01/16	SV	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He		<input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	1.57			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.57		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors										
		Date	Instr.	File #						
Canister DF =	1.57	X	Load DF =	2.5	X	Bag DF =	51.4	=	FINAL DF	202.1085434
				250			BVf (mLs)		51.4	
				100			Bvi (mLs)		1	
Canister DF =	1.57	X	Load DF =	1	X	Bag DF =	51.4	=	FINAL DF	80.84341737
				250			BVf (mLs)		51.4	
				250			Bvi (mLs)		1	
Canister DF =	1.57	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
							BVf (mLs)			
							Bvi (mLs)			



JOB # **320-20575**  
Sample # **2**

Client/Project:		VFR ID:	
Canister Serial #:	34002159	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	11.08	08/01/16	SV	
FINAL PRESSURE (PSIA)	22.26	08/01/16	SV	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He		<input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	2.01			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			2.01		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors										
Canister DF =	2.01	X	Load DF =	10	X	Bag DF =	3.19	=	FINAL DF	64.08790614
			LVf (mLs)	250		BVf (mLs)	3.19			
			LVi (mLs)	25		Bvi (mLs)	1			
Canister DF =	2.01	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			Bvi (mLs)				
Canister DF =	2.01	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			Bvi (mLs)				





JOB # 320-20575  
Sample # 3

Table with 4 columns: Client/Project, VFR ID, Canister Serial #: 7969, Duration, Cleaning Job, Flow, Client ID, Initials, Site Location.

FIELD table with 5 columns: READING, TIME, PRESS., DATE, INITIALS. Rows for INITIAL FIELD VACUUM and FINAL FIELD READING.

LABORATORY table with 4 columns: READING, PRESS., DATE, INITIALS. Rows for INITIAL VACUUM CHECK (29.8), INITIAL PRESSURE (11.64), FINAL PRESSURE (22.51), Pressurization Gas, and Initial Canister Dilution Factor (1.93).

CANISTER REPRESSURIZATION table with 6 columns: Date, Pi (PSIA), Pf (PSIA), Initial DF, Initials, NEW DF. Rows show repressurization attempts with '#DIV/0!' values.

Analytical Dilution Factors

Table for Analytical Dilution Factors showing Canister DF = 1.93, Load DF = 0.5175983, and Bag DF = 1, resulting in FINAL DF = 1.000956934.

Table for Analytical Dilution Factors showing Canister DF = 1.93, Load DF = #DIV/0!, and Bag DF = 1, resulting in FINAL DF = #DIV/0!.

Table for Analytical Dilution Factors showing Canister DF = 1.93, Load DF = #DIV/0!, and Bag DF = 1, resulting in FINAL DF = #DIV/0!.

# Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-20575-1

**Login Number: 20575**

**List Source: TestAmerica Sacramento**

**List Number: 1**

**Creator: Nelson, Kym D**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



320-19103 Chain of Custody

CC

# CANISTER QL CERTIFICATION

Certification Type: TO15 Scan

Date Cleaned/Batch ID 5/25/16 320-19103

Date of QC 5/28/16

Data File Number MS9052717.D

### CANISTER ID NUMBERS

<u>34000083*</u>	<u>7904</u>	<u>                    </u>
<u>0077</u>	<u>8425</u>	<u>                    </u>
<u>0786</u>	<u>8467</u>	<u>                    </u>
<u>1560</u>	<u>8195</u>	<u>                    </u>
<u>0888</u>	<u>                    </u>	<u>                    </u>
<u>1591</u>	<u>                    </u>	<u>                    </u>
<u>1467</u>	<u>                    </u>	<u>                    </u>
<u>0520</u>	<u>                    </u>	<u>                    </u>

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

[Signature]  
1<sup>st</sup> level Reviewed By:

6/2/16  
Date:

[Signature]  
2nd level Reviewed By:

6/7/16  
Date:

# CANISTER QC CERTIFICATION



Certification Type: TO15 Scan

Date Cleaned/Batch ID 6/20/16 320-19701

Date of QC 6/22/16

Data File Number 16062207-D

### CANISTER ID NUMBERS

<u>34000158*</u>	<u>34001200</u>	_____
<u>34000180</u>	<u>34001286</u>	_____
<u>8246</u>	<u>34002159</u>	_____
<u>34001429</u>	<u>34000790</u>	_____
<u>34001287</u>	_____	_____
<u>8045</u>	_____	_____
<u>34000463</u>	_____	_____
<u>34000198</u>	_____	_____

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

[Signature] For AP  
1<sup>st</sup> level Reviewed By:  
[Signature]  
2nd level Reviewed By:

6/28/16  
Date:  
6/28/16  
Date:



# CANISTER QC CERTIFICATION



Certification Type: T015 Scan

Date Cleaned/Batch ID 6/24/16 320-19851

Date of QC 6/28/16

Data File Number 16062808-D

### CANISTER ID NUMBERS

<u>34000464*</u>	<u>34000430</u>	_____
<u>34000505</u>	<u>7969</u>	_____
<u>4523</u>	<u>34001367</u>	_____
<u>34000494</u>	<u>34000851</u>	_____
<u>34001312</u>	_____	_____
<u>34002028</u>	_____	_____
<u>34001571</u>	_____	_____
<u>34000850</u>	_____	_____

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

[Signature]  
1<sup>st</sup> level Reviewed By:

[Signature]  
2nd level Reviewed By:

6/30/16  
Date:

6/30/16  
Date:





Certification Type TE15 Scan  
 Date Cleaned/Batch ID 7/25/16 320-20480  
 Date of QC 7/26/2016  
 Data File Number C:\MSDCHEM\1\DATA\160726\

MS9072618.d  
**CANISTER ID NUMBERS**

<u>34001737 *</u>	<u>34001921</u>	
<u>34001915</u>	<u>34001681</u>	
<u>34001754</u>	<u>34002180</u>	
<u>7539</u>	<u>34001890</u>	
<u>34001867</u>	<u>34001867</u>	
<u>34001780</u>	<u>34001961</u>	
<u>34001848</u>	<u>34001822</u>	
<u>34001903</u>	<u>34001929</u>	

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

[Signature] 7/27/16  
 1<sup>st</sup> level Reviewed By: Date:  
[Signature] 7/27/16  
 2nd level Reviewed By: Date:



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19103-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000083 Lab Sample ID: 320-19103-1  
 Matrix: Air Lab File ID: MS9052717.D  
 Analysis Method: TO-15 Date Collected: 05/24/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 05/28/2016 05:12  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 111723 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	0.52	J	0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19103-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000083 Lab Sample ID: 320-19103-1  
 Matrix: Air Lab File ID: MS9052717.D  
 Analysis Method: TO-15 Date Collected: 05/24/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 05/28/2016 05:12  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 111723 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	0.26	J B	0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19103-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000083 Lab Sample ID: 320-19103-1  
 Matrix: Air Lab File ID: MS9052717.D  
 Analysis Method: TO-15 Date Collected: 05/24/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 05/28/2016 05:12  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 111723 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	98		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	97		70-130
2037-26-5	Toluene-d8 (Surr)	101		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160527-31150.b\MS9052717.D  
 Lims ID: 320-19103-A-1  
 Client ID: 34000083  
 Sample Type: Client  
 Inject. Date: 28-May-2016 05:12:30 ALS Bottle#: 13 Worklist Smp#: 17  
 Purge Vol: 5.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-19103-A-1  
 Misc. Info.: 500mL  
 Operator ID: SRS Instrument ID: ATMS9  
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20160527-31150.b\TO15\_ATMS9N.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 02-Jun-2016 15:51:09 Calib Date: 25-May-2016 02:44:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20160524-31023.b\MS9032412.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK053

First Level Reviewer: phanthasena

Date: 30-May-2016 14:15:46

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.437	12.449	-0.012	96	35513	4.00	
* 2 1,4-Difluorobenzene	114	14.536	14.548	-0.012	96	183007	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.461	20.461	0.000	89	139993	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.611	13.630	-0.019	98	47481	3.88	
\$ 5 Toluene-d8 (Surr)	100	17.706	17.712	-0.006	99	98928	4.06	
\$ 6 4-Bromofluorobenzene (Surr	174	22.378	22.378	0.000	88	72746	3.90	
31 Acetone	43	7.729	7.656	0.073	90	2027	0.1099	
47 Methylene Chloride	49	8.957	8.970	-0.013	95	4339	0.2623	
48 Carbon disulfide	76	9.006	9.024	-0.018	100	14595	0.5211	
115 1,2,4-Trimethylbenzene	120	23.430	23.430	0.000	89	382	0.0169	

**Reagents:**

VAMSIS20\_00001 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160527-31150.b\MS9052717.D

Injection Date: 28-May-2016 05:12:30

Instrument ID: ATMS9

Operator ID: SRS

Lims ID: 320-19103-A-1

Lab Sample ID: 320-19103-1

Worklist Smp#: 17

Client ID: 34000083

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

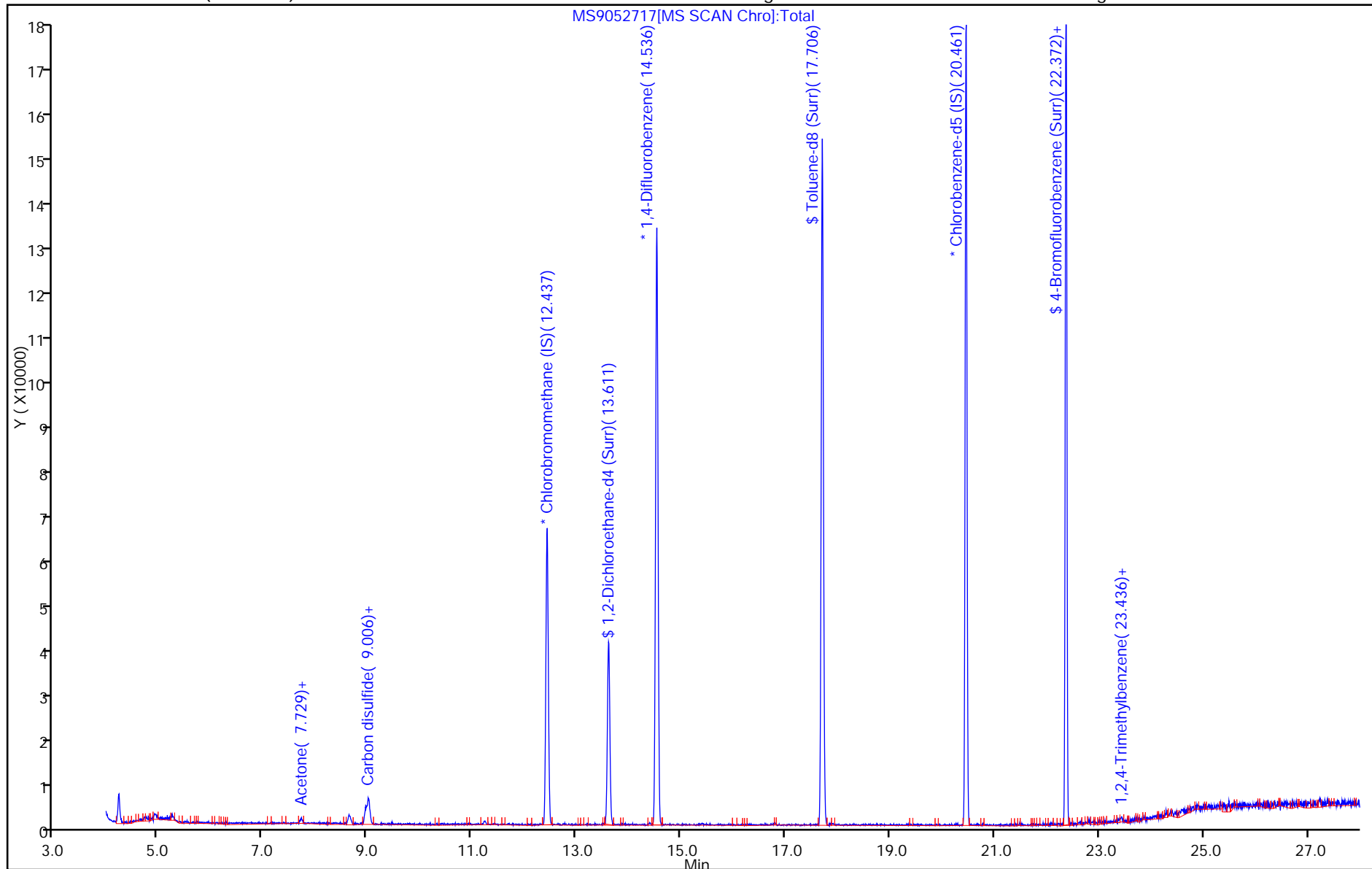
ALS Bottle#: 13

Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160527-31150.b\MS9052717.D

Injection Date: 28-May-2016 05:12:30

Instrument ID: ATMS9

Lims ID: 320-19103-A-1

Lab Sample ID: 320-19103-1

Client ID: 34000083

Operator ID: SRS

ALS Bottle#: 13 Worklist Smp#: 17

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

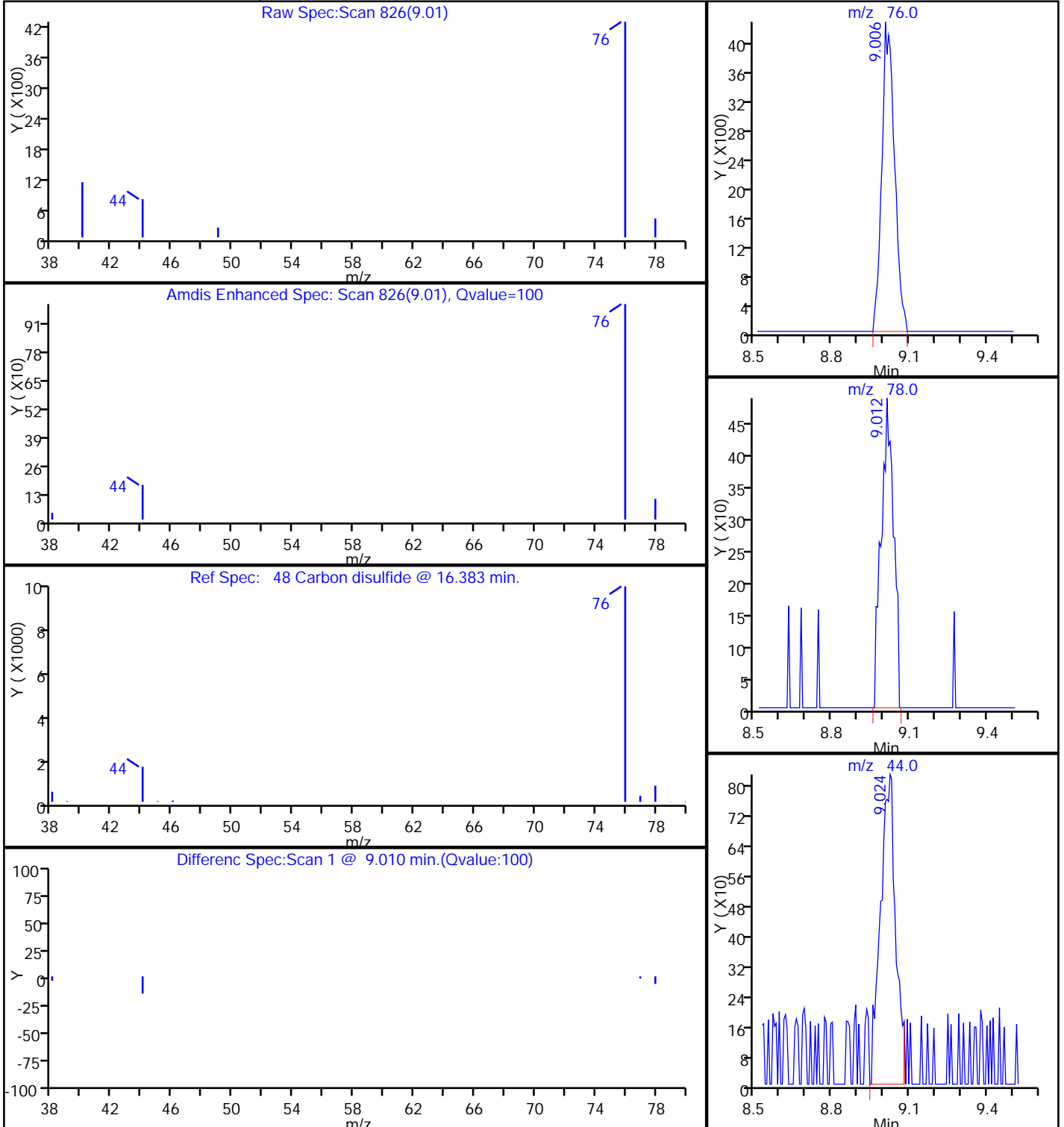
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

48 Carbon disulfide, CAS: 75-15-0



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160527-31150.b\MS9052717.D

Injection Date: 28-May-2016 05:12:30

Instrument ID: ATMS9

Lims ID: 320-19103-A-1

Lab Sample ID: 320-19103-1

Client ID: 34000083

Operator ID: SRS

ALS Bottle#: 13

Worklist Smp#: 17

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

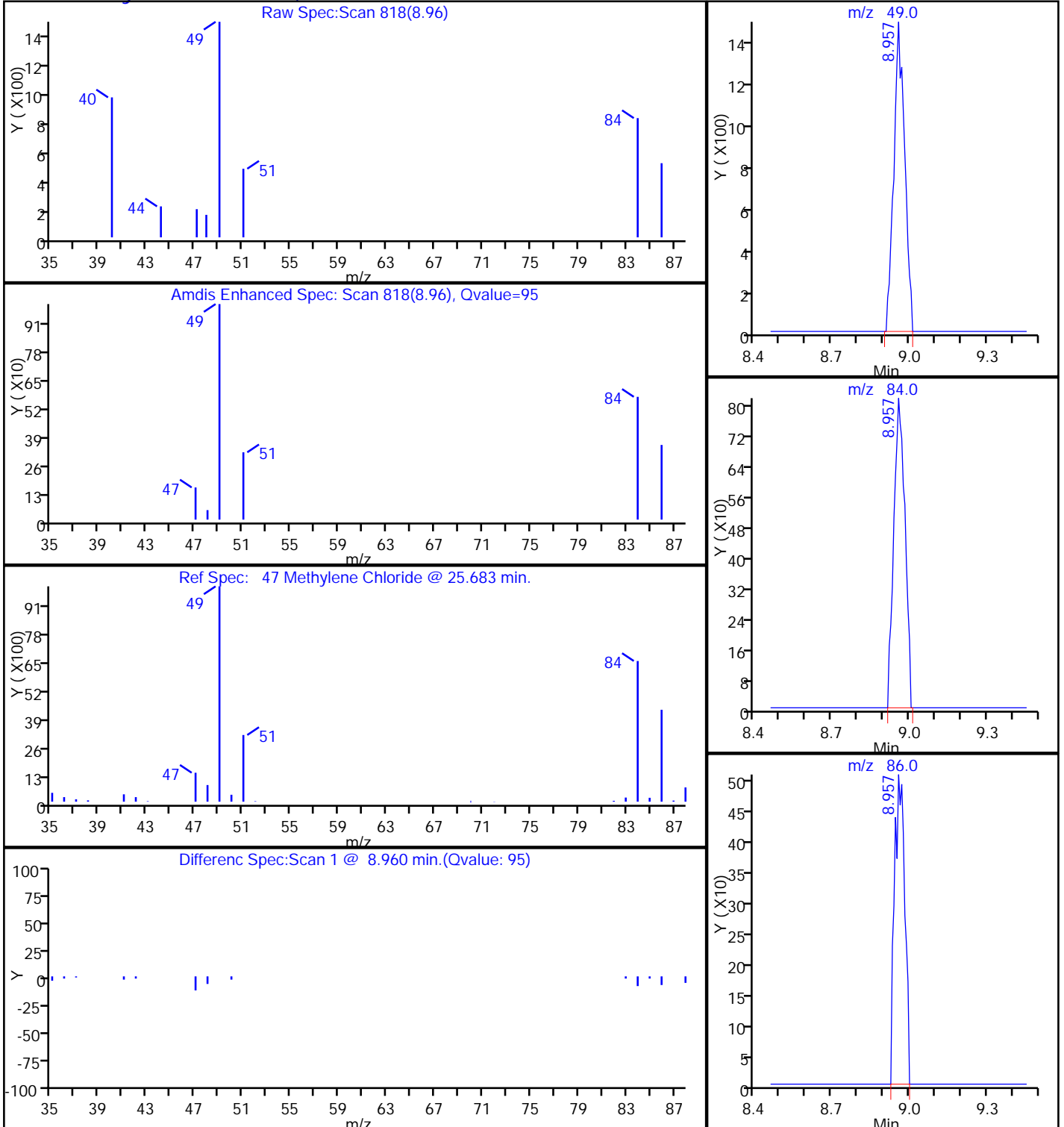
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

47 Methylene Chloride, CAS: 75-09-2



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19701-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000158 Lab Sample ID: 320-19701-1  
 Matrix: Air Lab File ID: 16062207.D  
 Analysis Method: TO-15 Date Collected: 06/20/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 06/22/2016 20:01  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 114913 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	0.20	J	0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19701-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000158 Lab Sample ID: 320-19701-1  
 Matrix: Air Lab File ID: 16062207.D  
 Analysis Method: TO-15 Date Collected: 06/20/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 06/22/2016 20:01  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 114913 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19701-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000158 Lab Sample ID: 320-19701-1  
 Matrix: Air Lab File ID: 16062207.D  
 Analysis Method: TO-15 Date Collected: 06/20/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 06/22/2016 20:01  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 114913 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	121		70-130
2037-26-5	Toluene-d8 (Surr)	99		70-130



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS11\20160622-31877.b\16062207.D  
 Lims ID: 320-19701-A-1  
 Client ID: 34000158  
 Sample Type: Client  
 Inject. Date: 22-Jun-2016 20:01:30 ALS Bottle#: 6 Worklist Smp#: 7  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-19701-A-1  
 Misc. Info.: 500mL  
 Operator ID: KY Instrument ID: ATMS11  
 Method: \\ChromNA\Sacramento\ChromData\ATMS11\20160622-31877.b\TO15\_ATMS11.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 24-Jun-2016 12:54:35 Calib Date: 22-Jun-2016 16:47:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS11\20160622-31877.b\16062203.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK032

First Level Reviewer: yangk

Date: 24-Jun-2016 12:42:06

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.458	11.457	0.001	91	45827	4.00	
* 2 1,4-Difluorobenzene	114	13.568	13.567	0.001	97	189618	4.00	
* 3 Chlorobenzene-d5 (IS)	117	19.680	19.679	0.001	92	152646	4.00	
\$ 4 1,2-Dichloroethane-d4 (Surr	65	12.637	12.630	0.007	97	77732	4.82	
\$ 5 Toluene-d8 (Surr)	100	16.821	16.820	0.001	97	112308	3.94	
\$ 6 4-Bromofluorobenzene (Surr	174	21.699	21.698	0.000	87	72737	3.86	
14 Propene	41	3.740	3.727	0.013	21	527	0.0401	
31 Acetone	43	6.909	6.884	0.025	94	2593	0.1443	
47 Methylene Chloride	49	8.058	8.045	0.013	69	867	0.0410	
48 Carbon disulfide	76	8.095	8.082	0.013	98	5593	0.1958	

**Reagents:**

VASUISIM\_00307

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS11\20160622-31877.b\16062207.D

Injection Date: 22-Jun-2016 20:01:30

Instrument ID: ATMS11

Operator ID: KY

Lims ID: 320-19701-A-1

Lab Sample ID: 320-19701-1

Worklist Smp#: 7

Client ID: 34000158

Purge Vol: 500.000 mL

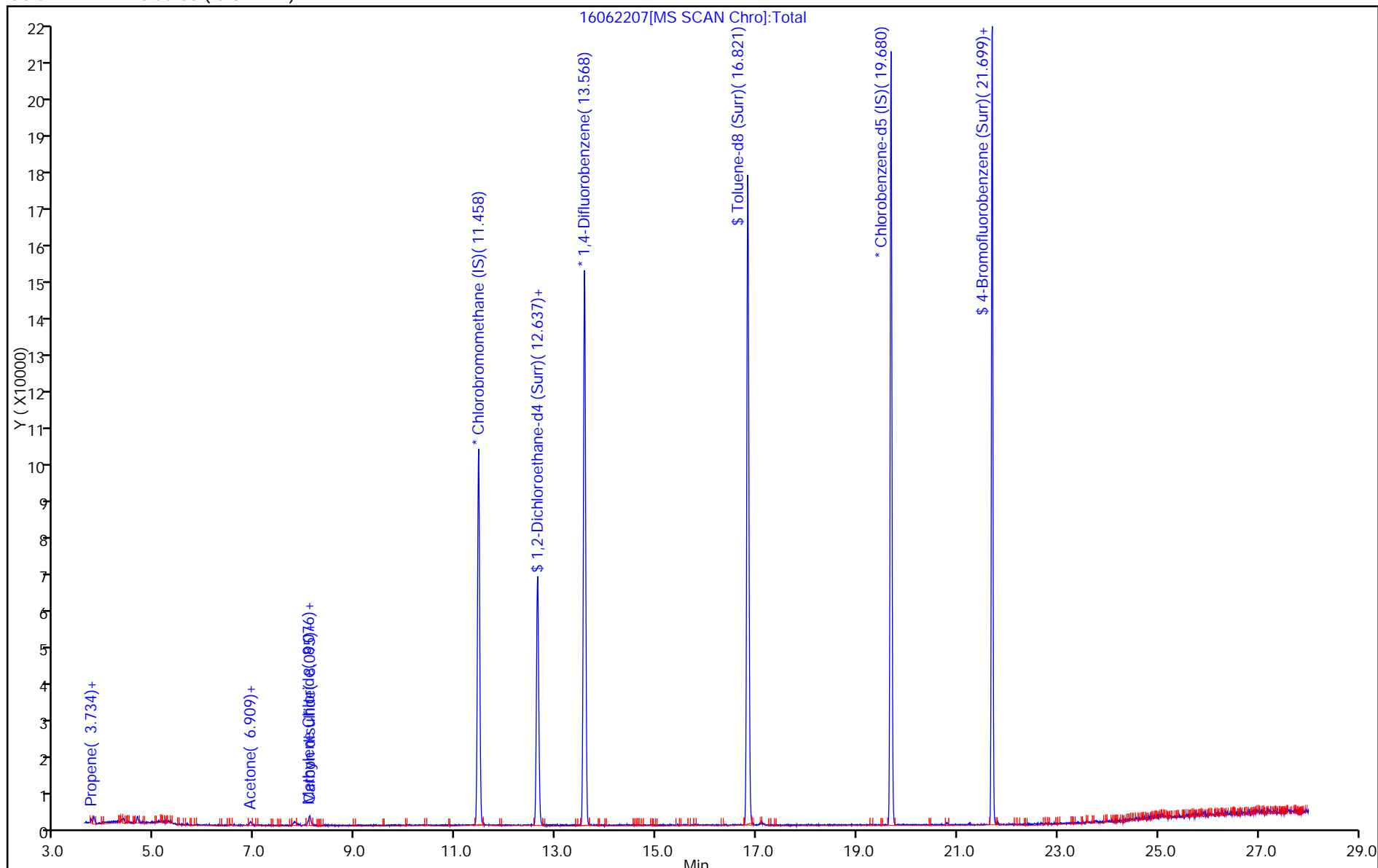
Dil. Factor: 1.0000

ALS Bottle#: 6

Method: TO15\_ATMS11

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS11\20160622-31877.b\16062207.D

Injection Date: 22-Jun-2016 20:01:30

Instrument ID: ATMS11

Lims ID: 320-19701-A-1

Lab Sample ID: 320-19701-1

Client ID: 34000158

Operator ID: KY

ALS Bottle#: 6 Worklist Smp#: 7

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

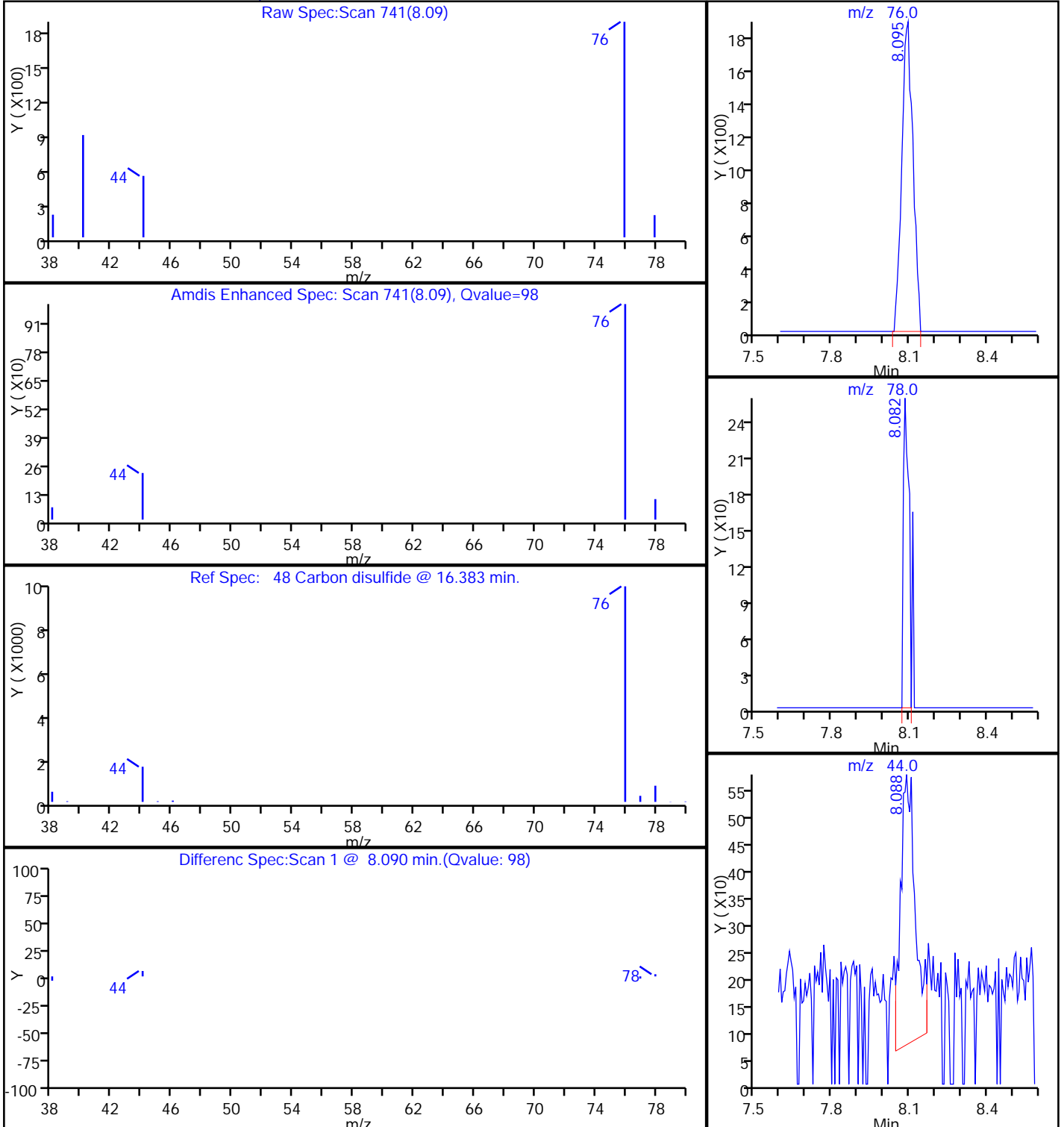
Method: TO15\_ATMS11

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

48 Carbon disulfide, CAS: 75-15-0



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19851-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000464 Lab Sample ID: 320-19851-1  
 Matrix: Air Lab File ID: 16062808.D  
 Analysis Method: TO-15 Date Collected: 06/27/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 06/28/2016 18:31  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 115745 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	0.40	J	0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19851-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000464 Lab Sample ID: 320-19851-1  
 Matrix: Air Lab File ID: 16062808.D  
 Analysis Method: TO-15 Date Collected: 06/27/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 06/28/2016 18:31  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 115745 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-19851-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000464 Lab Sample ID: 320-19851-1  
 Matrix: Air Lab File ID: 16062808.D  
 Analysis Method: TO-15 Date Collected: 06/27/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 06/28/2016 18:31  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 115745 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	107		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		70-130
2037-26-5	Toluene-d8 (Surr)	97		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS11\20160628-32065.b\16062808.D  
 Lims ID: 320-19851-A-1  
 Client ID: 34000464  
 Sample Type: Client  
 Inject. Date: 28-Jun-2016 18:31:30 ALS Bottle#: 6 Worklist Smp#: 8  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-19851-A-1  
 Misc. Info.: 500mL  
 Operator ID: KY Instrument ID: ATMS11  
 Method: \\ChromNA\Sacramento\ChromData\ATMS11\20160628-32065.b\TO15\_ATMS11.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 29-Jun-2016 14:20:48 Calib Date: 28-Jun-2016 14:13:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS11\20160628-32065.b\16062804.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK004

First Level Reviewer: yangk

Date: 29-Jun-2016 14:19:14

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.444	11.452	-0.008	91	39242	4.00	
* 2 1,4-Difluorobenzene	114	13.566	13.562	0.004	97	158087	4.00	
* 3 Chlorobenzene-d5 (IS)	117	19.678	19.680	-0.002	92	134957	4.00	
\$ 4 1,2-Dichloroethane-d4 (Surr)	65	12.630	12.625	0.005	97	66771	3.97	
\$ 5 Toluene-d8 (Surr)	100	16.820	16.822	-0.002	97	97451	3.88	
\$ 6 4-Bromofluorobenzene (Surr)	174	21.697	21.693	0.004	93	71815	4.29	
14 Propene	41	3.721	3.719	0.002	27	785	0.0571	
31 Acetone	43	6.889	6.869	0.020	97	2999	0.1567	
47 Methylene Chloride	49	8.050	8.049	0.001	74	1034	0.0519	
48 Carbon disulfide	76	8.075	8.073	0.002	98	10264	0.4029	

**Reagents:**

VASUISIM\_00307

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS11\20160628-32065.b\16062808.D

Injection Date: 28-Jun-2016 18:31:30

Instrument ID: ATMS11

Operator ID: KY

Lims ID: 320-19851-A-1

Lab Sample ID: 320-19851-1

Worklist Smp#: 8

Client ID: 34000464

Purge Vol: 500.000 mL

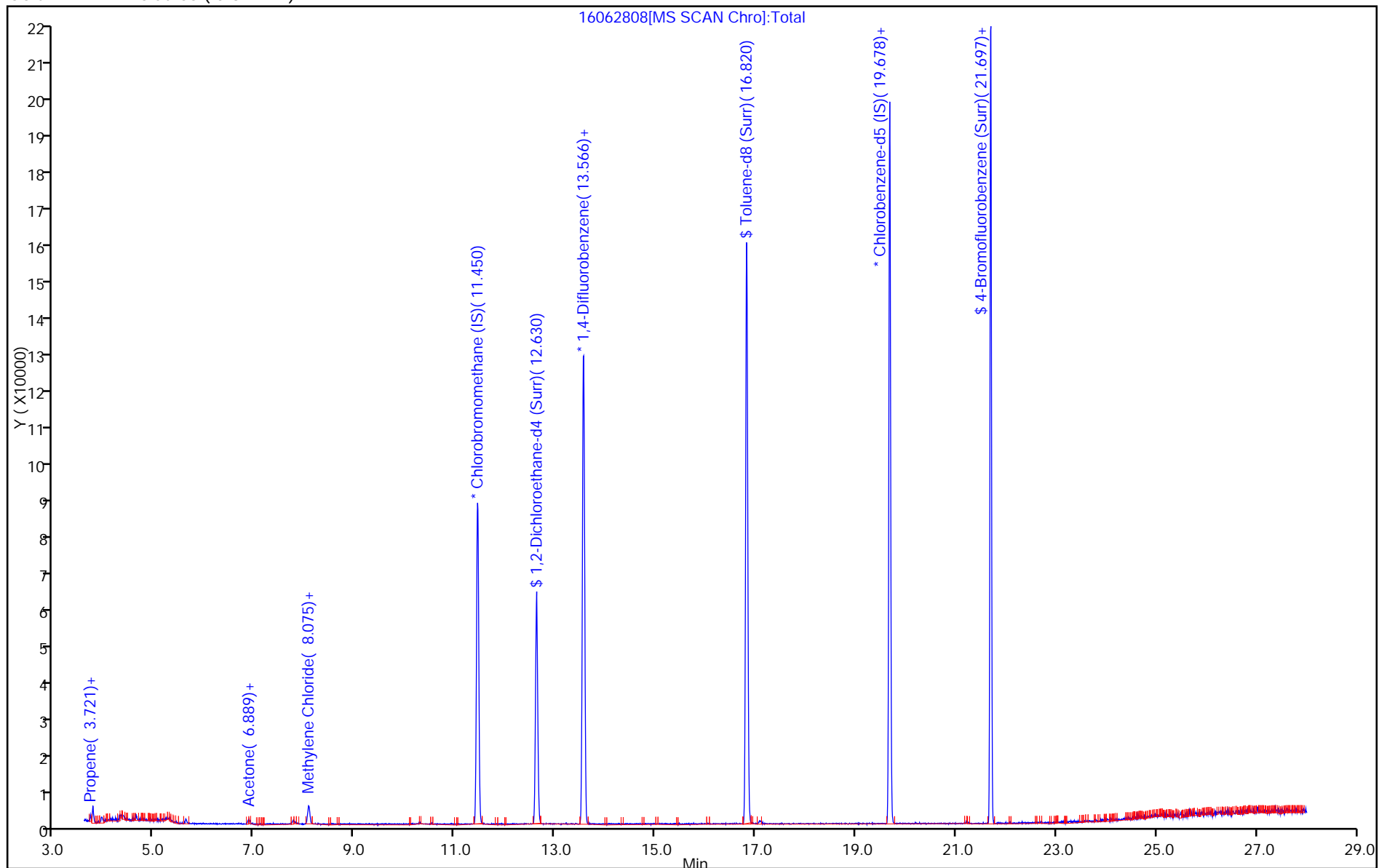
Dil. Factor: 1.0000

ALS Bottle#: 6

Method: TO15\_ATMS11

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)





TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS11\20160628-32065.b\16062808.D

Injection Date: 28-Jun-2016 18:31:30

Instrument ID: ATMS11

Lims ID: 320-19851-A-1

Lab Sample ID: 320-19851-1

Client ID: 34000464

Operator ID: KY

ALS Bottle#: 6 Worklist Smp#: 8

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

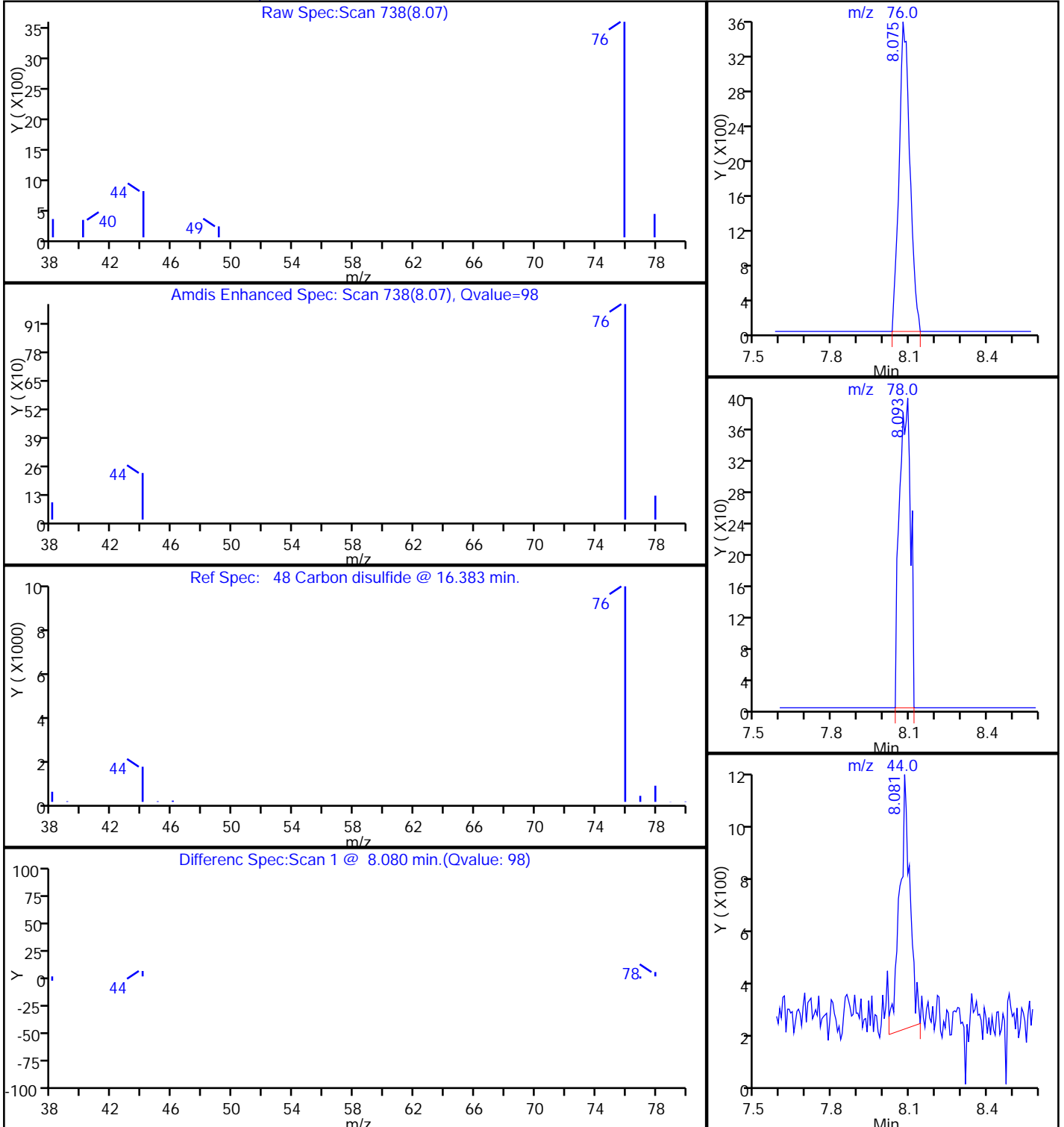
Method: TO15\_ATMS11

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

48 Carbon disulfide, CAS: 75-15-0



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20480-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001737 Lab Sample ID: 320-20480-1  
 Matrix: Air Lab File ID: MS9072618.D  
 Analysis Method: TO-15 Date Collected: 07/25/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 07/27/2016 03:17  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 119455 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.24	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20480-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001737 Lab Sample ID: 320-20480-1  
 Matrix: Air Lab File ID: MS9072618.D  
 Analysis Method: TO-15 Date Collected: 07/25/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 07/27/2016 03:17  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 119455 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	0.16	J	0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	0.22	J	0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	0.10	J	0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	0.055	J	0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20480-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001737 Lab Sample ID: 320-20480-1  
 Matrix: Air Lab File ID: MS9072618.D  
 Analysis Method: TO-15 Date Collected: 07/25/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 07/27/2016 03:17  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 119455 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	97		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	109		70-130
2037-26-5	Toluene-d8 (Surr)	98		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160726-32872.b\MS9072618.D  
 Lims ID: 320-20480-A-1  
 Client ID: 34001737  
 Sample Type: Client  
 Inject. Date: 27-Jul-2016 03:17:30 ALS Bottle#: 16 Worklist Smp#: 18  
 Purge Vol: 5.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-20480-A-1  
 Misc. Info.: 500  
 Operator ID: SV Instrument ID: ATMS9  
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20160726-32872.b\TO15\_ATMS9N.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 27-Jul-2016 18:22:46 Calib Date: 28-Jun-2016 01:59:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20160627-32031.b\MS9062712.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK001

First Level Reviewer: phanthasena

Date: 27-Jul-2016 18:22:45

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.419	12.444	-0.025	95	40186	4.00	
* 2 1,4-Difluorobenzene	114	14.524	14.536	-0.012	95	183230	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.450	20.450	0.000	91	153738	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.599	13.612	-0.013	98	68744	4.36	
\$ 5 Toluene-d8 (Surr)	100	17.694	17.700	-0.006	97	116204	3.91	
\$ 6 4-Bromofluorobenzene (Surr	174	22.366	22.366	0.000	84	90260	3.90	
14 Propene	41	4.176	4.170	0.006	48	719	0.1007	
15 Dichlorodifluoromethane	85	4.255	4.243	0.012	94	1413	0.0493	
22 Butane	43	4.955	4.943	0.012	1	460	0.0272	
31 Acetone	43	7.698	7.644	0.054	91	3701	0.2422	
47 Methylene Chloride	49	8.946	8.958	-0.012	90	2636	0.2212	
55 Hexane	41	10.089	10.101	-0.012	66	1953	0.1614	
85 Toluene	91	17.846	17.852	-0.006	91	2811	0.0554	
126 1,2,4-Trichlorobenzene	180	26.825	26.831	-0.006	58	342	0.0132	

**Reagents:**

VASUISIM\_00318 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160726-32872.b\MS9072618.D

Injection Date: 27-Jul-2016 03:17:30

Instrument ID: ATMS9

Operator ID: SV

Lims ID: 320-20480-A-1

Lab Sample ID: 320-20480-1

Worklist Smp#: 18

Client ID: 34001737

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

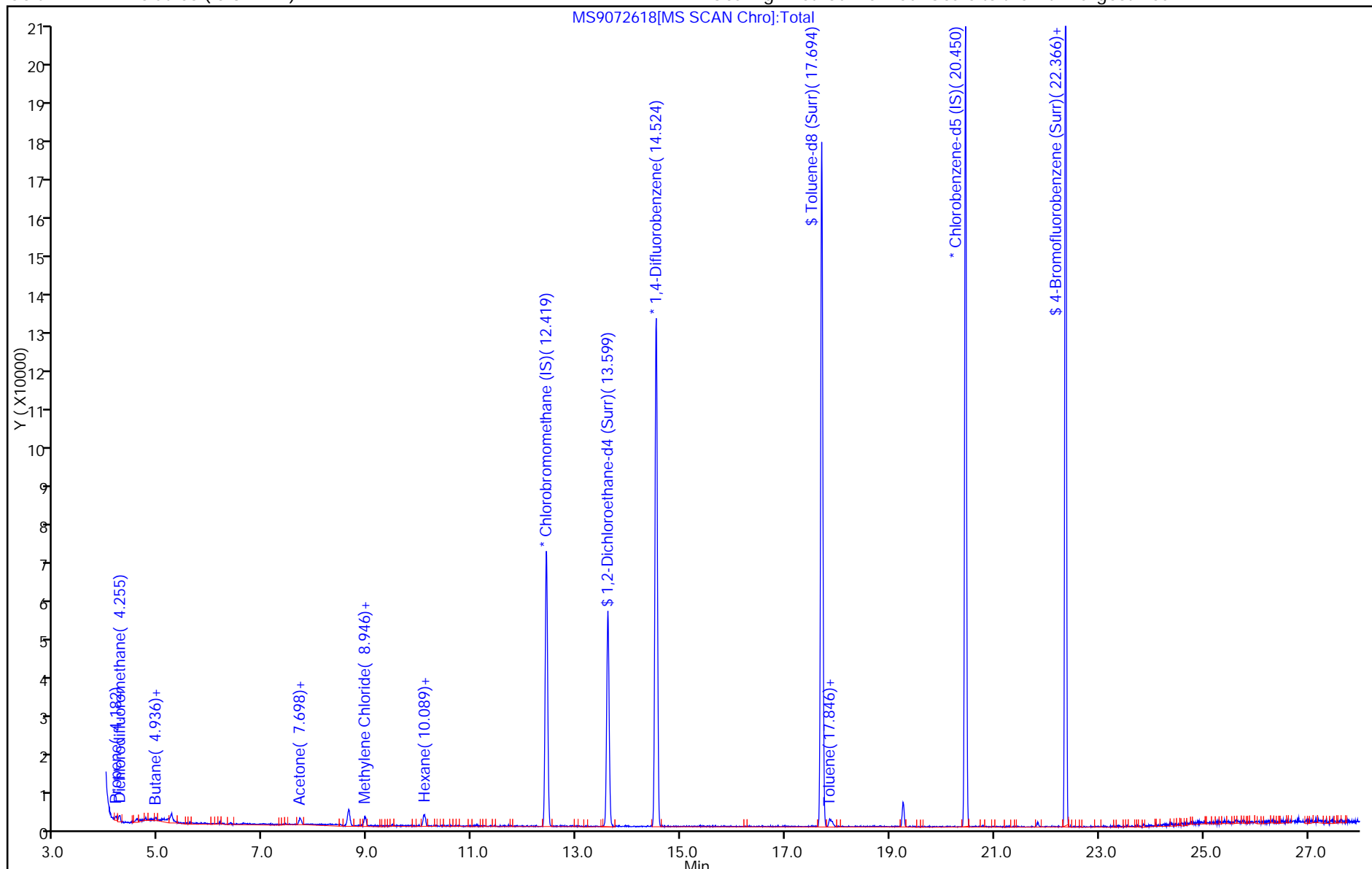
ALS Bottle#: 16

Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160726-32872.b\MS9072618.D

Injection Date: 27-Jul-2016 03:17:30

Instrument ID: ATMS9

Lims ID: 320-20480-A-1

Lab Sample ID: 320-20480-1

Client ID: 34001737

Operator ID: SV

ALS Bottle#: 16 Worklist Smp#: 18

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

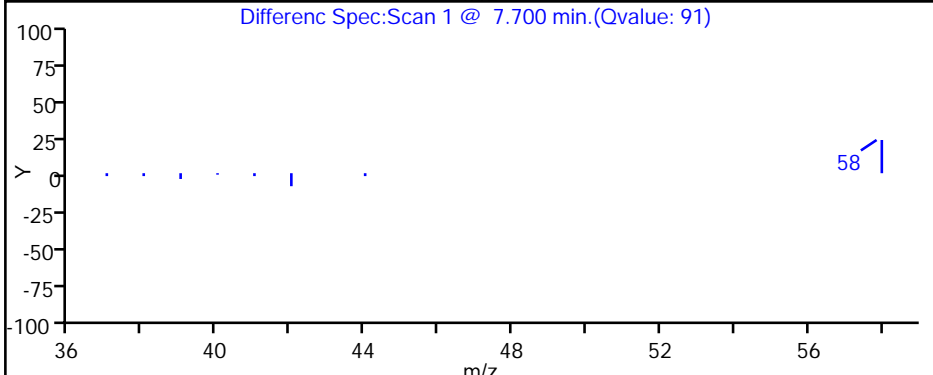
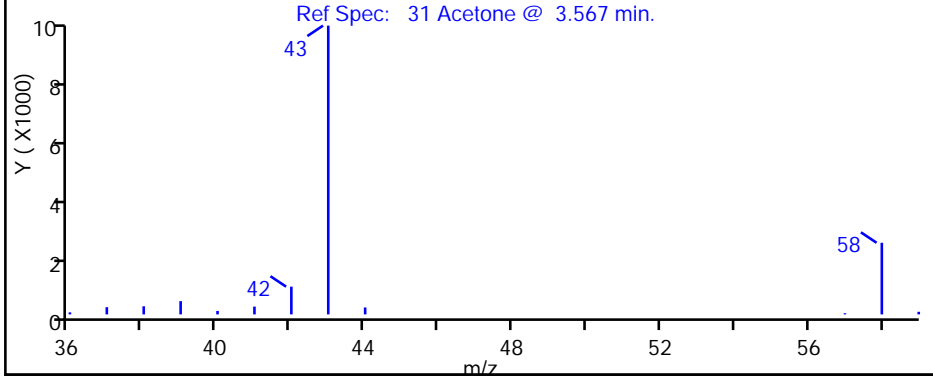
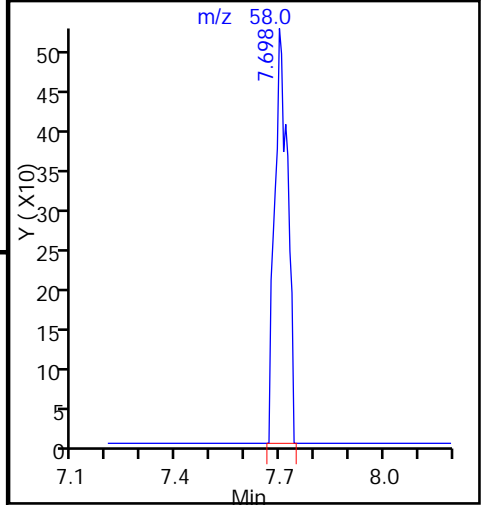
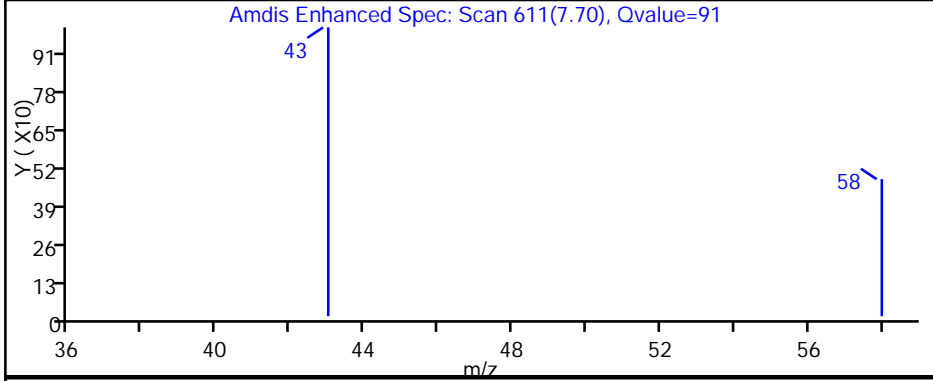
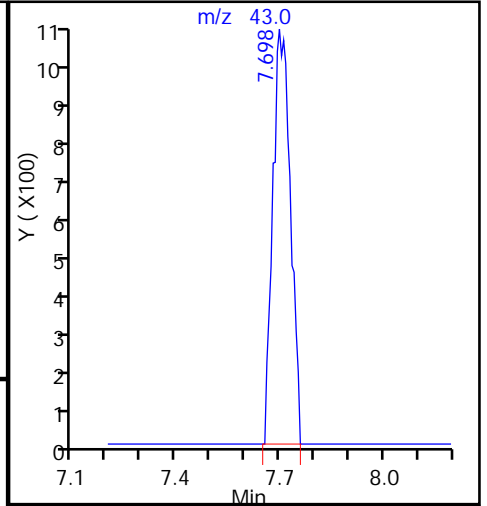
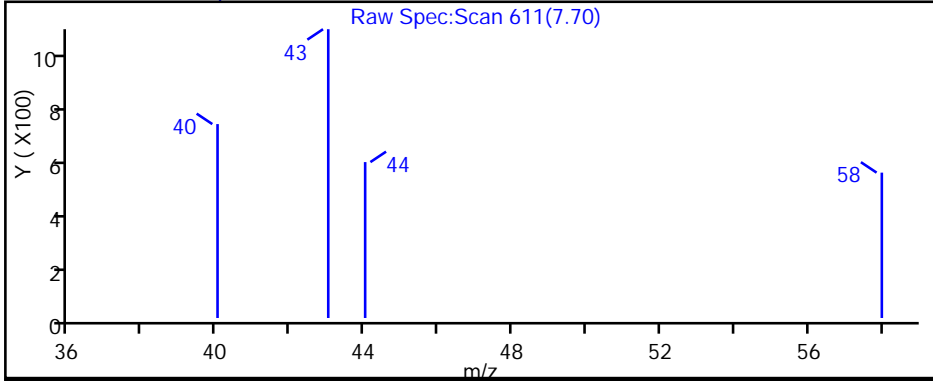
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160726-32872.b\MS9072618.D

Injection Date: 27-Jul-2016 03:17:30

Instrument ID: ATMS9

Lims ID: 320-20480-A-1

Lab Sample ID: 320-20480-1

Client ID: 34001737

Operator ID: SV

ALS Bottle#: 16

Worklist Smp#: 18

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

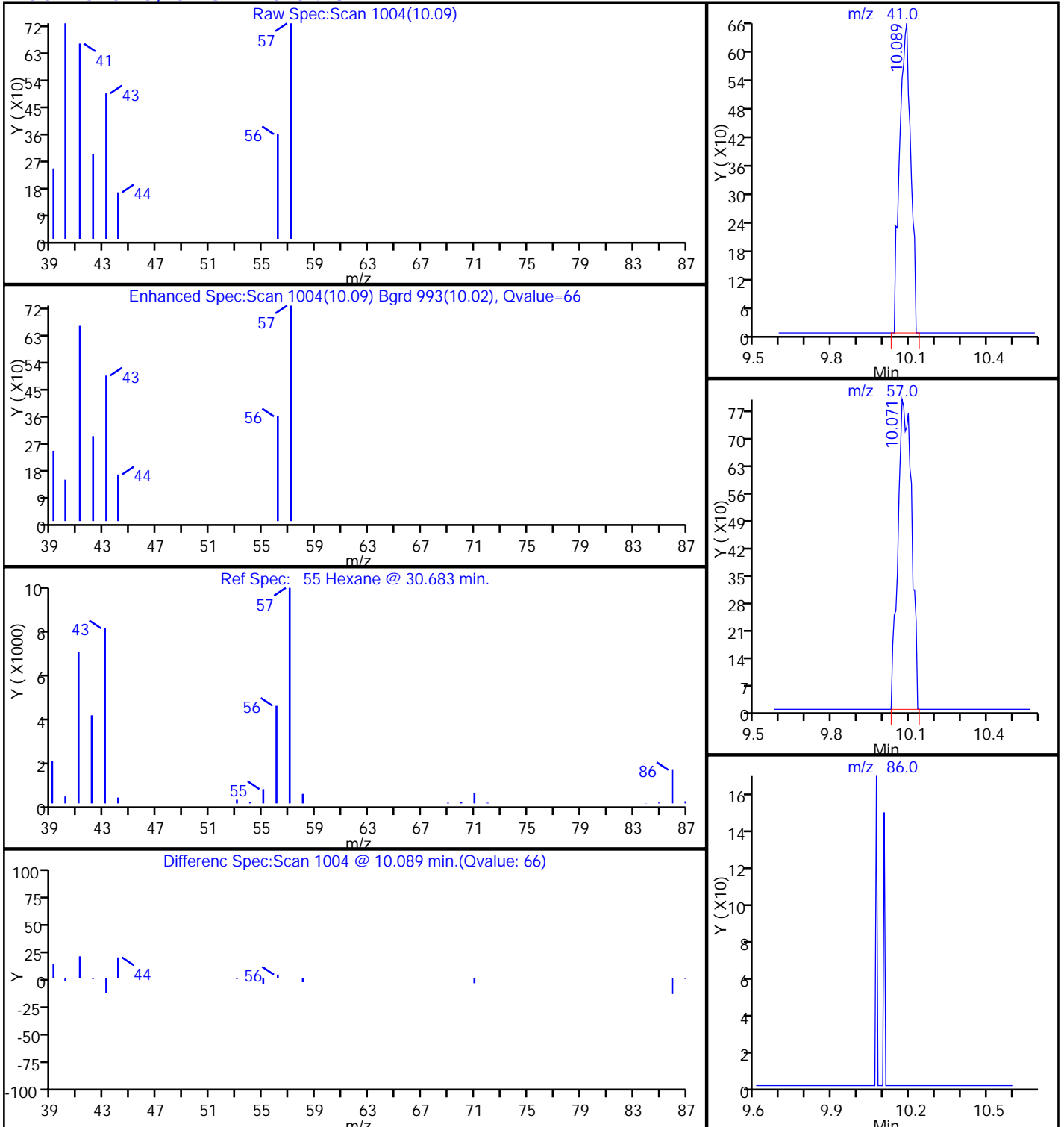
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

55 Hexane, CAS: 110-54-3





TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160726-32872.b\MS9072618.D

Injection Date: 27-Jul-2016 03:17:30

Instrument ID: ATMS9

Lims ID: 320-20480-A-1

Lab Sample ID: 320-20480-1

Client ID: 34001737

Operator ID: SV

ALS Bottle#: 16 Worklist Smp#: 18

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

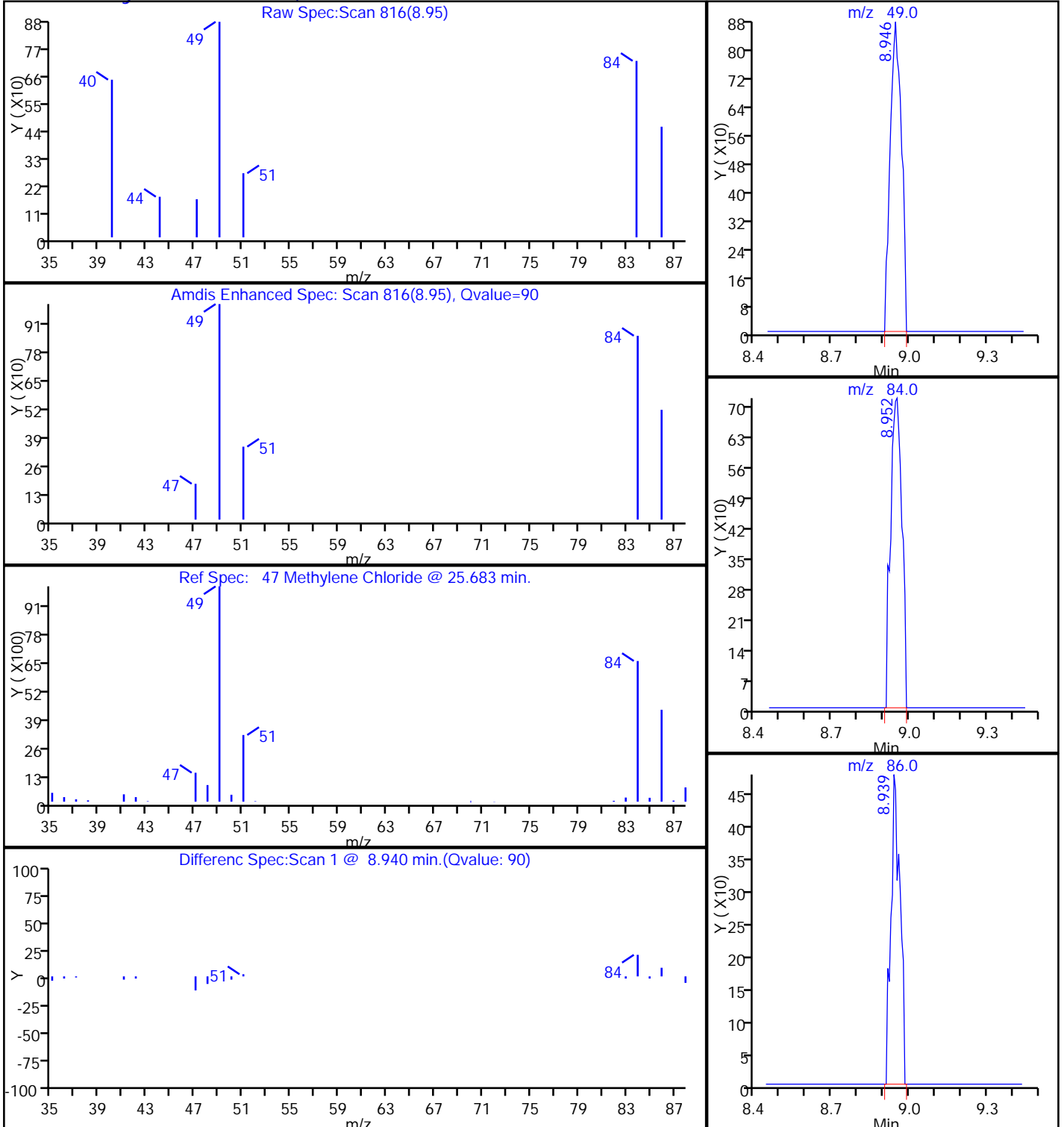
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

47 Methylene Chloride, CAS: 75-09-2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160726-32872.b\MS9072618.D

Injection Date: 27-Jul-2016 03:17:30

Instrument ID: ATMS9

Lims ID: 320-20480-A-1

Lab Sample ID: 320-20480-1

Client ID: 34001737

Operator ID: SV

ALS Bottle#: 16 Worklist Smp#: 18

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

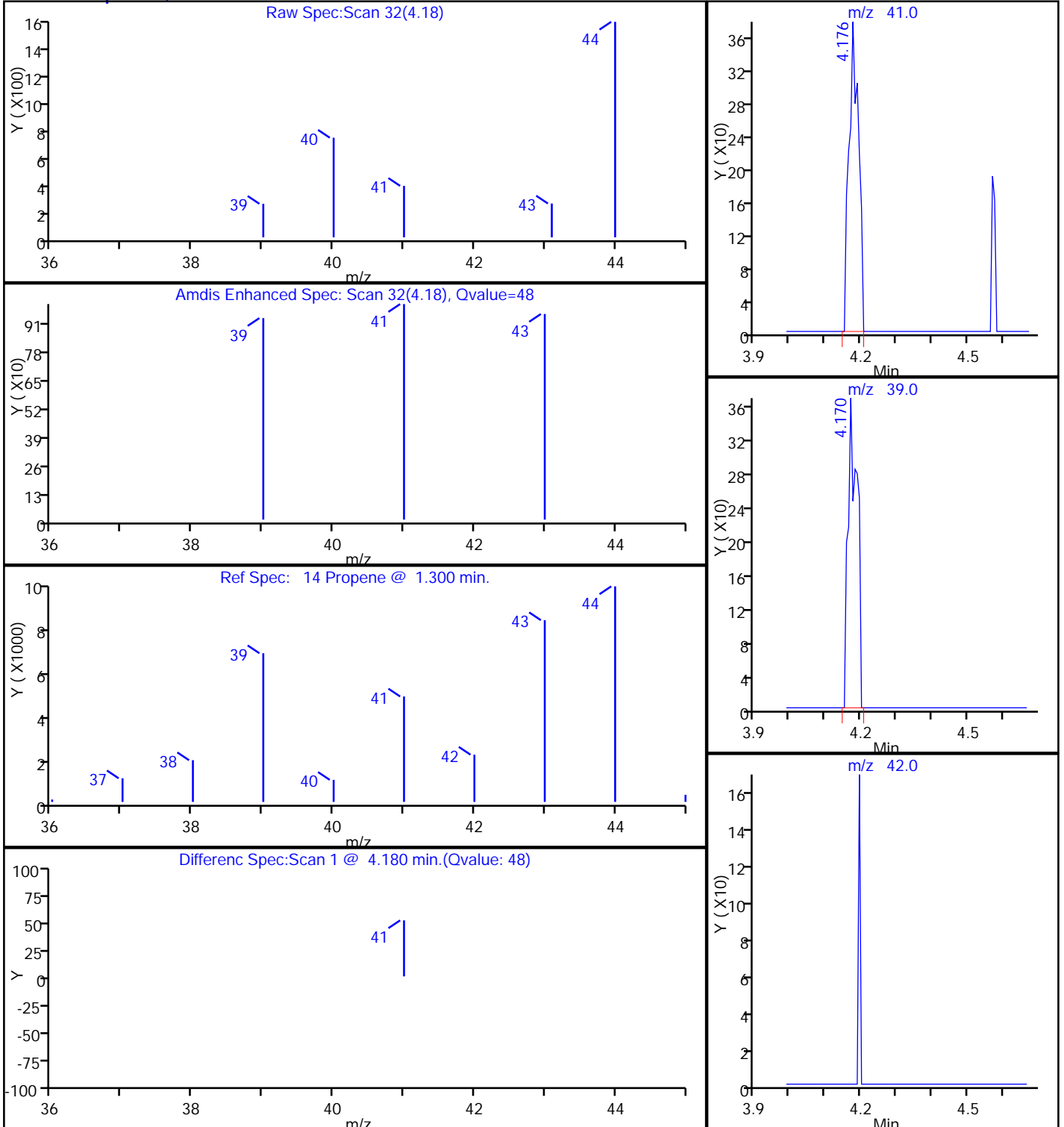
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

14 Propene, CAS: 115-07-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160726-32872.b\MS9072618.D

Injection Date: 27-Jul-2016 03:17:30

Instrument ID: ATMS9

Lims ID: 320-20480-A-1

Lab Sample ID: 320-20480-1

Client ID: 34001737

Operator ID: SV

ALS Bottle#: 16

Worklist Smp#: 18

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

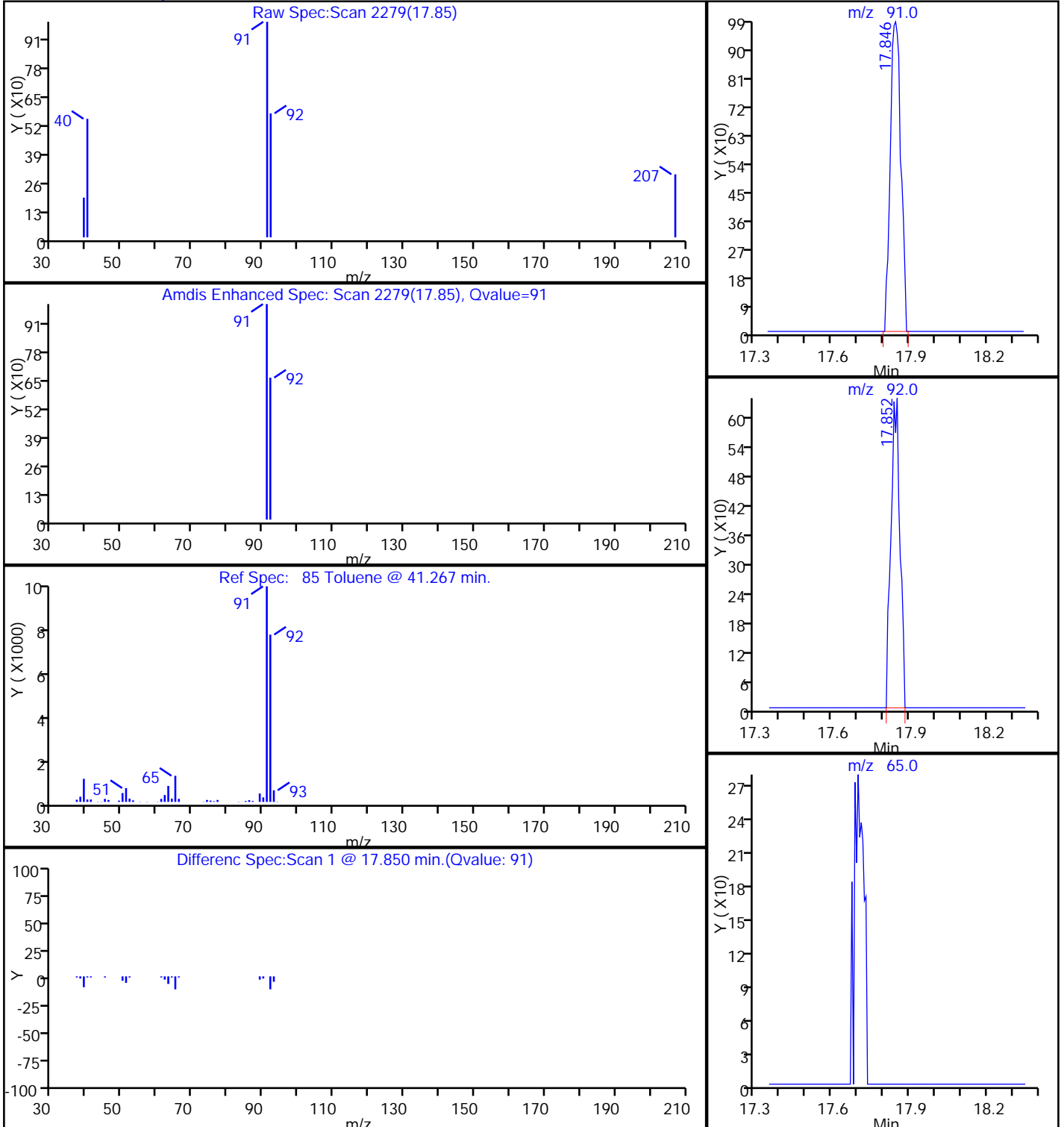
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

85 Toluene, CAS: 108-88-3



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-21625-1  
Client Project/Site: NuStar Vancouver

For:  
Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
9/20/2016 3:36:32 PM

Cathy Gamble, Project Management Assistant I  
(253)922-2310  
[cathy.gamble@testamericainc.com](mailto:cathy.gamble@testamericainc.com)



### LINKS

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results through  
**TotalAccess**

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Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

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**Job ID: 320-21625-1**

---

**Laboratory: TestAmerica Sacramento**

---

**Narrative**

**Receipt**

The samples were received on 9/9/2016 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

**Air - GC/MS VOA**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**VOA Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Detection Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Client Sample ID: SVE\_SOUTHPRECARBON\_83016

## Lab Sample ID: 320-21625-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	85		28		ppb v/v	71.1		TO-15	Total/NA
Tetrachloroethene	4100		28		ppb v/v	71.1		TO-15	Total/NA
Trichloroethene	250		28		ppb v/v	71.1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	340		110		ug/m3 Air	71.1		TO-15	Total/NA
Tetrachloroethene	28000		190		ug/m3 Air	71.1		TO-15	Total/NA
Trichloroethene	1400		150		ug/m3 Air	71.1		TO-15	Total/NA

## Client Sample ID: SVE\_SOUTH\_POSTCARBON\_83016

## Lab Sample ID: 320-21625-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	92		27		ppb v/v	66.8		TO-15	Total/NA
Tetrachloroethene	2900		27		ppb v/v	66.8		TO-15	Total/NA
1,1,1-Trichloroethane	39		20		ppb v/v	66.8		TO-15	Total/NA
Trichloroethene	170		27		ppb v/v	66.8		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	370		110		ug/m3 Air	66.8		TO-15	Total/NA
Tetrachloroethene	19000		180		ug/m3 Air	66.8		TO-15	Total/NA
1,1,1-Trichloroethane	210		110		ug/m3 Air	66.8		TO-15	Total/NA
Trichloroethene	910		140		ug/m3 Air	66.8		TO-15	Total/NA

## Client Sample ID: SVE\_NORTH\_EFFLUENT\_83016

## Lab Sample ID: 320-21625-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloromethane	0.84		0.80		ppb v/v	1		TO-15	Total/NA
Dichlorodifluoromethane	0.43		0.40		ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	8.0		0.40		ppb v/v	1		TO-15	Total/NA
Trichloroethene	0.43		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloromethane	1.7		1.7		ug/m3 Air	1		TO-15	Total/NA
Dichlorodifluoromethane	2.1		2.0		ug/m3 Air	1		TO-15	Total/NA
Tetrachloroethene	54		2.7		ug/m3 Air	1		TO-15	Total/NA
Trichloroethene	2.3		2.1		ug/m3 Air	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento



# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

**Client Sample ID: SVE\_SOUTHPRECARBON\_83016**

**Lab Sample ID: 320-21625-1**

**Date Collected: 08/30/16 14:01**

**Matrix: Air**

**Date Received: 09/09/16 09:30**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		360		ppb v/v			09/16/16 03:50	71.1
Benzene	ND		28		ppb v/v			09/16/16 03:50	71.1
Benzyl chloride	ND		57		ppb v/v			09/16/16 03:50	71.1
Bromodichloromethane	ND		21		ppb v/v			09/16/16 03:50	71.1
Bromoform	ND		28		ppb v/v			09/16/16 03:50	71.1
Bromomethane	ND		57		ppb v/v			09/16/16 03:50	71.1
2-Butanone (MEK)	ND		57		ppb v/v			09/16/16 03:50	71.1
Carbon disulfide	ND		57		ppb v/v			09/16/16 03:50	71.1
Carbon tetrachloride	ND		57		ppb v/v			09/16/16 03:50	71.1
Chlorobenzene	ND		21		ppb v/v			09/16/16 03:50	71.1
Dibromochloromethane	ND		28		ppb v/v			09/16/16 03:50	71.1
Chloroethane	ND		57		ppb v/v			09/16/16 03:50	71.1
Chloroform	ND		21		ppb v/v			09/16/16 03:50	71.1
Chloromethane	ND		57		ppb v/v			09/16/16 03:50	71.1
1,2-Dibromoethane (EDB)	ND		57		ppb v/v			09/16/16 03:50	71.1
1,2-Dichlorobenzene	ND		28		ppb v/v			09/16/16 03:50	71.1
1,3-Dichlorobenzene	ND		28		ppb v/v			09/16/16 03:50	71.1
1,4-Dichlorobenzene	ND		28		ppb v/v			09/16/16 03:50	71.1
Dichlorodifluoromethane	ND		28		ppb v/v			09/16/16 03:50	71.1
1,1-Dichloroethane	ND		21		ppb v/v			09/16/16 03:50	71.1
1,2-Dichloroethane	ND		57		ppb v/v			09/16/16 03:50	71.1
1,1-Dichloroethene	ND		57		ppb v/v			09/16/16 03:50	71.1
<b>cis-1,2-Dichloroethene</b>	<b>85</b>		28		ppb v/v			09/16/16 03:50	71.1
trans-1,2-Dichloroethene	ND		28		ppb v/v			09/16/16 03:50	71.1
1,2-Dichloropropane	ND		28		ppb v/v			09/16/16 03:50	71.1
cis-1,3-Dichloropropene	ND		28		ppb v/v			09/16/16 03:50	71.1
trans-1,3-Dichloropropene	ND		28		ppb v/v			09/16/16 03:50	71.1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		28		ppb v/v			09/16/16 03:50	71.1
Ethylbenzene	ND		28		ppb v/v			09/16/16 03:50	71.1
4-Ethyltoluene	ND		28		ppb v/v			09/16/16 03:50	71.1
Hexachlorobutadiene	ND		140		ppb v/v			09/16/16 03:50	71.1
2-Hexanone	ND		28		ppb v/v			09/16/16 03:50	71.1
Methylene Chloride	ND		28		ppb v/v			09/16/16 03:50	71.1
4-Methyl-2-pentanone (MIBK)	ND		28		ppb v/v			09/16/16 03:50	71.1
Styrene	ND		28		ppb v/v			09/16/16 03:50	71.1
1,1,2,2-Tetrachloroethane	ND		28		ppb v/v			09/16/16 03:50	71.1
<b>Tetrachloroethene</b>	<b>4100</b>		28		ppb v/v			09/16/16 03:50	71.1
Toluene	ND		28		ppb v/v			09/16/16 03:50	71.1
1,2,4-Trichlorobenzene	ND		140		ppb v/v			09/16/16 03:50	71.1
1,1,1-Trichloroethane	ND		21		ppb v/v			09/16/16 03:50	71.1
1,1,2-Trichloroethane	ND		28		ppb v/v			09/16/16 03:50	71.1
<b>Trichloroethene</b>	<b>250</b>		28		ppb v/v			09/16/16 03:50	71.1
Trichlorofluoromethane	ND		28		ppb v/v			09/16/16 03:50	71.1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		28		ppb v/v			09/16/16 03:50	71.1
1,2,4-Trimethylbenzene	ND		57		ppb v/v			09/16/16 03:50	71.1
1,3,5-Trimethylbenzene	ND		28		ppb v/v			09/16/16 03:50	71.1
Vinyl acetate	ND		57		ppb v/v			09/16/16 03:50	71.1
Vinyl chloride	ND		28		ppb v/v			09/16/16 03:50	71.1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

**Client Sample ID: SVE\_SOUTHPRECARBON\_83016**

**Lab Sample ID: 320-21625-1**

**Date Collected: 08/30/16 14:01**

**Matrix: Air**

**Date Received: 09/09/16 09:30**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		57		ppb v/v			09/16/16 03:50	71.1
o-Xylene	ND		28		ppb v/v			09/16/16 03:50	71.1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		840		ug/m3 Air			09/16/16 03:50	71.1
Benzene	ND		91		ug/m3 Air			09/16/16 03:50	71.1
Benzyl chloride	ND		290		ug/m3 Air			09/16/16 03:50	71.1
Bromodichloromethane	ND		140		ug/m3 Air			09/16/16 03:50	71.1
Bromoform	ND		290		ug/m3 Air			09/16/16 03:50	71.1
Bromomethane	ND		220		ug/m3 Air			09/16/16 03:50	71.1
2-Butanone (MEK)	ND		170		ug/m3 Air			09/16/16 03:50	71.1
Carbon disulfide	ND		180		ug/m3 Air			09/16/16 03:50	71.1
Carbon tetrachloride	ND		360		ug/m3 Air			09/16/16 03:50	71.1
Chlorobenzene	ND		98		ug/m3 Air			09/16/16 03:50	71.1
Dibromochloromethane	ND		240		ug/m3 Air			09/16/16 03:50	71.1
Chloroethane	ND		150		ug/m3 Air			09/16/16 03:50	71.1
Chloroform	ND		100		ug/m3 Air			09/16/16 03:50	71.1
Chloromethane	ND		120		ug/m3 Air			09/16/16 03:50	71.1
1,2-Dibromoethane (EDB)	ND		440		ug/m3 Air			09/16/16 03:50	71.1
1,2-Dichlorobenzene	ND		170		ug/m3 Air			09/16/16 03:50	71.1
1,3-Dichlorobenzene	ND		170		ug/m3 Air			09/16/16 03:50	71.1
1,4-Dichlorobenzene	ND		170		ug/m3 Air			09/16/16 03:50	71.1
Dichlorodifluoromethane	ND		140		ug/m3 Air			09/16/16 03:50	71.1
1,1-Dichloroethane	ND		86		ug/m3 Air			09/16/16 03:50	71.1
1,2-Dichloroethane	ND		230		ug/m3 Air			09/16/16 03:50	71.1
1,1-Dichloroethene	ND		230		ug/m3 Air			09/16/16 03:50	71.1
<b>cis-1,2-Dichloroethene</b>	<b>340</b>		110		ug/m3 Air			09/16/16 03:50	71.1
trans-1,2-Dichloroethene	ND		110		ug/m3 Air			09/16/16 03:50	71.1
1,2-Dichloropropane	ND		130		ug/m3 Air			09/16/16 03:50	71.1
cis-1,3-Dichloropropene	ND		130		ug/m3 Air			09/16/16 03:50	71.1
trans-1,3-Dichloropropene	ND		130		ug/m3 Air			09/16/16 03:50	71.1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		200		ug/m3 Air			09/16/16 03:50	71.1
Ethylbenzene	ND		120		ug/m3 Air			09/16/16 03:50	71.1
4-Ethyltoluene	ND		140		ug/m3 Air			09/16/16 03:50	71.1
Hexachlorobutadiene	ND		1500		ug/m3 Air			09/16/16 03:50	71.1
2-Hexanone	ND		120		ug/m3 Air			09/16/16 03:50	71.1
Methylene Chloride	ND		99		ug/m3 Air			09/16/16 03:50	71.1
4-Methyl-2-pentanone (MIBK)	ND		120		ug/m3 Air			09/16/16 03:50	71.1
Styrene	ND		120		ug/m3 Air			09/16/16 03:50	71.1
1,1,2,2-Tetrachloroethane	ND		200		ug/m3 Air			09/16/16 03:50	71.1
<b>Tetrachloroethene</b>	<b>28000</b>		190		ug/m3 Air			09/16/16 03:50	71.1
Toluene	ND		110		ug/m3 Air			09/16/16 03:50	71.1
1,2,4-Trichlorobenzene	ND		1100		ug/m3 Air			09/16/16 03:50	71.1
1,1,1-Trichloroethane	ND		120		ug/m3 Air			09/16/16 03:50	71.1
1,1,2-Trichloroethane	ND		160		ug/m3 Air			09/16/16 03:50	71.1
<b>Trichloroethene</b>	<b>1400</b>		150		ug/m3 Air			09/16/16 03:50	71.1
Trichlorofluoromethane	ND		160		ug/m3 Air			09/16/16 03:50	71.1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		220		ug/m3 Air			09/16/16 03:50	71.1
1,2,4-Trimethylbenzene	ND		280		ug/m3 Air			09/16/16 03:50	71.1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

**Client Sample ID: SVE\_SOUTHPRECARBON\_83016**

**Lab Sample ID: 320-21625-1**

Date Collected: 08/30/16 14:01

Matrix: Air

Date Received: 09/09/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trimethylbenzene	ND		140		ug/m3 Air			09/16/16 03:50	71.1
Vinyl acetate	ND		200		ug/m3 Air			09/16/16 03:50	71.1
Vinyl chloride	ND		73		ug/m3 Air			09/16/16 03:50	71.1
m,p-Xylene	ND		250		ug/m3 Air			09/16/16 03:50	71.1
o-Xylene	ND		120		ug/m3 Air			09/16/16 03:50	71.1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	80		70 - 130		09/16/16 03:50	71.1
1,2-Dichloroethane-d4 (Surr)	84		70 - 130		09/16/16 03:50	71.1
Toluene-d8 (Surr)	93		70 - 130		09/16/16 03:50	71.1

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_83016**

**Lab Sample ID: 320-21625-2**

Date Collected: 08/30/16 14:06

Matrix: Air

Date Received: 09/09/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		330		ppb v/v			09/16/16 04:42	66.8
Benzene	ND		27		ppb v/v			09/16/16 04:42	66.8
Benzyl chloride	ND		53		ppb v/v			09/16/16 04:42	66.8
Bromodichloromethane	ND		20		ppb v/v			09/16/16 04:42	66.8
Bromoform	ND		27		ppb v/v			09/16/16 04:42	66.8
Bromomethane	ND		53		ppb v/v			09/16/16 04:42	66.8
2-Butanone (MEK)	ND		53		ppb v/v			09/16/16 04:42	66.8
Carbon disulfide	ND		53		ppb v/v			09/16/16 04:42	66.8
Carbon tetrachloride	ND		53		ppb v/v			09/16/16 04:42	66.8
Chlorobenzene	ND		20		ppb v/v			09/16/16 04:42	66.8
Dibromochloromethane	ND		27		ppb v/v			09/16/16 04:42	66.8
Chloroethane	ND		53		ppb v/v			09/16/16 04:42	66.8
Chloroform	ND		20		ppb v/v			09/16/16 04:42	66.8
Chloromethane	ND		53		ppb v/v			09/16/16 04:42	66.8
1,2-Dibromoethane (EDB)	ND		53		ppb v/v			09/16/16 04:42	66.8
1,2-Dichlorobenzene	ND		27		ppb v/v			09/16/16 04:42	66.8
1,3-Dichlorobenzene	ND		27		ppb v/v			09/16/16 04:42	66.8
1,4-Dichlorobenzene	ND		27		ppb v/v			09/16/16 04:42	66.8
Dichlorodifluoromethane	ND		27		ppb v/v			09/16/16 04:42	66.8
1,1-Dichloroethane	ND		20		ppb v/v			09/16/16 04:42	66.8
1,2-Dichloroethane	ND		53		ppb v/v			09/16/16 04:42	66.8
1,1-Dichloroethene	ND		53		ppb v/v			09/16/16 04:42	66.8
<b>cis-1,2-Dichloroethene</b>	<b>92</b>		27		ppb v/v			09/16/16 04:42	66.8
trans-1,2-Dichloroethene	ND		27		ppb v/v			09/16/16 04:42	66.8
1,2-Dichloropropane	ND		27		ppb v/v			09/16/16 04:42	66.8
cis-1,3-Dichloropropene	ND		27		ppb v/v			09/16/16 04:42	66.8
trans-1,3-Dichloropropene	ND		27		ppb v/v			09/16/16 04:42	66.8
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		27		ppb v/v			09/16/16 04:42	66.8
Ethylbenzene	ND		27		ppb v/v			09/16/16 04:42	66.8
4-Ethyltoluene	ND		27		ppb v/v			09/16/16 04:42	66.8
Hexachlorobutadiene	ND		130		ppb v/v			09/16/16 04:42	66.8

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_83016**

**Lab Sample ID: 320-21625-2**

Date Collected: 08/30/16 14:06

Matrix: Air

Date Received: 09/09/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Hexanone	ND		27		ppb v/v			09/16/16 04:42	66.8
Methylene Chloride	ND		27		ppb v/v			09/16/16 04:42	66.8
4-Methyl-2-pentanone (MIBK)	ND		27		ppb v/v			09/16/16 04:42	66.8
Styrene	ND		27		ppb v/v			09/16/16 04:42	66.8
1,1,2,2-Tetrachloroethane	ND		27		ppb v/v			09/16/16 04:42	66.8
<b>Tetrachloroethene</b>	<b>2900</b>		27		ppb v/v			09/16/16 04:42	66.8
Toluene	ND		27		ppb v/v			09/16/16 04:42	66.8
1,2,4-Trichlorobenzene	ND		130		ppb v/v			09/16/16 04:42	66.8
<b>1,1,1-Trichloroethane</b>	<b>39</b>		20		ppb v/v			09/16/16 04:42	66.8
1,1,2-Trichloroethane	ND		27		ppb v/v			09/16/16 04:42	66.8
<b>Trichloroethene</b>	<b>170</b>		27		ppb v/v			09/16/16 04:42	66.8
Trichlorofluoromethane	ND		27		ppb v/v			09/16/16 04:42	66.8
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		27		ppb v/v			09/16/16 04:42	66.8
1,2,4-Trimethylbenzene	ND		53		ppb v/v			09/16/16 04:42	66.8
1,3,5-Trimethylbenzene	ND		27		ppb v/v			09/16/16 04:42	66.8
Vinyl acetate	ND		53		ppb v/v			09/16/16 04:42	66.8
Vinyl chloride	ND		27		ppb v/v			09/16/16 04:42	66.8
m,p-Xylene	ND		53		ppb v/v			09/16/16 04:42	66.8
o-Xylene	ND		27		ppb v/v			09/16/16 04:42	66.8
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		790		ug/m3 Air			09/16/16 04:42	66.8
Benzene	ND		85		ug/m3 Air			09/16/16 04:42	66.8
Benzyl chloride	ND		280		ug/m3 Air			09/16/16 04:42	66.8
Bromodichloromethane	ND		130		ug/m3 Air			09/16/16 04:42	66.8
Bromoform	ND		280		ug/m3 Air			09/16/16 04:42	66.8
Bromomethane	ND		210		ug/m3 Air			09/16/16 04:42	66.8
2-Butanone (MEK)	ND		160		ug/m3 Air			09/16/16 04:42	66.8
Carbon disulfide	ND		170		ug/m3 Air			09/16/16 04:42	66.8
Carbon tetrachloride	ND		340		ug/m3 Air			09/16/16 04:42	66.8
Chlorobenzene	ND		92		ug/m3 Air			09/16/16 04:42	66.8
Dibromochloromethane	ND		230		ug/m3 Air			09/16/16 04:42	66.8
Chloroethane	ND		140		ug/m3 Air			09/16/16 04:42	66.8
Chloroform	ND		98		ug/m3 Air			09/16/16 04:42	66.8
Chloromethane	ND		110		ug/m3 Air			09/16/16 04:42	66.8
1,2-Dibromoethane (EDB)	ND		410		ug/m3 Air			09/16/16 04:42	66.8
1,2-Dichlorobenzene	ND		160		ug/m3 Air			09/16/16 04:42	66.8
1,3-Dichlorobenzene	ND		160		ug/m3 Air			09/16/16 04:42	66.8
1,4-Dichlorobenzene	ND		160		ug/m3 Air			09/16/16 04:42	66.8
Dichlorodifluoromethane	ND		130		ug/m3 Air			09/16/16 04:42	66.8
1,1-Dichloroethane	ND		81		ug/m3 Air			09/16/16 04:42	66.8
1,2-Dichloroethane	ND		220		ug/m3 Air			09/16/16 04:42	66.8
1,1-Dichloroethene	ND		210		ug/m3 Air			09/16/16 04:42	66.8
<b>cis-1,2-Dichloroethene</b>	<b>370</b>		110		ug/m3 Air			09/16/16 04:42	66.8
trans-1,2-Dichloroethene	ND		110		ug/m3 Air			09/16/16 04:42	66.8
1,2-Dichloropropane	ND		120		ug/m3 Air			09/16/16 04:42	66.8
cis-1,3-Dichloropropene	ND		120		ug/m3 Air			09/16/16 04:42	66.8
trans-1,3-Dichloropropene	ND		120		ug/m3 Air			09/16/16 04:42	66.8
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		190		ug/m3 Air			09/16/16 04:42	66.8

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_83016**

**Lab Sample ID: 320-21625-2**

Date Collected: 08/30/16 14:06

Matrix: Air

Date Received: 09/09/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		120		ug/m3 Air			09/16/16 04:42	66.8
4-Ethyltoluene	ND		130		ug/m3 Air			09/16/16 04:42	66.8
Hexachlorobutadiene	ND		1400		ug/m3 Air			09/16/16 04:42	66.8
2-Hexanone	ND		110		ug/m3 Air			09/16/16 04:42	66.8
Methylene Chloride	ND		93		ug/m3 Air			09/16/16 04:42	66.8
4-Methyl-2-pentanone (MIBK)	ND		110		ug/m3 Air			09/16/16 04:42	66.8
Styrene	ND		110		ug/m3 Air			09/16/16 04:42	66.8
1,1,2,2-Tetrachloroethane	ND		180		ug/m3 Air			09/16/16 04:42	66.8
<b>Tetrachloroethene</b>	<b>19000</b>		180		ug/m3 Air			09/16/16 04:42	66.8
Toluene	ND		100		ug/m3 Air			09/16/16 04:42	66.8
1,2,4-Trichlorobenzene	ND		990		ug/m3 Air			09/16/16 04:42	66.8
<b>1,1,1-Trichloroethane</b>	<b>210</b>		110		ug/m3 Air			09/16/16 04:42	66.8
1,1,2-Trichloroethane	ND		150		ug/m3 Air			09/16/16 04:42	66.8
<b>Trichloroethene</b>	<b>910</b>		140		ug/m3 Air			09/16/16 04:42	66.8
Trichlorofluoromethane	ND		150		ug/m3 Air			09/16/16 04:42	66.8
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		200		ug/m3 Air			09/16/16 04:42	66.8
1,2,4-Trimethylbenzene	ND		260		ug/m3 Air			09/16/16 04:42	66.8
1,3,5-Trimethylbenzene	ND		130		ug/m3 Air			09/16/16 04:42	66.8
Vinyl acetate	ND		190		ug/m3 Air			09/16/16 04:42	66.8
Vinyl chloride	ND		68		ug/m3 Air			09/16/16 04:42	66.8
m,p-Xylene	ND		230		ug/m3 Air			09/16/16 04:42	66.8
o-Xylene	ND		120		ug/m3 Air			09/16/16 04:42	66.8
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	83		70 - 130					09/16/16 04:42	66.8
1,2-Dichloroethane-d4 (Surr)	85		70 - 130					09/16/16 04:42	66.8
Toluene-d8 (Surr)	95		70 - 130					09/16/16 04:42	66.8

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_83016**

**Lab Sample ID: 320-21625-3**

Date Collected: 08/30/16 14:27

Matrix: Air

Date Received: 09/09/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			09/16/16 05:39	1
Benzene	ND		0.40		ppb v/v			09/16/16 05:39	1
Benzyl chloride	ND		0.80		ppb v/v			09/16/16 05:39	1
Bromodichloromethane	ND		0.30		ppb v/v			09/16/16 05:39	1
Bromoform	ND		0.40		ppb v/v			09/16/16 05:39	1
Bromomethane	ND		0.80		ppb v/v			09/16/16 05:39	1
2-Butanone (MEK)	ND		0.80		ppb v/v			09/16/16 05:39	1
Carbon disulfide	ND		0.80		ppb v/v			09/16/16 05:39	1
Carbon tetrachloride	ND		0.80		ppb v/v			09/16/16 05:39	1
Chlorobenzene	ND		0.30		ppb v/v			09/16/16 05:39	1
Dibromochloromethane	ND		0.40		ppb v/v			09/16/16 05:39	1
Chloroethane	ND		0.80		ppb v/v			09/16/16 05:39	1
Chloroform	ND		0.30		ppb v/v			09/16/16 05:39	1
<b>Chloromethane</b>	<b>0.84</b>		0.80		ppb v/v			09/16/16 05:39	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_83016**

**Lab Sample ID: 320-21625-3**

**Date Collected: 08/30/16 14:27**

**Matrix: Air**

**Date Received: 09/09/16 09:30**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			09/16/16 05:39	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			09/16/16 05:39	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			09/16/16 05:39	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			09/16/16 05:39	1
<b>Dichlorodifluoromethane</b>	<b>0.43</b>		0.40		ppb v/v			09/16/16 05:39	1
1,1-Dichloroethane	ND		0.30		ppb v/v			09/16/16 05:39	1
1,2-Dichloroethane	ND		0.80		ppb v/v			09/16/16 05:39	1
1,1-Dichloroethene	ND		0.80		ppb v/v			09/16/16 05:39	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			09/16/16 05:39	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			09/16/16 05:39	1
1,2-Dichloropropane	ND		0.40		ppb v/v			09/16/16 05:39	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			09/16/16 05:39	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			09/16/16 05:39	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			09/16/16 05:39	1
Ethylbenzene	ND		0.40		ppb v/v			09/16/16 05:39	1
4-Ethyltoluene	ND		0.40		ppb v/v			09/16/16 05:39	1
Hexachlorobutadiene	ND		2.0		ppb v/v			09/16/16 05:39	1
2-Hexanone	ND		0.40		ppb v/v			09/16/16 05:39	1
Methylene Chloride	ND		0.40		ppb v/v			09/16/16 05:39	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			09/16/16 05:39	1
Styrene	ND		0.40		ppb v/v			09/16/16 05:39	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			09/16/16 05:39	1
<b>Tetrachloroethene</b>	<b>8.0</b>		0.40		ppb v/v			09/16/16 05:39	1
Toluene	ND		0.40		ppb v/v			09/16/16 05:39	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			09/16/16 05:39	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			09/16/16 05:39	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			09/16/16 05:39	1
<b>Trichloroethene</b>	<b>0.43</b>		0.40		ppb v/v			09/16/16 05:39	1
Trichlorofluoromethane	ND		0.40		ppb v/v			09/16/16 05:39	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			09/16/16 05:39	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			09/16/16 05:39	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			09/16/16 05:39	1
Vinyl acetate	ND		0.80		ppb v/v			09/16/16 05:39	1
Vinyl chloride	ND		0.40		ppb v/v			09/16/16 05:39	1
m,p-Xylene	ND		0.80		ppb v/v			09/16/16 05:39	1
o-Xylene	ND		0.40		ppb v/v			09/16/16 05:39	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			09/16/16 05:39	1
Benzene	ND		1.3		ug/m3 Air			09/16/16 05:39	1
Benzyl chloride	ND		4.1		ug/m3 Air			09/16/16 05:39	1
Bromodichloromethane	ND		2.0		ug/m3 Air			09/16/16 05:39	1
Bromoform	ND		4.1		ug/m3 Air			09/16/16 05:39	1
Bromomethane	ND		3.1		ug/m3 Air			09/16/16 05:39	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			09/16/16 05:39	1
Carbon disulfide	ND		2.5		ug/m3 Air			09/16/16 05:39	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			09/16/16 05:39	1
Chlorobenzene	ND		1.4		ug/m3 Air			09/16/16 05:39	1
Dibromochloromethane	ND		3.4		ug/m3 Air			09/16/16 05:39	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_83016**

**Lab Sample ID: 320-21625-3**

Date Collected: 08/30/16 14:27

Matrix: Air

Date Received: 09/09/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		2.1		ug/m3 Air			09/16/16 05:39	1
Chloroform	ND		1.5		ug/m3 Air			09/16/16 05:39	1
<b>Chloromethane</b>	<b>1.7</b>		1.7		ug/m3 Air			09/16/16 05:39	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			09/16/16 05:39	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			09/16/16 05:39	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			09/16/16 05:39	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			09/16/16 05:39	1
<b>Dichlorodifluoromethane</b>	<b>2.1</b>		2.0		ug/m3 Air			09/16/16 05:39	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			09/16/16 05:39	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			09/16/16 05:39	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			09/16/16 05:39	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			09/16/16 05:39	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			09/16/16 05:39	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			09/16/16 05:39	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			09/16/16 05:39	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			09/16/16 05:39	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			09/16/16 05:39	1
Ethylbenzene	ND		1.7		ug/m3 Air			09/16/16 05:39	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			09/16/16 05:39	1
Hexachlorobutadiene	ND		21		ug/m3 Air			09/16/16 05:39	1
2-Hexanone	ND		1.6		ug/m3 Air			09/16/16 05:39	1
Methylene Chloride	ND		1.4		ug/m3 Air			09/16/16 05:39	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			09/16/16 05:39	1
Styrene	ND		1.7		ug/m3 Air			09/16/16 05:39	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			09/16/16 05:39	1
<b>Tetrachloroethene</b>	<b>54</b>		2.7		ug/m3 Air			09/16/16 05:39	1
Toluene	ND		1.5		ug/m3 Air			09/16/16 05:39	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			09/16/16 05:39	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			09/16/16 05:39	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			09/16/16 05:39	1
<b>Trichloroethene</b>	<b>2.3</b>		2.1		ug/m3 Air			09/16/16 05:39	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			09/16/16 05:39	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			09/16/16 05:39	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			09/16/16 05:39	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			09/16/16 05:39	1
Vinyl acetate	ND		2.8		ug/m3 Air			09/16/16 05:39	1
Vinyl chloride	ND		1.0		ug/m3 Air			09/16/16 05:39	1
m,p-Xylene	ND		3.5		ug/m3 Air			09/16/16 05:39	1
o-Xylene	ND		1.7		ug/m3 Air			09/16/16 05:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		70 - 130		09/16/16 05:39	1
1,2-Dichloroethane-d4 (Surr)	93		70 - 130		09/16/16 05:39	1
Toluene-d8 (Surr)	97		70 - 130		09/16/16 05:39	1

TestAmerica Sacramento

# Surrogate Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		BFB (70-130)	12DCE (70-130)	TOL (70-130)
320-21625-1	SVE_SOUTHPRECARBON_830	80	84	93
320-21625-2	SVE_SOUTH_POSTCARBON_3016	83	85	95
320-21625-3	SVE_NORTH_EFFLUENT_8306	90	93	97
LCS 320-127333/3	Lab Control Sample	104	100	101
LCSD 320-127333/4	Lab Control Sample Dup	98	90	95
MB 320-127333/6	Method Blank	88	87	97

### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)



# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 320-127333/6

Matrix: Air

Analysis Batch: 127333

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			09/15/16 19:04	1
Benzene	ND		0.40		ppb v/v			09/15/16 19:04	1
Benzyl chloride	ND		0.80		ppb v/v			09/15/16 19:04	1
Bromodichloromethane	ND		0.30		ppb v/v			09/15/16 19:04	1
Bromoform	ND		0.40		ppb v/v			09/15/16 19:04	1
Bromomethane	ND		0.80		ppb v/v			09/15/16 19:04	1
2-Butanone (MEK)	ND		0.80		ppb v/v			09/15/16 19:04	1
Carbon disulfide	ND		0.80		ppb v/v			09/15/16 19:04	1
Carbon tetrachloride	ND		0.80		ppb v/v			09/15/16 19:04	1
Chlorobenzene	ND		0.30		ppb v/v			09/15/16 19:04	1
Dibromochloromethane	ND		0.40		ppb v/v			09/15/16 19:04	1
Chloroethane	ND		0.80		ppb v/v			09/15/16 19:04	1
Chloroform	ND		0.30		ppb v/v			09/15/16 19:04	1
Chloromethane	ND		0.80		ppb v/v			09/15/16 19:04	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			09/15/16 19:04	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			09/15/16 19:04	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			09/15/16 19:04	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			09/15/16 19:04	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			09/15/16 19:04	1
1,1-Dichloroethane	ND		0.30		ppb v/v			09/15/16 19:04	1
1,2-Dichloroethane	ND		0.80		ppb v/v			09/15/16 19:04	1
1,1-Dichloroethene	ND		0.80		ppb v/v			09/15/16 19:04	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			09/15/16 19:04	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			09/15/16 19:04	1
1,2-Dichloropropane	ND		0.40		ppb v/v			09/15/16 19:04	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			09/15/16 19:04	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			09/15/16 19:04	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			09/15/16 19:04	1
Ethylbenzene	ND		0.40		ppb v/v			09/15/16 19:04	1
4-Ethyltoluene	ND		0.40		ppb v/v			09/15/16 19:04	1
Hexachlorobutadiene	ND		2.0		ppb v/v			09/15/16 19:04	1
2-Hexanone	ND		0.40		ppb v/v			09/15/16 19:04	1
Methylene Chloride	ND		0.40		ppb v/v			09/15/16 19:04	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			09/15/16 19:04	1
Styrene	ND		0.40		ppb v/v			09/15/16 19:04	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			09/15/16 19:04	1
Tetrachloroethene	ND		0.40		ppb v/v			09/15/16 19:04	1
Toluene	ND		0.40		ppb v/v			09/15/16 19:04	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			09/15/16 19:04	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			09/15/16 19:04	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			09/15/16 19:04	1
Trichloroethene	ND		0.40		ppb v/v			09/15/16 19:04	1
Trichlorofluoromethane	ND		0.40		ppb v/v			09/15/16 19:04	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			09/15/16 19:04	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			09/15/16 19:04	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			09/15/16 19:04	1
Vinyl acetate	ND		0.80		ppb v/v			09/15/16 19:04	1
Vinyl chloride	ND		0.40		ppb v/v			09/15/16 19:04	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-127333/6**

**Matrix: Air**

**Analysis Batch: 127333**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
m,p-Xylene	ND		0.80		ppb v/v			09/15/16 19:04	1
o-Xylene	ND		0.40		ppb v/v			09/15/16 19:04	1
Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	ND		12		ug/m3 Air			09/15/16 19:04	1
Benzene	ND		1.3		ug/m3 Air			09/15/16 19:04	1
Benzyl chloride	ND		4.1		ug/m3 Air			09/15/16 19:04	1
Bromodichloromethane	ND		2.0		ug/m3 Air			09/15/16 19:04	1
Bromoform	ND		4.1		ug/m3 Air			09/15/16 19:04	1
Bromomethane	ND		3.1		ug/m3 Air			09/15/16 19:04	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			09/15/16 19:04	1
Carbon disulfide	ND		2.5		ug/m3 Air			09/15/16 19:04	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			09/15/16 19:04	1
Chlorobenzene	ND		1.4		ug/m3 Air			09/15/16 19:04	1
Dibromochloromethane	ND		3.4		ug/m3 Air			09/15/16 19:04	1
Chloroethane	ND		2.1		ug/m3 Air			09/15/16 19:04	1
Chloroform	ND		1.5		ug/m3 Air			09/15/16 19:04	1
Chloromethane	ND		1.7		ug/m3 Air			09/15/16 19:04	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			09/15/16 19:04	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			09/15/16 19:04	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			09/15/16 19:04	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			09/15/16 19:04	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			09/15/16 19:04	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			09/15/16 19:04	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			09/15/16 19:04	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			09/15/16 19:04	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			09/15/16 19:04	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			09/15/16 19:04	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			09/15/16 19:04	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			09/15/16 19:04	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			09/15/16 19:04	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			09/15/16 19:04	1
Ethylbenzene	ND		1.7		ug/m3 Air			09/15/16 19:04	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			09/15/16 19:04	1
Hexachlorobutadiene	ND		21		ug/m3 Air			09/15/16 19:04	1
2-Hexanone	ND		1.6		ug/m3 Air			09/15/16 19:04	1
Methylene Chloride	ND		1.4		ug/m3 Air			09/15/16 19:04	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			09/15/16 19:04	1
Styrene	ND		1.7		ug/m3 Air			09/15/16 19:04	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			09/15/16 19:04	1
Tetrachloroethene	ND		2.7		ug/m3 Air			09/15/16 19:04	1
Toluene	ND		1.5		ug/m3 Air			09/15/16 19:04	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			09/15/16 19:04	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			09/15/16 19:04	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			09/15/16 19:04	1
Trichloroethene	ND		2.1		ug/m3 Air			09/15/16 19:04	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			09/15/16 19:04	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			09/15/16 19:04	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-127333/6**

**Matrix: Air**

**Analysis Batch: 127333**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			09/15/16 19:04	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			09/15/16 19:04	1
Vinyl acetate	ND		2.8		ug/m3 Air			09/15/16 19:04	1
Vinyl chloride	ND		1.0		ug/m3 Air			09/15/16 19:04	1
m,p-Xylene	ND		3.5		ug/m3 Air			09/15/16 19:04	1
o-Xylene	ND		1.7		ug/m3 Air			09/15/16 19:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		70 - 130		09/15/16 19:04	1
1,2-Dichloroethane-d4 (Surr)	87		70 - 130		09/15/16 19:04	1
Toluene-d8 (Surr)	97		70 - 130		09/15/16 19:04	1

**Lab Sample ID: LCS 320-127333/3**

**Matrix: Air**

**Analysis Batch: 127333**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	18.3		ppb v/v		92	71 - 131
Benzene	20.0	19.9		ppb v/v		100	68 - 128
Benzyl chloride	20.0	17.7		ppb v/v		88	58 - 120
Bromodichloromethane	20.0	21.0		ppb v/v		105	65 - 130
Bromoform	20.0	23.4		ppb v/v		117	64 - 144
Bromomethane	20.0	19.6		ppb v/v		98	70 - 131
2-Butanone (MEK)	20.0	21.2		ppb v/v		106	71 - 131
Carbon disulfide	20.0	18.5		ppb v/v		92	63 - 123
Carbon tetrachloride	20.0	22.4		ppb v/v		112	67 - 127
Chlorobenzene	20.0	21.5		ppb v/v		107	70 - 132
Dibromochloromethane	20.0	21.6		ppb v/v		108	68 - 128
Chloroethane	20.0	19.8		ppb v/v		99	70 - 131
Chloroform	20.0	20.6		ppb v/v		103	69 - 129
Chloromethane	20.0	17.6		ppb v/v		88	67 - 127
1,2-Dibromoethane (EDB)	20.0	21.3		ppb v/v		107	68 - 131
1,2-Dichlorobenzene	20.0	22.6		ppb v/v		113	73 - 143
1,3-Dichlorobenzene	20.0	23.1		ppb v/v		115	77 - 136
1,4-Dichlorobenzene	20.0	23.6		ppb v/v		118	73 - 143
Dichlorodifluoromethane	20.0	20.6		ppb v/v		103	69 - 129
1,1-Dichloroethane	20.0	19.3		ppb v/v		97	65 - 125
1,2-Dichloroethane	20.0	21.6		ppb v/v		108	71 - 131
1,1-Dichloroethene	20.0	18.3		ppb v/v		91	53 - 128
cis-1,2-Dichloroethene	20.0	20.9		ppb v/v		105	68 - 128
trans-1,2-Dichloroethene	20.0	19.7		ppb v/v		98	70 - 130
1,2-Dichloropropane	20.0	22.4		ppb v/v		112	74 - 128
cis-1,3-Dichloropropene	20.0	22.9		ppb v/v		115	78 - 132
trans-1,3-Dichloropropene	20.0	18.3		ppb v/v		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	22.7		ppb v/v		113	64 - 124
Ethylbenzene	20.0	20.4		ppb v/v		102	76 - 136
4-Ethyltoluene	20.0	18.6		ppb v/v		93	62 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-127333/3

Matrix: Air

Analysis Batch: 127333

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	26.1		ppb v/v		130	42 - 150
2-Hexanone	20.0	20.1		ppb v/v		100	70 - 128
Methylene Chloride	20.0	17.8		ppb v/v		89	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	20.1		ppb v/v		101	73 - 133
Styrene	20.0	23.5		ppb v/v		118	76 - 144
1,1,2,2-Tetrachloroethane	20.0	19.0		ppb v/v		95	75 - 135
Tetrachloroethene	20.0	21.4		ppb v/v		107	56 - 138
Toluene	20.0	21.6		ppb v/v		108	71 - 132
1,2,4-Trichlorobenzene	20.0	29.1		ppb v/v		146	59 - 150
1,1,1-Trichloroethane	20.0	21.0		ppb v/v		105	65 - 124
1,1,2-Trichloroethane	20.0	20.8		ppb v/v		104	71 - 131
Trichloroethene	20.0	23.5		ppb v/v		117	64 - 127
Trichlorofluoromethane	20.0	21.8		ppb v/v		109	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.8		ppb v/v		94	50 - 132
1,2,4-Trimethylbenzene	20.0	23.0		ppb v/v		115	61 - 145
1,3,5-Trimethylbenzene	20.0	20.9		ppb v/v		105	65 - 136
Vinyl acetate	20.0	21.5		ppb v/v		108	77 - 134
Vinyl chloride	20.0	20.5		ppb v/v		103	69 - 129
m,p-Xylene	40.0	42.3		ppb v/v		106	75 - 138
o-Xylene	20.0	21.4		ppb v/v		107	77 - 132
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	43.6		ug/m3 Air		92	71 - 131
Benzene	64	63.6		ug/m3 Air		100	68 - 128
Benzyl chloride	100	91.6		ug/m3 Air		88	58 - 120
Bromodichloromethane	130	141		ug/m3 Air		105	65 - 130
Bromoform	210	242		ug/m3 Air		117	64 - 144
Bromomethane	78	76.2		ug/m3 Air		98	70 - 131
2-Butanone (MEK)	59	62.5		ug/m3 Air		106	71 - 131
Carbon disulfide	62	57.5		ug/m3 Air		92	63 - 123
Carbon tetrachloride	130	141		ug/m3 Air		112	67 - 127
Chlorobenzene	92	98.8		ug/m3 Air		107	70 - 132
Dibromochloromethane	170	184		ug/m3 Air		108	68 - 128
Chloroethane	53	52.3		ug/m3 Air		99	70 - 131
Chloroform	98	101		ug/m3 Air		103	69 - 129
Chloromethane	41	36.4		ug/m3 Air		88	67 - 127
1,2-Dibromoethane (EDB)	150	164		ug/m3 Air		107	68 - 131
1,2-Dichlorobenzene	120	136		ug/m3 Air		113	73 - 143
1,3-Dichlorobenzene	120	139		ug/m3 Air		115	77 - 136
1,4-Dichlorobenzene	120	142		ug/m3 Air		118	73 - 143
Dichlorodifluoromethane	99	102		ug/m3 Air		103	69 - 129
1,1-Dichloroethane	81	78.2		ug/m3 Air		97	65 - 125
1,2-Dichloroethane	81	87.3		ug/m3 Air		108	71 - 131
1,1-Dichloroethene	79	72.5		ug/m3 Air		91	53 - 128
cis-1,2-Dichloroethene	79	82.9		ug/m3 Air		105	68 - 128
trans-1,2-Dichloroethene	79	78.0		ug/m3 Air		98	70 - 130
1,2-Dichloropropane	92	104		ug/m3 Air		112	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-127333/3**

**Matrix: Air**

**Analysis Batch: 127333**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	104		ug/m3 Air		115	78 - 132
trans-1,3-Dichloropropene	91	82.9		ug/m3 Air		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	159		ug/m3 Air		113	64 - 124
Ethylbenzene	87	88.8		ug/m3 Air		102	76 - 136
4-Ethyltoluene	98	91.6		ug/m3 Air		93	62 - 136
Hexachlorobutadiene	210	278		ug/m3 Air		130	42 - 150
2-Hexanone	82	82.3		ug/m3 Air		100	70 - 128
Methylene Chloride	69	61.7		ug/m3 Air		89	65 - 125
4-Methyl-2-pentanone (MIBK)	82	82.4		ug/m3 Air		101	73 - 133
Styrene	85	100		ug/m3 Air		118	76 - 144
1,1,2,2-Tetrachloroethane	140	131		ug/m3 Air		95	75 - 135
Tetrachloroethene	140	145		ug/m3 Air		107	56 - 138
Toluene	75	81.3		ug/m3 Air		108	71 - 132
1,2,4-Trichlorobenzene	150	216		ug/m3 Air		146	59 - 150
1,1,1-Trichloroethane	110	114		ug/m3 Air		105	65 - 124
1,1,2-Trichloroethane	110	114		ug/m3 Air		104	71 - 131
Trichloroethene	110	126		ug/m3 Air		117	64 - 127
Trichlorofluoromethane	110	122		ug/m3 Air		109	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	144		ug/m3 Air		94	50 - 132
1,2,4-Trimethylbenzene	98	113		ug/m3 Air		115	61 - 145
1,3,5-Trimethylbenzene	98	103		ug/m3 Air		105	65 - 136
Vinyl acetate	70	75.8		ug/m3 Air		108	77 - 134
Vinyl chloride	51	52.5		ug/m3 Air		103	69 - 129
m,p-Xylene	170	184		ug/m3 Air		106	75 - 138
o-Xylene	87	93.1		ug/m3 Air		107	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		70 - 130
1,2-Dichloroethane-d4 (Surr)	100		70 - 130
Toluene-d8 (Surr)	101		70 - 130

**Lab Sample ID: LCSD 320-127333/4**

**Matrix: Air**

**Analysis Batch: 127333**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	16.1		ppb v/v		81	71 - 131	13	25
Benzene	20.0	18.3		ppb v/v		92	68 - 128	8	25
Benzyl chloride	20.0	16.9		ppb v/v		84	58 - 120	5	25
Bromodichloromethane	20.0	19.6		ppb v/v		98	65 - 130	7	25
Bromoform	20.0	23.9		ppb v/v		119	64 - 144	2	25
Bromomethane	20.0	21.8		ppb v/v		109	70 - 131	10	25
2-Butanone (MEK)	20.0	18.6		ppb v/v		93	71 - 131	13	25
Carbon disulfide	20.0	16.8		ppb v/v		84	63 - 123	9	25
Carbon tetrachloride	20.0	22.1		ppb v/v		110	67 - 127	2	25
Chlorobenzene	20.0	21.6		ppb v/v		108	70 - 132	1	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-127333/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 127333

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	20.0	22.6		ppb v/v		113	68 - 128	5	25
Chloroethane	20.0	18.1		ppb v/v		91	70 - 131	9	25
Chloroform	20.0	18.9		ppb v/v		94	69 - 129	9	25
Chloromethane	20.0	17.5		ppb v/v		88	67 - 127	1	25
1,2-Dibromoethane (EDB)	20.0	21.7		ppb v/v		109	68 - 131	2	25
1,2-Dichlorobenzene	20.0	22.6		ppb v/v		113	73 - 143	0	25
1,3-Dichlorobenzene	20.0	23.1		ppb v/v		115	77 - 136	0	25
1,4-Dichlorobenzene	20.0	23.7		ppb v/v		119	73 - 143	1	25
Dichlorodifluoromethane	20.0	19.1		ppb v/v		95	69 - 129	7	25
1,1-Dichloroethane	20.0	17.2		ppb v/v		86	65 - 125	12	25
1,2-Dichloroethane	20.0	19.7		ppb v/v		99	71 - 131	9	25
1,1-Dichloroethene	20.0	16.6		ppb v/v		83	53 - 128	10	25
cis-1,2-Dichloroethene	20.0	19.8		ppb v/v		99	68 - 128	5	25
trans-1,2-Dichloroethene	20.0	17.5		ppb v/v		87	70 - 130	12	25
1,2-Dichloropropane	20.0	20.6		ppb v/v		103	74 - 128	8	25
cis-1,3-Dichloropropene	20.0	20.9		ppb v/v		104	78 - 132	9	25
trans-1,3-Dichloropropene	20.0	17.6		ppb v/v		88	56 - 136	4	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	23.1		ppb v/v		116	64 - 124	2	25
Ethylbenzene	20.0	19.7		ppb v/v		99	76 - 136	3	25
4-Ethyltoluene	20.0	18.6		ppb v/v		93	62 - 136	0	25
Hexachlorobutadiene	20.0	25.7		ppb v/v		128	42 - 150	1	25
2-Hexanone	20.0	18.0		ppb v/v		90	70 - 128	11	25
Methylene Chloride	20.0	15.7		ppb v/v		78	65 - 125	12	25
4-Methyl-2-pentanone (MIBK)	20.0	17.2		ppb v/v		86	73 - 133	15	25
Styrene	20.0	23.2		ppb v/v		116	76 - 144	1	25
1,1,2,2-Tetrachloroethane	20.0	17.6		ppb v/v		88	75 - 135	8	25
Tetrachloroethene	20.0	22.8		ppb v/v		114	56 - 138	7	25
Toluene	20.0	20.3		ppb v/v		101	71 - 132	6	25
1,2,4-Trichlorobenzene	20.0	28.6		ppb v/v		143	59 - 150	2	25
1,1,1-Trichloroethane	20.0	19.8		ppb v/v		99	65 - 124	6	25
1,1,2-Trichloroethane	20.0	20.7		ppb v/v		103	71 - 131	1	25
Trichloroethene	20.0	24.0		ppb v/v		120	64 - 127	2	25
Trichlorofluoromethane	20.0	20.6		ppb v/v		103	68 - 128	5	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.4		ppb v/v		92	50 - 132	2	25
1,2,4-Trimethylbenzene	20.0	23.0		ppb v/v		115	61 - 145	0	25
1,3,5-Trimethylbenzene	20.0	20.7		ppb v/v		104	65 - 136	1	25
Vinyl acetate	20.0	18.6		ppb v/v		93	77 - 134	14	25
Vinyl chloride	20.0	20.0		ppb v/v		100	69 - 129	3	25
m,p-Xylene	40.0	40.5		ppb v/v		101	75 - 138	4	25
o-Xylene	20.0	20.4		ppb v/v		102	77 - 132	5	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	38.3		ug/m3 Air		81	71 - 131	13	25
Benzene	64	58.5		ug/m3 Air		92	68 - 128	8	25
Benzyl chloride	100	87.5		ug/m3 Air		84	58 - 120	5	25
Bromodichloromethane	130	131		ug/m3 Air		98	65 - 130	7	25
Bromoform	210	247		ug/m3 Air		119	64 - 144	2	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-127333/4**  
**Matrix: Air**  
**Analysis Batch: 127333**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
Bromomethane	78	84.5		ug/m3 Air		109	70 - 131	10	25
2-Butanone (MEK)	59	54.7		ug/m3 Air		93	71 - 131	13	25
Carbon disulfide	62	52.4		ug/m3 Air		84	63 - 123	9	25
Carbon tetrachloride	130	139		ug/m3 Air		110	67 - 127	2	25
Chlorobenzene	92	99.6		ug/m3 Air		108	70 - 132	1	25
Dibromochloromethane	170	193		ug/m3 Air		113	68 - 128	5	25
Chloroethane	53	47.8		ug/m3 Air		91	70 - 131	9	25
Chloroform	98	92.2		ug/m3 Air		94	69 - 129	9	25
Chloromethane	41	36.1		ug/m3 Air		88	67 - 127	1	25
1,2-Dibromoethane (EDB)	150	167		ug/m3 Air		109	68 - 131	2	25
1,2-Dichlorobenzene	120	136		ug/m3 Air		113	73 - 143	0	25
1,3-Dichlorobenzene	120	139		ug/m3 Air		115	77 - 136	0	25
1,4-Dichlorobenzene	120	143		ug/m3 Air		119	73 - 143	1	25
Dichlorodifluoromethane	99	94.4		ug/m3 Air		95	69 - 129	7	25
1,1-Dichloroethane	81	69.5		ug/m3 Air		86	65 - 125	12	25
1,2-Dichloroethane	81	79.8		ug/m3 Air		99	71 - 131	9	25
1,1-Dichloroethene	79	65.6		ug/m3 Air		83	53 - 128	10	25
cis-1,2-Dichloroethene	79	78.5		ug/m3 Air		99	68 - 128	5	25
trans-1,2-Dichloroethene	79	69.4		ug/m3 Air		87	70 - 130	12	25
1,2-Dichloropropane	92	95.4		ug/m3 Air		103	74 - 128	8	25
cis-1,3-Dichloropropene	91	94.7		ug/m3 Air		104	78 - 132	9	25
trans-1,3-Dichloropropene	91	79.9		ug/m3 Air		88	56 - 136	4	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	162		ug/m3 Air		116	64 - 124	2	25
Ethylbenzene	87	85.7		ug/m3 Air		99	76 - 136	3	25
4-Ethyltoluene	98	91.5		ug/m3 Air		93	62 - 136	0	25
Hexachlorobutadiene	210	274		ug/m3 Air		128	42 - 150	1	25
2-Hexanone	82	73.8		ug/m3 Air		90	70 - 128	11	25
Methylene Chloride	69	54.5		ug/m3 Air		78	65 - 125	12	25
4-Methyl-2-pentanone (MIBK)	82	70.6		ug/m3 Air		86	73 - 133	15	25
Styrene	85	98.8		ug/m3 Air		116	76 - 144	1	25
1,1,2,2-Tetrachloroethane	140	121		ug/m3 Air		88	75 - 135	8	25
Tetrachloroethene	140	155		ug/m3 Air		114	56 - 138	7	25
Toluene	75	76.4		ug/m3 Air		101	71 - 132	6	25
1,2,4-Trichlorobenzene	150	212		ug/m3 Air		143	59 - 150	2	25
1,1,1-Trichloroethane	110	108		ug/m3 Air		99	65 - 124	6	25
1,1,2-Trichloroethane	110	113		ug/m3 Air		103	71 - 131	1	25
Trichloroethene	110	129		ug/m3 Air		120	64 - 127	2	25
Trichlorofluoromethane	110	116		ug/m3 Air		103	68 - 128	5	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	141		ug/m3 Air		92	50 - 132	2	25
1,2,4-Trimethylbenzene	98	113		ug/m3 Air		115	61 - 145	0	25
1,3,5-Trimethylbenzene	98	102		ug/m3 Air		104	65 - 136	1	25
Vinyl acetate	70	65.7		ug/m3 Air		93	77 - 134	14	25
Vinyl chloride	51	51.0		ug/m3 Air		100	69 - 129	3	25
m,p-Xylene	170	176		ug/m3 Air		101	75 - 138	4	25
o-Xylene	87	88.6		ug/m3 Air		102	77 - 132	5	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-127333/4

Matrix: Air

Analysis Batch: 127333

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	98		70 - 130
1,2-Dichloroethane-d4 (Surr)	90		70 - 130
Toluene-d8 (Surr)	95		70 - 130

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# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Air - GC/MS VOA

### Analysis Batch: 127333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-21625-1	SVE_SOUTHPRECARBON_83016	Total/NA	Air	TO-15	
320-21625-2	SVE_SOUTH_POSTCARBON_83016	Total/NA	Air	TO-15	
320-21625-3	SVE_NORTH_EFFLUENT_83016	Total/NA	Air	TO-15	
MB 320-127333/6	Method Blank	Total/NA	Air	TO-15	
LCS 320-127333/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-127333/4	Lab Control Sample Dup	Total/NA	Air	TO-15	

# Lab Chronicle

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

**Client Sample ID: SVE\_SOUTHPRECARBON\_83016**

**Lab Sample ID: 320-21625-1**

**Date Collected: 08/30/16 14:01**

**Matrix: Air**

**Date Received: 09/09/16 09:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		71.1	6.47 mL	250 mL	127333	09/16/16 03:50	AP1	TAL SAC

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_83016**

**Lab Sample ID: 320-21625-2**

**Date Collected: 08/30/16 14:06**

**Matrix: Air**

**Date Received: 09/09/16 09:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		66.8	6.47 mL	250 mL	127333	09/16/16 04:42	AP1	TAL SAC

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_83016**

**Lab Sample ID: 320-21625-3**

**Date Collected: 08/30/16 14:27**

**Matrix: Air**

**Date Received: 09/09/16 09:30**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	460 mL	250 mL	127333	09/16/16 05:39	AP1	TAL SAC

## Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Certification Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-16 *
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-16
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
USDA	Federal		P330-11-00092	04-17-17

\* Certification renewal pending - certification considered valid.

# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver

TestAmerica Job ID: 320-21625-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-21625-1	SVE_SOUTHPRECARBON_83016	Air	08/30/16 14:01	09/09/16 09:30
320-21625-2	SVE_SOUTH_POSTCARBON_83016	Air	08/30/16 14:06	09/09/16 09:30
320-21625-3	SVE_NORTH_EFFLUENT_83016	Air	08/30/16 14:27	09/09/16 09:30

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JOB # **320-21625**  
Sample # **1**

Client/Project:		VFR ID:	
Canister Serial #:	34000289	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	12.38	09/15/16	LHS for KY	
FINAL PRESSURE (PSIA)	22.78	09/15/16	LHS for KY	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He		<input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	1.84			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
9/15/2016	14.70	45.42	1.84	LHS	5.69
			5.69		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors						
	Date	Instr.	File #			
Canister DF = <b>5.69</b>	<b>X</b>	Load DF = <b>12.5</b>	<b>X</b>	Bag DF = <b>1</b>	=	<b>FINAL DF</b> <b>71.06780192</b>
		LVf (mLs) <b>250</b>		BVf (mLs)		
		LVi (mLs) <b>20</b>		BVi (mLs)		
Canister DF = <b>5.69</b>	<b>X</b>	Load DF = <b>#DIV/0!</b>	<b>X</b>	Bag DF = <b>1</b>	=	<b>FINAL DF</b> <b>#DIV/0!</b>
		LVf (mLs)		BVf (mLs)		
		LVi (mLs)		BVi (mLs)		
Canister DF = <b>5.69</b>	<b>X</b>	Load DF = <b>#DIV/0!</b>	<b>X</b>	Bag DF = <b>1</b>	=	<b>FINAL DF</b> <b>#DIV/0!</b>
		LVf (mLs)		BVf (mLs)		
		LVi (mLs)		BVi (mLs)		



JOB # **320-21625**  
Sample # **2**

Client/Project:		VFR ID:	
Canister Serial #:	34000558	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	13.18	09/15/16	LHS for KY	
FINAL PRESSURE (PSIA)	22.78	09/15/16	LHS for KY	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He		<input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	1.73			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
9/15/2016	14.70	45.45	1.73	LHS	5.34
			5.34		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors									
	Date	Instr.	File #						
Canister DF = <b>5.34</b>	9/15/2016	MS7		X	Load DF = <b>12.5</b>	X	Bag DF = <b>1</b>	=	FINAL DF <b>66.79821777</b>
					LVf (mLs) <b>250</b>		BVf (mLs)		
					LVi (mLs) <b>20</b>		BVi (mLs)		
Canister DF = <b>5.34</b>				X	Load DF = <b>#DIV/0!</b>	X	Bag DF = <b>1</b>	=	FINAL DF <b>#DIV/0!</b>
					LVf (mLs)		BVf (mLs)		
					LVi (mLs)		BVi (mLs)		
Canister DF = <b>5.34</b>				X	Load DF = <b>#DIV/0!</b>	X	Bag DF = <b>1</b>	=	FINAL DF <b>#DIV/0!</b>
					LVf (mLs)		BVf (mLs)		
					LVi (mLs)		BVi (mLs)		





JOB # **320-21625**  
Sample # **3**

Client/Project:		VFR ID:	
Canister Serial #:	8083	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	12.38	09/15/16	LHS for KY	
FINAL PRESSURE (PSIA)	22.82	09/15/16	LHS for KY	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He		<input type="checkbox"/>	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor =	1.84			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.84		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors										
Canister DF =	1.84	X	Load DF =	0.5434783	X	Bag DF =	1	=	FINAL DF	1.001791108
			LVf (mLs)	250		BVf (mLs)				
			LVi (mLs)	460		BVi (mLs)				
Canister DF =	1.84	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			BVi (mLs)				
Canister DF =	1.84	X	Load DF =	#DIV/0!	X	Bag DF =	1	=	FINAL DF	#DIV/0!
			LVf (mLs)			BVf (mLs)				
			LVi (mLs)			BVi (mLs)				



# Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-21625-1

**Login Number: 21625**

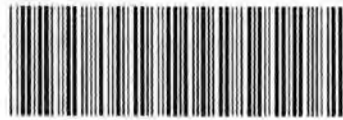
**List Number: 1**

**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# CANISTER QC CERTIFICATION



320-20403 Chain of Custody

Certification Type: TEIS Scan

Date Cleaned/Batch ID 7/21/14 320-20403

Date of QC 7/22/16

Data File Number C:\MSDCHEM\1\DATA\160722\

MS70722.d 7/25/16 MS70722.d  
**CANISTER ID NUMBERS**

<u>34200501 *</u>	<u>34200544</u>	
<u>34201389</u>	<u>34200223</u>	
<u>34200558</u>	<u>10390</u>	
<u>34200289</u>	<u>34201127</u>	
<u>8083</u>		
<u>10477</u>		
<u>34200342</u>		
<u>34201459</u>		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

[Signature]  
 1<sup>st</sup> level Reviewed By:

7/25/16  
 Date:

[Signature]  
 2nd level Reviewed By:

7/25/16  
 Date:

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20403-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000501 Lab Sample ID: 320-20403-1  
 Matrix: Air Lab File ID: MS7072220.D  
 Analysis Method: TO-15 Date Collected: 07/21/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 07/23/2016 05:03  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 118994 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.33	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20403-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000501 Lab Sample ID: 320-20403-1  
 Matrix: Air Lab File ID: MS7072220.D  
 Analysis Method: TO-15 Date Collected: 07/21/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 07/23/2016 05:03  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 118994 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	0.20	J	0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20403-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000501 Lab Sample ID: 320-20403-1  
 Matrix: Air Lab File ID: MS7072220.D  
 Analysis Method: TO-15 Date Collected: 07/21/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 07/23/2016 05:03  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 118994 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	95		70-130
2037-26-5	Toluene-d8 (Surr)	105		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20160722-32764.b\MS7072220.D  
 Lims ID: 320-20403-A-1  
 Client ID: 34000501  
 Sample Type: Client  
 Inject. Date: 23-Jul-2016 05:03:30 ALS Bottle#: 2 Worklist Smp#: 22  
 Purge Vol: 5.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-20403-A-1  
 Misc. Info.: 500 mL CAN CERT  
 Operator ID: LHS Instrument ID: ATMS7  
 Method: \\ChromNA\Sacramento\ChromData\ATMS7\20160722-32764.b\TO15\_ATMS7N.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 25-Jul-2016 10:20:34 Calib Date: 07-Jul-2016 08:13:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS7\20160706-32272.b\MS7070615.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK001

First Level Reviewer: phanthasena

Date: 25-Jul-2016 10:20:34

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.312	12.300	0.012	90	58130	4.00	
* 2 1,4-Difluorobenzene	114	14.465	14.453	0.012	97	280683	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.145	21.133	0.012	94	273584	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.516	13.504	0.012	96	114181	3.82	
\$ 5 Toluene-d8 (Surr)	100	17.872	17.860	0.012	96	195400	4.19	
\$ 6 4-Bromofluorobenzene (Surr	95	23.688	23.676	0.012	83	179427	4.21	
11 Propene	41	3.850	3.843	0.007	86	2050	0.0818	
13 Dichlorodifluoromethane	85	3.916	3.904	0.012	96	936	0.0236	
32 Acetone	43	7.402	7.335	0.067	98	18503	0.3274	
39 Methylene Chloride	49	8.741	8.716	0.025	91	1864	0.0476	
54 Tetrahydrofuran	42	12.500	12.440	0.060	90	11027	0.1974	
80 Tetrachloroethene	166	19.557	19.545	0.012	81	1338	0.0271	

**Reagents:**

VASUISIM\_00313

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20160722-32764.b\MS7072220.D

Injection Date: 23-Jul-2016 05:03:30

Instrument ID: ATMS7

Operator ID: LHS

Lims ID: 320-20403-A-1

Lab Sample ID: 320-20403-1

Worklist Smp#: 22

Client ID: 34000501

Purge Vol: 5.000 mL

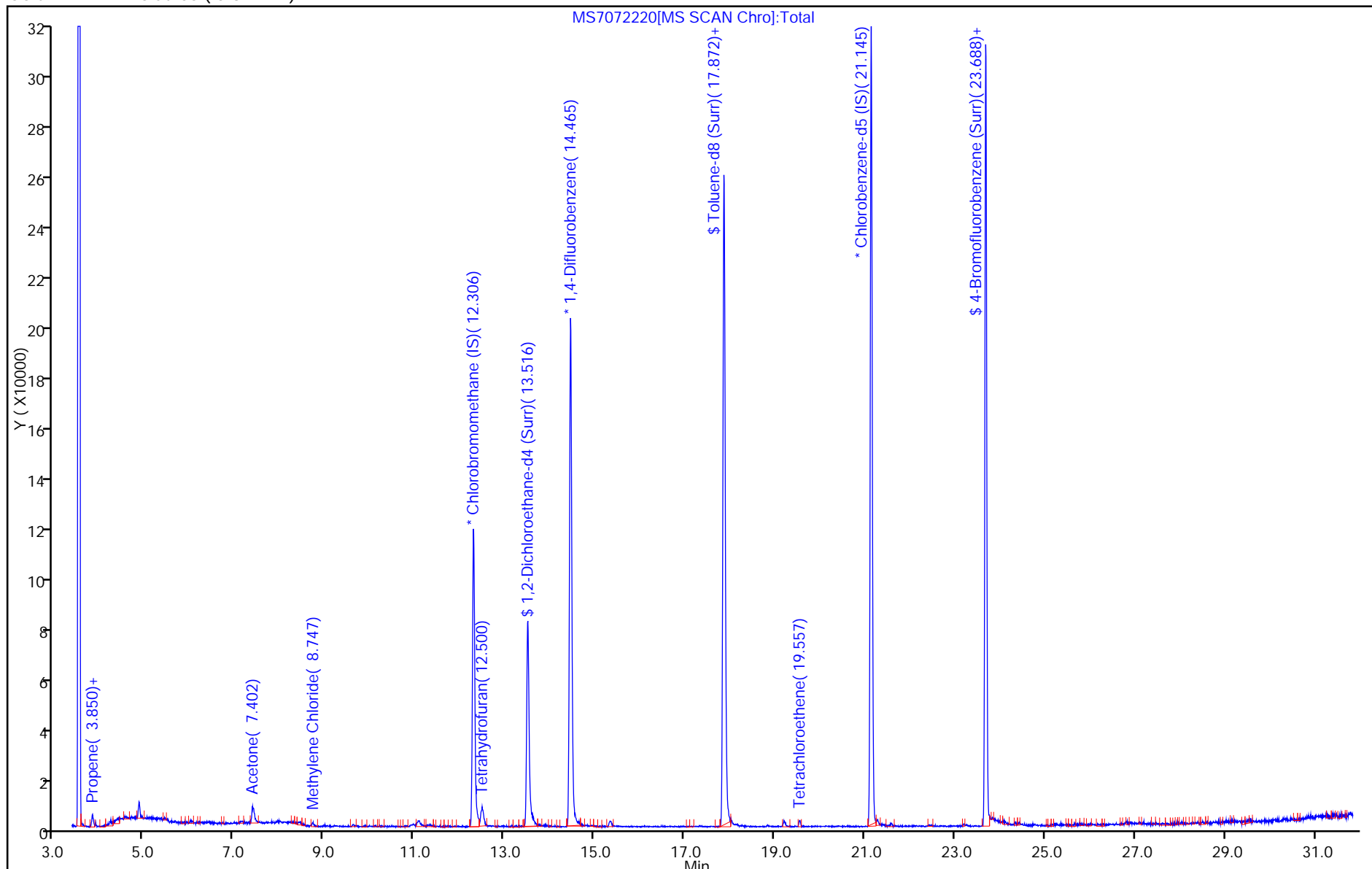
Dil. Factor: 1.0000

ALS Bottle#: 2

Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)





TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20160722-32764.b\MS7072220.D

Injection Date: 23-Jul-2016 05:03:30

Instrument ID: ATMS7

Lims ID: 320-20403-A-1

Lab Sample ID: 320-20403-1

Client ID: 34000501

Operator ID: LHS

ALS Bottle#: 2 Worklist Smp#: 22

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

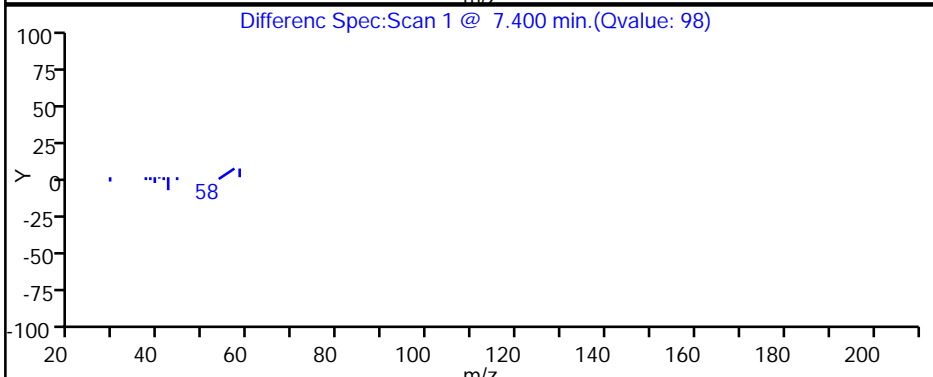
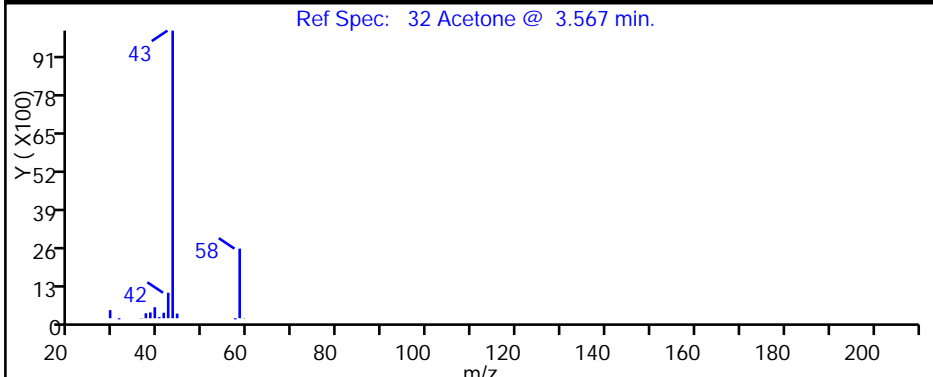
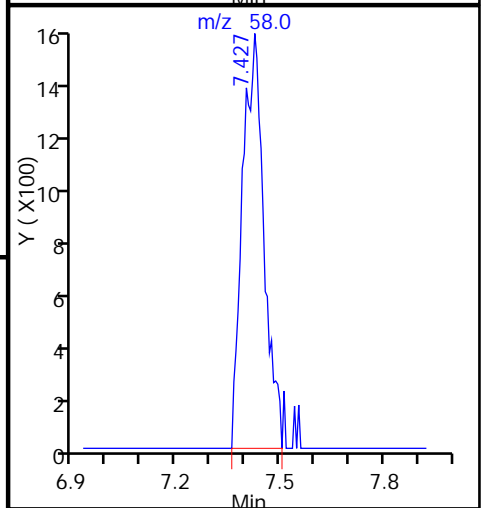
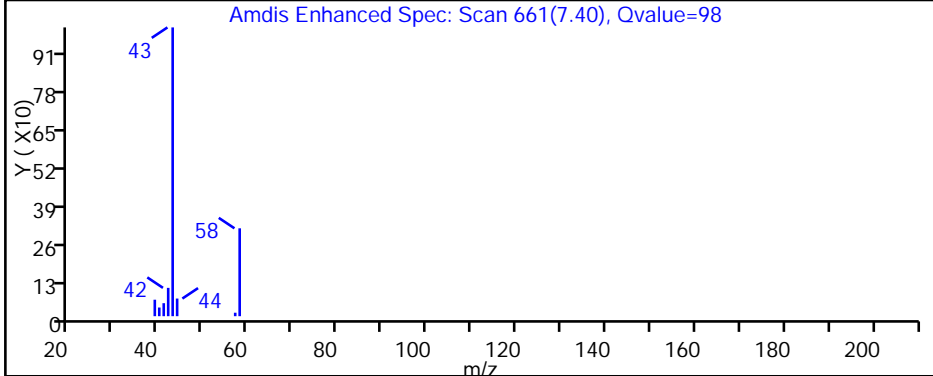
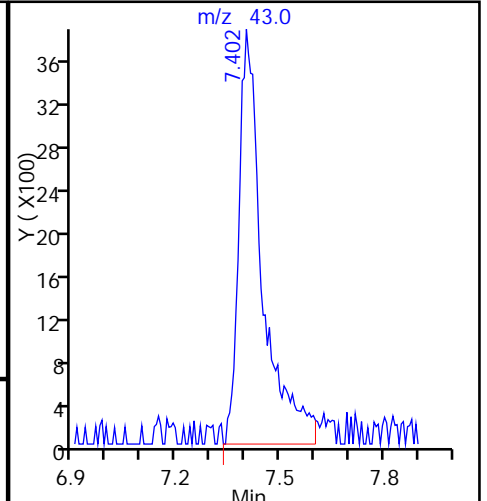
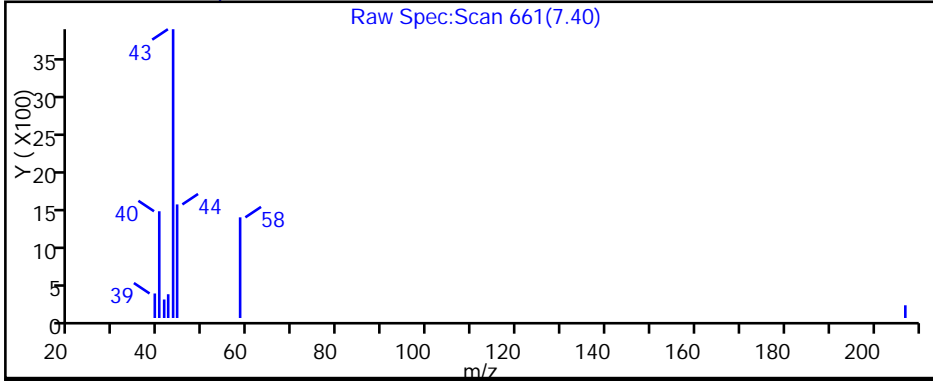
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20160722-32764.b\MS7072220.D

Injection Date: 23-Jul-2016 05:03:30

Instrument ID: ATMS7

Lims ID: 320-20403-A-1

Lab Sample ID: 320-20403-1

Client ID: 34000501

Operator ID: LHS

ALS Bottle#: 2 Worklist Smp#: 22

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

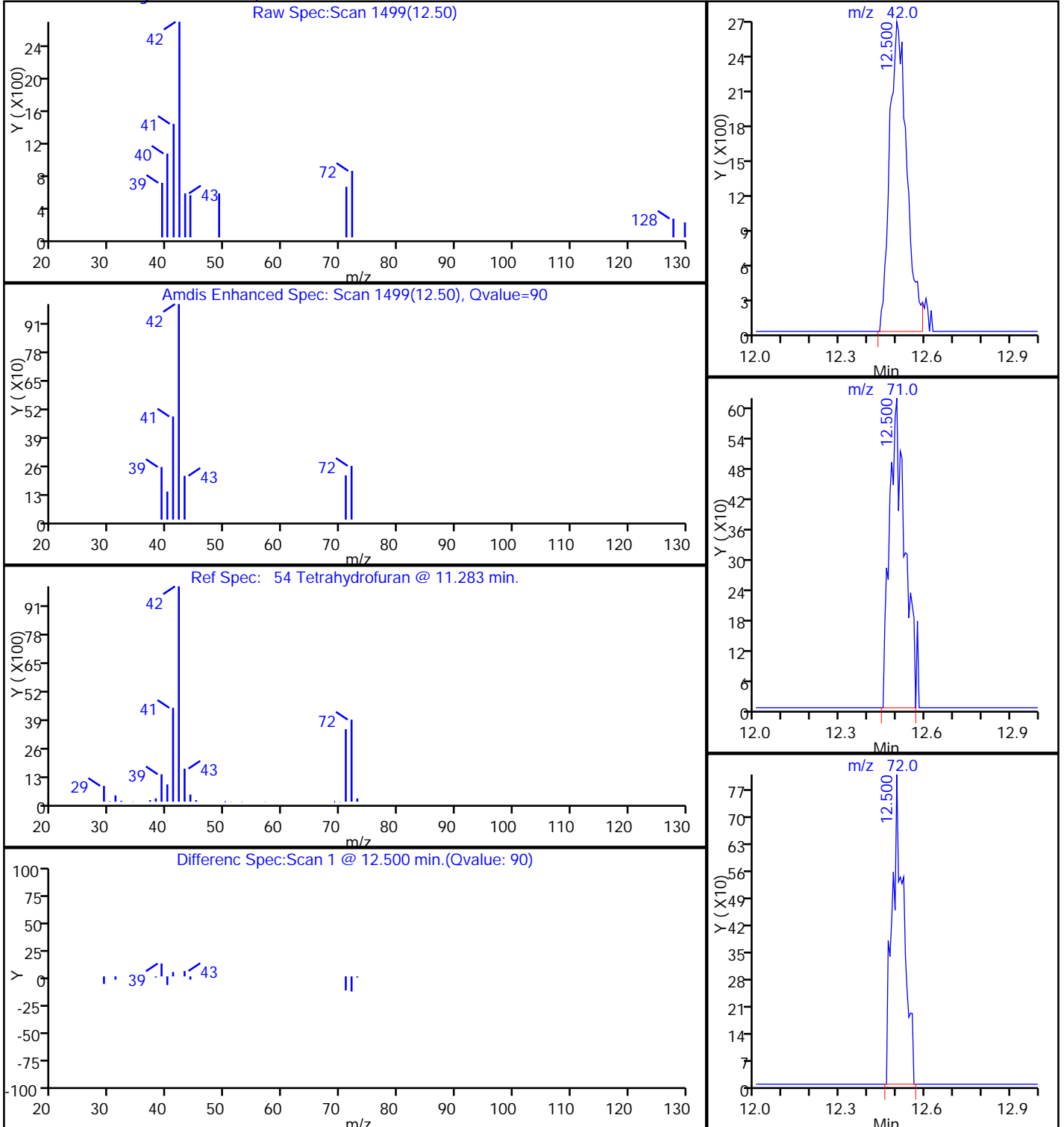
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

54 Tetrahydrofuran, CAS: 109-99-9



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-22374-1  
Client Project/Site: NuStar Vapor Testing

For:  
Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
10/20/2016 2:08:49 PM

Cathy Gamble, Project Management Assistant I  
(253)922-2310  
[cathy.gamble@testamericainc.com](mailto:cathy.gamble@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



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[www.testamericainc.com](http://www.testamericainc.com)

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

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**Job ID: 320-22374-1**

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**Laboratory: TestAmerica Sacramento**

## Narrative

### Receipt

The samples were received on 10/5/2016 9:55 AM; the samples arrived in good condition.

### Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):  
SVE\_SOUTH\_PRECARBON\_092916 (320-22374-1). The container labels list 34000851, while the COC lists 1058.

### Air - GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Detection Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Client Sample ID: SVE\_SOUTH\_PRECARBON\_092916

## Lab Sample ID: 320-22374-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	85		24		ppb v/v	59.8		TO-15	Total/NA
1,1,1-Trichloroethane	20		18		ppb v/v	59.8		TO-15	Total/NA
Trichloroethene	240		24		ppb v/v	59.8		TO-15	Total/NA
Tetrachloroethene - DL	3600		42		ppb v/v	105		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	340		95		ug/m3 Air	59.8		TO-15	Total/NA
1,1,1-Trichloroethane	110		98		ug/m3 Air	59.8		TO-15	Total/NA
Trichloroethene	1300		130		ug/m3 Air	59.8		TO-15	Total/NA
Tetrachloroethene - DL	25000		280		ug/m3 Air	105		TO-15	Total/NA

## Client Sample ID: SVE\_SOUTH\_POSTCARBON\_092916

## Lab Sample ID: 320-22374-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	100		15		ppb v/v	38.1		TO-15	Total/NA
Tetrachloroethene	2100		15		ppb v/v	38.1		TO-15	Total/NA
1,1,1-Trichloroethane	26		11		ppb v/v	38.1		TO-15	Total/NA
Trichloroethene	360		15		ppb v/v	38.1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	410		60		ug/m3 Air	38.1		TO-15	Total/NA
Tetrachloroethene	14000		100		ug/m3 Air	38.1		TO-15	Total/NA
1,1,1-Trichloroethane	140		62		ug/m3 Air	38.1		TO-15	Total/NA
Trichloroethene	1900		82		ug/m3 Air	38.1		TO-15	Total/NA

## Client Sample ID: SVE\_NORTH\_EFFLUENT\_092916

## Lab Sample ID: 320-22374-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	5.6		5.0		ppb v/v	1		TO-15	Total/NA
2-Butanone (MEK)	0.85		0.80		ppb v/v	1		TO-15	Total/NA
Dichlorodifluoromethane	0.53		0.40		ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	2.2		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	13		12		ug/m3 Air	1		TO-15	Total/NA
2-Butanone (MEK)	2.5		2.4		ug/m3 Air	1		TO-15	Total/NA
Dichlorodifluoromethane	2.6		2.0		ug/m3 Air	1		TO-15	Total/NA
Tetrachloroethene	15		2.7		ug/m3 Air	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

**Client Sample ID: SVE\_SOUTH\_PRECARBON\_092916**

**Lab Sample ID: 320-22374-1**

**Date Collected: 09/29/16 14:05**

**Matrix: Air**

**Date Received: 10/05/16 09:55**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		300		ppb v/v			10/15/16 20:28	59.8
Benzene	ND		24		ppb v/v			10/15/16 20:28	59.8
Benzyl chloride	ND		48		ppb v/v			10/15/16 20:28	59.8
Bromodichloromethane	ND		18		ppb v/v			10/15/16 20:28	59.8
Bromoform	ND		24		ppb v/v			10/15/16 20:28	59.8
Bromomethane	ND		48		ppb v/v			10/15/16 20:28	59.8
2-Butanone (MEK)	ND		48		ppb v/v			10/15/16 20:28	59.8
Carbon disulfide	ND		48		ppb v/v			10/15/16 20:28	59.8
Carbon tetrachloride	ND		48		ppb v/v			10/15/16 20:28	59.8
Chlorobenzene	ND		18		ppb v/v			10/15/16 20:28	59.8
Dibromochloromethane	ND		24		ppb v/v			10/15/16 20:28	59.8
Chloroethane	ND		48		ppb v/v			10/15/16 20:28	59.8
Chloroform	ND		18		ppb v/v			10/15/16 20:28	59.8
Chloromethane	ND		48		ppb v/v			10/15/16 20:28	59.8
1,2-Dibromoethane (EDB)	ND		48		ppb v/v			10/15/16 20:28	59.8
1,2-Dichlorobenzene	ND		24		ppb v/v			10/15/16 20:28	59.8
1,3-Dichlorobenzene	ND		24		ppb v/v			10/15/16 20:28	59.8
1,4-Dichlorobenzene	ND		24		ppb v/v			10/15/16 20:28	59.8
Dichlorodifluoromethane	ND		24		ppb v/v			10/15/16 20:28	59.8
1,1-Dichloroethane	ND		18		ppb v/v			10/15/16 20:28	59.8
1,2-Dichloroethane	ND		48		ppb v/v			10/15/16 20:28	59.8
1,1-Dichloroethene	ND		48		ppb v/v			10/15/16 20:28	59.8
<b>cis-1,2-Dichloroethene</b>	<b>85</b>		24		ppb v/v			10/15/16 20:28	59.8
trans-1,2-Dichloroethene	ND		24		ppb v/v			10/15/16 20:28	59.8
1,2-Dichloropropane	ND		24		ppb v/v			10/15/16 20:28	59.8
cis-1,3-Dichloropropene	ND		24		ppb v/v			10/15/16 20:28	59.8
trans-1,3-Dichloropropene	ND		24		ppb v/v			10/15/16 20:28	59.8
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		24		ppb v/v			10/15/16 20:28	59.8
Ethylbenzene	ND		24		ppb v/v			10/15/16 20:28	59.8
4-Ethyltoluene	ND		24		ppb v/v			10/15/16 20:28	59.8
Hexachlorobutadiene	ND		120		ppb v/v			10/15/16 20:28	59.8
2-Hexanone	ND		24		ppb v/v			10/15/16 20:28	59.8
Methylene Chloride	ND		24		ppb v/v			10/15/16 20:28	59.8
4-Methyl-2-pentanone (MIBK)	ND		24		ppb v/v			10/15/16 20:28	59.8
Styrene	ND		24		ppb v/v			10/15/16 20:28	59.8
1,1,2,2-Tetrachloroethane	ND		24		ppb v/v			10/15/16 20:28	59.8
Toluene	ND		24		ppb v/v			10/15/16 20:28	59.8
1,2,4-Trichlorobenzene	ND		120		ppb v/v			10/15/16 20:28	59.8
<b>1,1,1-Trichloroethane</b>	<b>20</b>		18		ppb v/v			10/15/16 20:28	59.8
1,1,2-Trichloroethane	ND		24		ppb v/v			10/15/16 20:28	59.8
<b>Trichloroethene</b>	<b>240</b>		24		ppb v/v			10/15/16 20:28	59.8
Trichlorofluoromethane	ND		24		ppb v/v			10/15/16 20:28	59.8
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		24		ppb v/v			10/15/16 20:28	59.8
1,2,4-Trimethylbenzene	ND		48		ppb v/v			10/15/16 20:28	59.8
1,3,5-Trimethylbenzene	ND		24		ppb v/v			10/15/16 20:28	59.8
Vinyl acetate	ND		48		ppb v/v			10/15/16 20:28	59.8
Vinyl chloride	ND		24		ppb v/v			10/15/16 20:28	59.8
m,p-Xylene	ND		48		ppb v/v			10/15/16 20:28	59.8

TestAmerica Sacramento



# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

**Client Sample ID: SVE\_SOUTH\_PRECARBON\_092916**

**Lab Sample ID: 320-22374-1**

**Date Collected: 09/29/16 14:05**

**Matrix: Air**

**Date Received: 10/05/16 09:55**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
o-Xylene	ND		24		ppb v/v			10/15/16 20:28	59.8
<b>Analyte</b>	<b>Result</b>	<b>Qualifier</b>	<b>RL</b>	<b>MDL</b>	<b>Unit</b>	<b>D</b>	<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Acetone	ND		710		ug/m3 Air			10/15/16 20:28	59.8
Benzene	ND		76		ug/m3 Air			10/15/16 20:28	59.8
Benzyl chloride	ND		250		ug/m3 Air			10/15/16 20:28	59.8
Bromodichloromethane	ND		120		ug/m3 Air			10/15/16 20:28	59.8
Bromoform	ND		250		ug/m3 Air			10/15/16 20:28	59.8
Bromomethane	ND		190		ug/m3 Air			10/15/16 20:28	59.8
2-Butanone (MEK)	ND		140		ug/m3 Air			10/15/16 20:28	59.8
Carbon disulfide	ND		150		ug/m3 Air			10/15/16 20:28	59.8
Carbon tetrachloride	ND		300		ug/m3 Air			10/15/16 20:28	59.8
Chlorobenzene	ND		83		ug/m3 Air			10/15/16 20:28	59.8
Dibromochloromethane	ND		200		ug/m3 Air			10/15/16 20:28	59.8
Chloroethane	ND		130		ug/m3 Air			10/15/16 20:28	59.8
Chloroform	ND		88		ug/m3 Air			10/15/16 20:28	59.8
Chloromethane	ND		99		ug/m3 Air			10/15/16 20:28	59.8
1,2-Dibromoethane (EDB)	ND		370		ug/m3 Air			10/15/16 20:28	59.8
1,2-Dichlorobenzene	ND		140		ug/m3 Air			10/15/16 20:28	59.8
1,3-Dichlorobenzene	ND		140		ug/m3 Air			10/15/16 20:28	59.8
1,4-Dichlorobenzene	ND		140		ug/m3 Air			10/15/16 20:28	59.8
Dichlorodifluoromethane	ND		120		ug/m3 Air			10/15/16 20:28	59.8
1,1-Dichloroethane	ND		73		ug/m3 Air			10/15/16 20:28	59.8
1,2-Dichloroethane	ND		190		ug/m3 Air			10/15/16 20:28	59.8
1,1-Dichloroethene	ND		190		ug/m3 Air			10/15/16 20:28	59.8
<b>cis-1,2-Dichloroethene</b>	<b>340</b>		95		ug/m3 Air			10/15/16 20:28	59.8
trans-1,2-Dichloroethene	ND		95		ug/m3 Air			10/15/16 20:28	59.8
1,2-Dichloropropane	ND		110		ug/m3 Air			10/15/16 20:28	59.8
cis-1,3-Dichloropropene	ND		110		ug/m3 Air			10/15/16 20:28	59.8
trans-1,3-Dichloropropene	ND		110		ug/m3 Air			10/15/16 20:28	59.8
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		170		ug/m3 Air			10/15/16 20:28	59.8
Ethylbenzene	ND		100		ug/m3 Air			10/15/16 20:28	59.8
4-Ethyltoluene	ND		120		ug/m3 Air			10/15/16 20:28	59.8
Hexachlorobutadiene	ND		1300		ug/m3 Air			10/15/16 20:28	59.8
2-Hexanone	ND		98		ug/m3 Air			10/15/16 20:28	59.8
Methylene Chloride	ND		83		ug/m3 Air			10/15/16 20:28	59.8
4-Methyl-2-pentanone (MIBK)	ND		98		ug/m3 Air			10/15/16 20:28	59.8
Styrene	ND		100		ug/m3 Air			10/15/16 20:28	59.8
1,1,2,2-Tetrachloroethane	ND		160		ug/m3 Air			10/15/16 20:28	59.8
Toluene	ND		90		ug/m3 Air			10/15/16 20:28	59.8
1,2,4-Trichlorobenzene	ND		890		ug/m3 Air			10/15/16 20:28	59.8
<b>1,1,1-Trichloroethane</b>	<b>110</b>		98		ug/m3 Air			10/15/16 20:28	59.8
1,1,2-Trichloroethane	ND		130		ug/m3 Air			10/15/16 20:28	59.8
<b>Trichloroethene</b>	<b>1300</b>		130		ug/m3 Air			10/15/16 20:28	59.8
Trichlorofluoromethane	ND		130		ug/m3 Air			10/15/16 20:28	59.8
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		180		ug/m3 Air			10/15/16 20:28	59.8
1,2,4-Trimethylbenzene	ND		240		ug/m3 Air			10/15/16 20:28	59.8
1,3,5-Trimethylbenzene	ND		120		ug/m3 Air			10/15/16 20:28	59.8
Vinyl acetate	ND		170		ug/m3 Air			10/15/16 20:28	59.8

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

**Client Sample ID: SVE\_SOUTH\_PRECARBON\_092916**

**Lab Sample ID: 320-22374-1**

Date Collected: 09/29/16 14:05

Matrix: Air

Date Received: 10/05/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		61		ug/m3 Air			10/15/16 20:28	59.8
m,p-Xylene	ND		210		ug/m3 Air			10/15/16 20:28	59.8
o-Xylene	ND		100		ug/m3 Air			10/15/16 20:28	59.8
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		70 - 130					10/15/16 20:28	59.8
1,2-Dichloroethane-d4 (Surr)	99		70 - 130					10/15/16 20:28	59.8
Toluene-d8 (Surr)	101		70 - 130					10/15/16 20:28	59.8

**Method: TO-15 - Volatile Organic Compounds in Ambient Air - DL**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Tetrachloroethene</b>	<b>3600</b>		42		ppb v/v			10/16/16 19:48	105
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Tetrachloroethene</b>	<b>25000</b>		280		ug/m3 Air			10/16/16 19:48	105
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		70 - 130					10/16/16 19:48	105
1,2-Dichloroethane-d4 (Surr)	103		70 - 130					10/16/16 19:48	105
Toluene-d8 (Surr)	99		70 - 130					10/16/16 19:48	105

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_092916**

**Lab Sample ID: 320-22374-2**

Date Collected: 09/29/16 14:10

Matrix: Air

Date Received: 10/05/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		190		ppb v/v			10/15/16 21:18	38.1
Benzene	ND		15		ppb v/v			10/15/16 21:18	38.1
Benzyl chloride	ND		30		ppb v/v			10/15/16 21:18	38.1
Bromodichloromethane	ND		11		ppb v/v			10/15/16 21:18	38.1
Bromoform	ND		15		ppb v/v			10/15/16 21:18	38.1
Bromomethane	ND		30		ppb v/v			10/15/16 21:18	38.1
2-Butanone (MEK)	ND		30		ppb v/v			10/15/16 21:18	38.1
Carbon disulfide	ND		30		ppb v/v			10/15/16 21:18	38.1
Carbon tetrachloride	ND		30		ppb v/v			10/15/16 21:18	38.1
Chlorobenzene	ND		11		ppb v/v			10/15/16 21:18	38.1
Dibromochloromethane	ND		15		ppb v/v			10/15/16 21:18	38.1
Chloroethane	ND		30		ppb v/v			10/15/16 21:18	38.1
Chloroform	ND		11		ppb v/v			10/15/16 21:18	38.1
Chloromethane	ND		30		ppb v/v			10/15/16 21:18	38.1
1,2-Dibromoethane (EDB)	ND		30		ppb v/v			10/15/16 21:18	38.1
1,2-Dichlorobenzene	ND		15		ppb v/v			10/15/16 21:18	38.1
1,3-Dichlorobenzene	ND		15		ppb v/v			10/15/16 21:18	38.1
1,4-Dichlorobenzene	ND		15		ppb v/v			10/15/16 21:18	38.1
Dichlorodifluoromethane	ND		15		ppb v/v			10/15/16 21:18	38.1
1,1-Dichloroethane	ND		11		ppb v/v			10/15/16 21:18	38.1
1,2-Dichloroethane	ND		30		ppb v/v			10/15/16 21:18	38.1
1,1-Dichloroethene	ND		30		ppb v/v			10/15/16 21:18	38.1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_092916**

**Lab Sample ID: 320-22374-2**

**Date Collected: 09/29/16 14:10**

**Matrix: Air**

**Date Received: 10/05/16 09:55**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>cis-1,2-Dichloroethene</b>	<b>100</b>		15		ppb v/v			10/15/16 21:18	38.1
trans-1,2-Dichloroethene	ND		15		ppb v/v			10/15/16 21:18	38.1
1,2-Dichloropropane	ND		15		ppb v/v			10/15/16 21:18	38.1
cis-1,3-Dichloropropene	ND		15		ppb v/v			10/15/16 21:18	38.1
trans-1,3-Dichloropropene	ND		15		ppb v/v			10/15/16 21:18	38.1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		15		ppb v/v			10/15/16 21:18	38.1
Ethylbenzene	ND		15		ppb v/v			10/15/16 21:18	38.1
4-Ethyltoluene	ND		15		ppb v/v			10/15/16 21:18	38.1
Hexachlorobutadiene	ND		76		ppb v/v			10/15/16 21:18	38.1
2-Hexanone	ND		15		ppb v/v			10/15/16 21:18	38.1
Methylene Chloride	ND		15		ppb v/v			10/15/16 21:18	38.1
4-Methyl-2-pentanone (MIBK)	ND		15		ppb v/v			10/15/16 21:18	38.1
Styrene	ND		15		ppb v/v			10/15/16 21:18	38.1
1,1,2,2-Tetrachloroethane	ND		15		ppb v/v			10/15/16 21:18	38.1
<b>Tetrachloroethene</b>	<b>2100</b>		15		ppb v/v			10/15/16 21:18	38.1
Toluene	ND		15		ppb v/v			10/15/16 21:18	38.1
1,2,4-Trichlorobenzene	ND		76		ppb v/v			10/15/16 21:18	38.1
<b>1,1,1-Trichloroethane</b>	<b>26</b>		11		ppb v/v			10/15/16 21:18	38.1
1,1,2-Trichloroethane	ND		15		ppb v/v			10/15/16 21:18	38.1
<b>Trichloroethene</b>	<b>360</b>		15		ppb v/v			10/15/16 21:18	38.1
Trichlorofluoromethane	ND		15		ppb v/v			10/15/16 21:18	38.1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		15		ppb v/v			10/15/16 21:18	38.1
1,2,4-Trimethylbenzene	ND		30		ppb v/v			10/15/16 21:18	38.1
1,3,5-Trimethylbenzene	ND		15		ppb v/v			10/15/16 21:18	38.1
Vinyl acetate	ND		30		ppb v/v			10/15/16 21:18	38.1
Vinyl chloride	ND		15		ppb v/v			10/15/16 21:18	38.1
m,p-Xylene	ND		30		ppb v/v			10/15/16 21:18	38.1
o-Xylene	ND		15		ppb v/v			10/15/16 21:18	38.1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		450		ug/m3 Air			10/15/16 21:18	38.1
Benzene	ND		49		ug/m3 Air			10/15/16 21:18	38.1
Benzyl chloride	ND		160		ug/m3 Air			10/15/16 21:18	38.1
Bromodichloromethane	ND		77		ug/m3 Air			10/15/16 21:18	38.1
Bromoform	ND		160		ug/m3 Air			10/15/16 21:18	38.1
Bromomethane	ND		120		ug/m3 Air			10/15/16 21:18	38.1
2-Butanone (MEK)	ND		90		ug/m3 Air			10/15/16 21:18	38.1
Carbon disulfide	ND		95		ug/m3 Air			10/15/16 21:18	38.1
Carbon tetrachloride	ND		190		ug/m3 Air			10/15/16 21:18	38.1
Chlorobenzene	ND		53		ug/m3 Air			10/15/16 21:18	38.1
Dibromochloromethane	ND		130		ug/m3 Air			10/15/16 21:18	38.1
Chloroethane	ND		80		ug/m3 Air			10/15/16 21:18	38.1
Chloroform	ND		56		ug/m3 Air			10/15/16 21:18	38.1
Chloromethane	ND		63		ug/m3 Air			10/15/16 21:18	38.1
1,2-Dibromoethane (EDB)	ND		230		ug/m3 Air			10/15/16 21:18	38.1
1,2-Dichlorobenzene	ND		92		ug/m3 Air			10/15/16 21:18	38.1
1,3-Dichlorobenzene	ND		92		ug/m3 Air			10/15/16 21:18	38.1
1,4-Dichlorobenzene	ND		92		ug/m3 Air			10/15/16 21:18	38.1
Dichlorodifluoromethane	ND		75		ug/m3 Air			10/15/16 21:18	38.1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_092916**

**Lab Sample ID: 320-22374-2**

Date Collected: 09/29/16 14:10

Matrix: Air

Date Received: 10/05/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		46		ug/m3 Air			10/15/16 21:18	38.1
1,2-Dichloroethane	ND		120		ug/m3 Air			10/15/16 21:18	38.1
1,1-Dichloroethene	ND		120		ug/m3 Air			10/15/16 21:18	38.1
<b>cis-1,2-Dichloroethene</b>	<b>410</b>		60		ug/m3 Air			10/15/16 21:18	38.1
trans-1,2-Dichloroethene	ND		60		ug/m3 Air			10/15/16 21:18	38.1
1,2-Dichloropropane	ND		70		ug/m3 Air			10/15/16 21:18	38.1
cis-1,3-Dichloropropene	ND		69		ug/m3 Air			10/15/16 21:18	38.1
trans-1,3-Dichloropropene	ND		69		ug/m3 Air			10/15/16 21:18	38.1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		110		ug/m3 Air			10/15/16 21:18	38.1
Ethylbenzene	ND		66		ug/m3 Air			10/15/16 21:18	38.1
4-Ethyltoluene	ND		75		ug/m3 Air			10/15/16 21:18	38.1
Hexachlorobutadiene	ND		810		ug/m3 Air			10/15/16 21:18	38.1
2-Hexanone	ND		62		ug/m3 Air			10/15/16 21:18	38.1
Methylene Chloride	ND		53		ug/m3 Air			10/15/16 21:18	38.1
4-Methyl-2-pentanone (MIBK)	ND		62		ug/m3 Air			10/15/16 21:18	38.1
Styrene	ND		65		ug/m3 Air			10/15/16 21:18	38.1
1,1,2,2-Tetrachloroethane	ND		100		ug/m3 Air			10/15/16 21:18	38.1
<b>Tetrachloroethene</b>	<b>14000</b>		100		ug/m3 Air			10/15/16 21:18	38.1
Toluene	ND		57		ug/m3 Air			10/15/16 21:18	38.1
1,2,4-Trichlorobenzene	ND		570		ug/m3 Air			10/15/16 21:18	38.1
<b>1,1,1-Trichloroethane</b>	<b>140</b>		62		ug/m3 Air			10/15/16 21:18	38.1
1,1,2-Trichloroethane	ND		83		ug/m3 Air			10/15/16 21:18	38.1
<b>Trichloroethene</b>	<b>1900</b>		82		ug/m3 Air			10/15/16 21:18	38.1
Trichlorofluoromethane	ND		86		ug/m3 Air			10/15/16 21:18	38.1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		120		ug/m3 Air			10/15/16 21:18	38.1
1,2,4-Trimethylbenzene	ND		150		ug/m3 Air			10/15/16 21:18	38.1
1,3,5-Trimethylbenzene	ND		75		ug/m3 Air			10/15/16 21:18	38.1
Vinyl acetate	ND		110		ug/m3 Air			10/15/16 21:18	38.1
Vinyl chloride	ND		39		ug/m3 Air			10/15/16 21:18	38.1
m,p-Xylene	ND		130		ug/m3 Air			10/15/16 21:18	38.1
o-Xylene	ND		66		ug/m3 Air			10/15/16 21:18	38.1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		70 - 130		10/15/16 21:18	38.1
1,2-Dichloroethane-d4 (Surr)	101		70 - 130		10/15/16 21:18	38.1
Toluene-d8 (Surr)	99		70 - 130		10/15/16 21:18	38.1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_092916**

**Lab Sample ID: 320-22374-3**

Date Collected: 09/29/16 14:30

Matrix: Air

Date Received: 10/05/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>5.6</b>		5.0		ppb v/v			10/15/16 22:13	1
Benzene	ND		0.40		ppb v/v			10/15/16 22:13	1
Benzyl chloride	ND		0.80		ppb v/v			10/15/16 22:13	1
Bromodichloromethane	ND		0.30		ppb v/v			10/15/16 22:13	1
Bromoform	ND		0.40		ppb v/v			10/15/16 22:13	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_092916**

**Lab Sample ID: 320-22374-3**

Date Collected: 09/29/16 14:30

Matrix: Air

Date Received: 10/05/16 09:55

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		0.80		ppb v/v			10/15/16 22:13	1
<b>2-Butanone (MEK)</b>	<b>0.85</b>		0.80		ppb v/v			10/15/16 22:13	1
Carbon disulfide	ND		0.80		ppb v/v			10/15/16 22:13	1
Carbon tetrachloride	ND		0.80		ppb v/v			10/15/16 22:13	1
Chlorobenzene	ND		0.30		ppb v/v			10/15/16 22:13	1
Dibromochloromethane	ND		0.40		ppb v/v			10/15/16 22:13	1
Chloroethane	ND		0.80		ppb v/v			10/15/16 22:13	1
Chloroform	ND		0.30		ppb v/v			10/15/16 22:13	1
Chloromethane	ND		0.80		ppb v/v			10/15/16 22:13	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			10/15/16 22:13	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			10/15/16 22:13	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			10/15/16 22:13	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			10/15/16 22:13	1
<b>Dichlorodifluoromethane</b>	<b>0.53</b>		0.40		ppb v/v			10/15/16 22:13	1
1,1-Dichloroethane	ND		0.30		ppb v/v			10/15/16 22:13	1
1,2-Dichloroethane	ND		0.80		ppb v/v			10/15/16 22:13	1
1,1-Dichloroethene	ND		0.80		ppb v/v			10/15/16 22:13	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			10/15/16 22:13	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			10/15/16 22:13	1
1,2-Dichloropropane	ND		0.40		ppb v/v			10/15/16 22:13	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			10/15/16 22:13	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			10/15/16 22:13	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			10/15/16 22:13	1
Ethylbenzene	ND		0.40		ppb v/v			10/15/16 22:13	1
4-Ethyltoluene	ND		0.40		ppb v/v			10/15/16 22:13	1
Hexachlorobutadiene	ND		2.0		ppb v/v			10/15/16 22:13	1
2-Hexanone	ND		0.40		ppb v/v			10/15/16 22:13	1
Methylene Chloride	ND		0.40		ppb v/v			10/15/16 22:13	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			10/15/16 22:13	1
Styrene	ND		0.40		ppb v/v			10/15/16 22:13	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			10/15/16 22:13	1
<b>Tetrachloroethene</b>	<b>2.2</b>		0.40		ppb v/v			10/15/16 22:13	1
Toluene	ND		0.40		ppb v/v			10/15/16 22:13	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			10/15/16 22:13	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			10/15/16 22:13	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			10/15/16 22:13	1
Trichloroethene	ND		0.40		ppb v/v			10/15/16 22:13	1
Trichlorofluoromethane	ND		0.40		ppb v/v			10/15/16 22:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			10/15/16 22:13	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			10/15/16 22:13	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			10/15/16 22:13	1
Vinyl acetate	ND		0.80		ppb v/v			10/15/16 22:13	1
Vinyl chloride	ND		0.40		ppb v/v			10/15/16 22:13	1
m,p-Xylene	ND		0.80		ppb v/v			10/15/16 22:13	1
o-Xylene	ND		0.40		ppb v/v			10/15/16 22:13	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>13</b>		12		ug/m3 Air			10/15/16 22:13	1
Benzene	ND		1.3		ug/m3 Air			10/15/16 22:13	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_092916**

**Lab Sample ID: 320-22374-3**

**Date Collected: 09/29/16 14:30**

**Matrix: Air**

**Date Received: 10/05/16 09:55**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzyl chloride	ND		4.1		ug/m3 Air			10/15/16 22:13	1
Bromodichloromethane	ND		2.0		ug/m3 Air			10/15/16 22:13	1
Bromoform	ND		4.1		ug/m3 Air			10/15/16 22:13	1
Bromomethane	ND		3.1		ug/m3 Air			10/15/16 22:13	1
<b>2-Butanone (MEK)</b>	<b>2.5</b>		2.4		ug/m3 Air			10/15/16 22:13	1
Carbon disulfide	ND		2.5		ug/m3 Air			10/15/16 22:13	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			10/15/16 22:13	1
Chlorobenzene	ND		1.4		ug/m3 Air			10/15/16 22:13	1
Dibromochloromethane	ND		3.4		ug/m3 Air			10/15/16 22:13	1
Chloroethane	ND		2.1		ug/m3 Air			10/15/16 22:13	1
Chloroform	ND		1.5		ug/m3 Air			10/15/16 22:13	1
Chloromethane	ND		1.7		ug/m3 Air			10/15/16 22:13	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			10/15/16 22:13	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			10/15/16 22:13	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			10/15/16 22:13	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			10/15/16 22:13	1
<b>Dichlorodifluoromethane</b>	<b>2.6</b>		2.0		ug/m3 Air			10/15/16 22:13	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			10/15/16 22:13	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			10/15/16 22:13	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			10/15/16 22:13	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			10/15/16 22:13	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			10/15/16 22:13	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			10/15/16 22:13	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			10/15/16 22:13	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			10/15/16 22:13	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			10/15/16 22:13	1
Ethylbenzene	ND		1.7		ug/m3 Air			10/15/16 22:13	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			10/15/16 22:13	1
Hexachlorobutadiene	ND		21		ug/m3 Air			10/15/16 22:13	1
2-Hexanone	ND		1.6		ug/m3 Air			10/15/16 22:13	1
Methylene Chloride	ND		1.4		ug/m3 Air			10/15/16 22:13	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			10/15/16 22:13	1
Styrene	ND		1.7		ug/m3 Air			10/15/16 22:13	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			10/15/16 22:13	1
<b>Tetrachloroethene</b>	<b>15</b>		2.7		ug/m3 Air			10/15/16 22:13	1
Toluene	ND		1.5		ug/m3 Air			10/15/16 22:13	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			10/15/16 22:13	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			10/15/16 22:13	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			10/15/16 22:13	1
Trichloroethene	ND		2.1		ug/m3 Air			10/15/16 22:13	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			10/15/16 22:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			10/15/16 22:13	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			10/15/16 22:13	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			10/15/16 22:13	1
Vinyl acetate	ND		2.8		ug/m3 Air			10/15/16 22:13	1
Vinyl chloride	ND		1.0		ug/m3 Air			10/15/16 22:13	1
m,p-Xylene	ND		3.5		ug/m3 Air			10/15/16 22:13	1
o-Xylene	ND		1.7		ug/m3 Air			10/15/16 22:13	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_092916**

**Lab Sample ID: 320-22374-3**

**Date Collected: 09/29/16 14:30**

**Matrix: Air**

**Date Received: 10/05/16 09:55**

**Sample Container: Summa Canister 6L**

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
4-Bromofluorobenzene (Surr)	100		70 - 130		10/15/16 22:13	1
1,2-Dichloroethane-d4 (Surr)	102		70 - 130		10/15/16 22:13	1
Toluene-d8 (Surr)	100		70 - 130		10/15/16 22:13	1

# Surrogate Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (70-130)	12DCE (70-130)	TOL (70-130)
320-22374-1	SVE_SOUTH_PRECARBON_09	89	99	101
320-22374-1 - DL	SVE_SOUTH_PRECARBON_09	91	103	99
320-22374-2	SVE_SOUTH_POSTCARBON_1	94	101	99
320-22374-3	SVE_NORTH_EFFLUENT_0929	100	102	100
LCS 320-132741/14	Lab Control Sample	104	98	100
LCS 320-132802/3	Lab Control Sample	104	107	103
LCSD 320-132741/15	Lab Control Sample Dup	103	96	100
LCSD 320-132802/4	Lab Control Sample Dup	105	106	102
MB 320-132741/17	Method Blank	94	95	101
MB 320-132802/9	Method Blank	94	103	98

#### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)  
 12DCE = 1,2-Dichloroethane-d4 (Surr)  
 TOL = Toluene-d8 (Surr)





# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 320-132741/17

Matrix: Air

Analysis Batch: 132741

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			10/15/16 15:56	1
Benzene	ND		0.40		ppb v/v			10/15/16 15:56	1
Benzyl chloride	ND		0.80		ppb v/v			10/15/16 15:56	1
Bromodichloromethane	ND		0.30		ppb v/v			10/15/16 15:56	1
Bromoform	ND		0.40		ppb v/v			10/15/16 15:56	1
Bromomethane	ND		0.80		ppb v/v			10/15/16 15:56	1
2-Butanone (MEK)	ND		0.80		ppb v/v			10/15/16 15:56	1
Carbon disulfide	ND		0.80		ppb v/v			10/15/16 15:56	1
Carbon tetrachloride	ND		0.80		ppb v/v			10/15/16 15:56	1
Chlorobenzene	ND		0.30		ppb v/v			10/15/16 15:56	1
Dibromochloromethane	ND		0.40		ppb v/v			10/15/16 15:56	1
Chloroethane	ND		0.80		ppb v/v			10/15/16 15:56	1
Chloroform	ND		0.30		ppb v/v			10/15/16 15:56	1
Chloromethane	ND		0.80		ppb v/v			10/15/16 15:56	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			10/15/16 15:56	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			10/15/16 15:56	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			10/15/16 15:56	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			10/15/16 15:56	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			10/15/16 15:56	1
1,1-Dichloroethane	ND		0.30		ppb v/v			10/15/16 15:56	1
1,2-Dichloroethane	ND		0.80		ppb v/v			10/15/16 15:56	1
1,1-Dichloroethene	ND		0.80		ppb v/v			10/15/16 15:56	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			10/15/16 15:56	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			10/15/16 15:56	1
1,2-Dichloropropane	ND		0.40		ppb v/v			10/15/16 15:56	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			10/15/16 15:56	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			10/15/16 15:56	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			10/15/16 15:56	1
Ethylbenzene	ND		0.40		ppb v/v			10/15/16 15:56	1
4-Ethyltoluene	ND		0.40		ppb v/v			10/15/16 15:56	1
Hexachlorobutadiene	ND		2.0		ppb v/v			10/15/16 15:56	1
2-Hexanone	ND		0.40		ppb v/v			10/15/16 15:56	1
Methylene Chloride	ND		0.40		ppb v/v			10/15/16 15:56	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			10/15/16 15:56	1
Styrene	ND		0.40		ppb v/v			10/15/16 15:56	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			10/15/16 15:56	1
Tetrachloroethene	ND		0.40		ppb v/v			10/15/16 15:56	1
Toluene	ND		0.40		ppb v/v			10/15/16 15:56	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			10/15/16 15:56	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			10/15/16 15:56	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			10/15/16 15:56	1
Trichloroethene	ND		0.40		ppb v/v			10/15/16 15:56	1
Trichlorofluoromethane	ND		0.40		ppb v/v			10/15/16 15:56	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			10/15/16 15:56	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			10/15/16 15:56	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			10/15/16 15:56	1
Vinyl acetate	ND		0.80		ppb v/v			10/15/16 15:56	1
Vinyl chloride	ND		0.40		ppb v/v			10/15/16 15:56	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 320-132741/17

Matrix: Air

Analysis Batch: 132741

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		0.80		ppb v/v			10/15/16 15:56	1
o-Xylene	ND		0.40		ppb v/v			10/15/16 15:56	1
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			10/15/16 15:56	1
Benzene	ND		1.3		ug/m3 Air			10/15/16 15:56	1
Benzyl chloride	ND		4.1		ug/m3 Air			10/15/16 15:56	1
Bromodichloromethane	ND		2.0		ug/m3 Air			10/15/16 15:56	1
Bromoform	ND		4.1		ug/m3 Air			10/15/16 15:56	1
Bromomethane	ND		3.1		ug/m3 Air			10/15/16 15:56	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			10/15/16 15:56	1
Carbon disulfide	ND		2.5		ug/m3 Air			10/15/16 15:56	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			10/15/16 15:56	1
Chlorobenzene	ND		1.4		ug/m3 Air			10/15/16 15:56	1
Dibromochloromethane	ND		3.4		ug/m3 Air			10/15/16 15:56	1
Chloroethane	ND		2.1		ug/m3 Air			10/15/16 15:56	1
Chloroform	ND		1.5		ug/m3 Air			10/15/16 15:56	1
Chloromethane	ND		1.7		ug/m3 Air			10/15/16 15:56	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			10/15/16 15:56	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			10/15/16 15:56	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			10/15/16 15:56	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			10/15/16 15:56	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			10/15/16 15:56	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			10/15/16 15:56	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			10/15/16 15:56	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			10/15/16 15:56	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			10/15/16 15:56	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			10/15/16 15:56	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			10/15/16 15:56	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			10/15/16 15:56	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			10/15/16 15:56	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			10/15/16 15:56	1
Ethylbenzene	ND		1.7		ug/m3 Air			10/15/16 15:56	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			10/15/16 15:56	1
Hexachlorobutadiene	ND		21		ug/m3 Air			10/15/16 15:56	1
2-Hexanone	ND		1.6		ug/m3 Air			10/15/16 15:56	1
Methylene Chloride	ND		1.4		ug/m3 Air			10/15/16 15:56	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			10/15/16 15:56	1
Styrene	ND		1.7		ug/m3 Air			10/15/16 15:56	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			10/15/16 15:56	1
Tetrachloroethene	ND		2.7		ug/m3 Air			10/15/16 15:56	1
Toluene	ND		1.5		ug/m3 Air			10/15/16 15:56	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			10/15/16 15:56	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			10/15/16 15:56	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			10/15/16 15:56	1
Trichloroethene	ND		2.1		ug/m3 Air			10/15/16 15:56	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			10/15/16 15:56	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			10/15/16 15:56	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-132741/17**

**Matrix: Air**

**Analysis Batch: 132741**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			10/15/16 15:56	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			10/15/16 15:56	1
Vinyl acetate	ND		2.8		ug/m3 Air			10/15/16 15:56	1
Vinyl chloride	ND		1.0		ug/m3 Air			10/15/16 15:56	1
m,p-Xylene	ND		3.5		ug/m3 Air			10/15/16 15:56	1
o-Xylene	ND		1.7		ug/m3 Air			10/15/16 15:56	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		70 - 130		10/15/16 15:56	1
1,2-Dichloroethane-d4 (Surr)	95		70 - 130		10/15/16 15:56	1
Toluene-d8 (Surr)	101		70 - 130		10/15/16 15:56	1

**Lab Sample ID: LCS 320-132741/14**

**Matrix: Air**

**Analysis Batch: 132741**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	18.5		ppb v/v		93	71 - 131
Benzene	20.0	19.0		ppb v/v		95	68 - 128
Benzyl chloride	20.0	19.1		ppb v/v		95	58 - 120
Bromodichloromethane	20.0	18.8		ppb v/v		94	65 - 130
Bromoform	20.0	20.4		ppb v/v		102	64 - 144
Bromomethane	20.0	21.0		ppb v/v		105	70 - 131
2-Butanone (MEK)	20.0	19.4		ppb v/v		97	71 - 131
Carbon disulfide	20.0	18.4		ppb v/v		92	63 - 123
Carbon tetrachloride	20.0	18.9		ppb v/v		94	67 - 127
Chlorobenzene	20.0	19.9		ppb v/v		99	70 - 132
Dibromochloromethane	20.0	19.5		ppb v/v		97	68 - 128
Chloroethane	20.0	20.6		ppb v/v		103	70 - 131
Chloroform	20.0	18.9		ppb v/v		95	69 - 129
Chloromethane	20.0	20.4		ppb v/v		102	67 - 127
1,2-Dibromoethane (EDB)	20.0	20.4		ppb v/v		102	68 - 131
1,2-Dichlorobenzene	20.0	23.1		ppb v/v		116	73 - 143
1,3-Dichlorobenzene	20.0	22.7		ppb v/v		114	77 - 136
1,4-Dichlorobenzene	20.0	23.1		ppb v/v		115	73 - 143
Dichlorodifluoromethane	20.0	18.8		ppb v/v		94	69 - 129
1,1-Dichloroethane	20.0	18.6		ppb v/v		93	65 - 125
1,2-Dichloroethane	20.0	18.6		ppb v/v		93	71 - 131
1,1-Dichloroethene	20.0	17.2		ppb v/v		86	53 - 128
cis-1,2-Dichloroethene	20.0	19.2		ppb v/v		96	68 - 128
trans-1,2-Dichloroethene	20.0	18.7		ppb v/v		94	70 - 130
1,2-Dichloropropane	20.0	19.3		ppb v/v		96	74 - 128
cis-1,3-Dichloropropene	20.0	21.3		ppb v/v		107	78 - 132
trans-1,3-Dichloropropene	20.0	18.3		ppb v/v		92	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	19.7		ppb v/v		99	64 - 124
Ethylbenzene	20.0	20.3		ppb v/v		101	76 - 136
4-Ethyltoluene	20.0	20.9		ppb v/v		104	62 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-132741/14

Matrix: Air

Analysis Batch: 132741

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	22.2		ppb v/v		111	42 - 150
2-Hexanone	20.0	22.1		ppb v/v		111	70 - 128
Methylene Chloride	20.0	17.5		ppb v/v		87	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	20.8		ppb v/v		104	73 - 133
Styrene	20.0	21.5		ppb v/v		107	76 - 144
1,1,2,2-Tetrachloroethane	20.0	21.7		ppb v/v		108	75 - 135
Tetrachloroethene	20.0	19.3		ppb v/v		96	56 - 138
Toluene	20.0	19.5		ppb v/v		98	71 - 132
1,2,4-Trichlorobenzene	20.0	25.5		ppb v/v		128	59 - 150
1,1,1-Trichloroethane	20.0	18.7		ppb v/v		93	65 - 124
1,1,2-Trichloroethane	20.0	20.4		ppb v/v		102	71 - 131
Trichloroethene	20.0	19.3		ppb v/v		96	64 - 127
Trichlorofluoromethane	20.0	19.3		ppb v/v		96	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.6		ppb v/v		88	50 - 132
1,2,4-Trimethylbenzene	20.0	21.0		ppb v/v		105	61 - 145
1,3,5-Trimethylbenzene	20.0	20.7		ppb v/v		103	65 - 136
Vinyl acetate	20.0	21.0		ppb v/v		105	77 - 134
Vinyl chloride	20.0	20.8		ppb v/v		104	69 - 129
m,p-Xylene	40.0	40.9		ppb v/v		102	75 - 138
o-Xylene	20.0	20.6		ppb v/v		103	77 - 132
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	44.0		ug/m3 Air		93	71 - 131
Benzene	64	60.6		ug/m3 Air		95	68 - 128
Benzyl chloride	100	98.9		ug/m3 Air		95	58 - 120
Bromodichloromethane	130	126		ug/m3 Air		94	65 - 130
Bromoform	210	211		ug/m3 Air		102	64 - 144
Bromomethane	78	81.4		ug/m3 Air		105	70 - 131
2-Butanone (MEK)	59	57.3		ug/m3 Air		97	71 - 131
Carbon disulfide	62	57.2		ug/m3 Air		92	63 - 123
Carbon tetrachloride	130	119		ug/m3 Air		94	67 - 127
Chlorobenzene	92	91.4		ug/m3 Air		99	70 - 132
Dibromochloromethane	170	166		ug/m3 Air		97	68 - 128
Chloroethane	53	54.4		ug/m3 Air		103	70 - 131
Chloroform	98	92.5		ug/m3 Air		95	69 - 129
Chloromethane	41	42.2		ug/m3 Air		102	67 - 127
1,2-Dibromoethane (EDB)	150	156		ug/m3 Air		102	68 - 131
1,2-Dichlorobenzene	120	139		ug/m3 Air		116	73 - 143
1,3-Dichlorobenzene	120	137		ug/m3 Air		114	77 - 136
1,4-Dichlorobenzene	120	139		ug/m3 Air		115	73 - 143
Dichlorodifluoromethane	99	93.1		ug/m3 Air		94	69 - 129
1,1-Dichloroethane	81	75.2		ug/m3 Air		93	65 - 125
1,2-Dichloroethane	81	75.2		ug/m3 Air		93	71 - 131
1,1-Dichloroethene	79	68.2		ug/m3 Air		86	53 - 128
cis-1,2-Dichloroethene	79	76.3		ug/m3 Air		96	68 - 128
trans-1,2-Dichloroethene	79	74.3		ug/m3 Air		94	70 - 130
1,2-Dichloropropane	92	89.2		ug/m3 Air		96	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-132741/14

Matrix: Air

Analysis Batch: 132741

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	96.9		ug/m3 Air		107	78 - 132
trans-1,3-Dichloropropene	91	83.1		ug/m3 Air		92	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	138		ug/m3 Air		99	64 - 124
Ethylbenzene	87	88.1		ug/m3 Air		101	76 - 136
4-Ethyltoluene	98	103		ug/m3 Air		104	62 - 136
Hexachlorobutadiene	210	237		ug/m3 Air		111	42 - 150
2-Hexanone	82	90.7		ug/m3 Air		111	70 - 128
Methylene Chloride	69	60.7		ug/m3 Air		87	65 - 125
4-Methyl-2-pentanone (MIBK)	82	85.3		ug/m3 Air		104	73 - 133
Styrene	85	91.4		ug/m3 Air		107	76 - 144
1,1,2,2-Tetrachloroethane	140	149		ug/m3 Air		108	75 - 135
Tetrachloroethene	140	131		ug/m3 Air		96	56 - 138
Toluene	75	73.6		ug/m3 Air		98	71 - 132
1,2,4-Trichlorobenzene	150	189		ug/m3 Air		128	59 - 150
1,1,1-Trichloroethane	110	102		ug/m3 Air		93	65 - 124
1,1,2-Trichloroethane	110	111		ug/m3 Air		102	71 - 131
Trichloroethene	110	104		ug/m3 Air		96	64 - 127
Trichlorofluoromethane	110	108		ug/m3 Air		96	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	135		ug/m3 Air		88	50 - 132
1,2,4-Trimethylbenzene	98	103		ug/m3 Air		105	61 - 145
1,3,5-Trimethylbenzene	98	102		ug/m3 Air		103	65 - 136
Vinyl acetate	70	73.9		ug/m3 Air		105	77 - 134
Vinyl chloride	51	53.1		ug/m3 Air		104	69 - 129
m,p-Xylene	170	177		ug/m3 Air		102	75 - 138
o-Xylene	87	89.4		ug/m3 Air		103	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		70 - 130
1,2-Dichloroethane-d4 (Surr)	98		70 - 130
Toluene-d8 (Surr)	100		70 - 130

Lab Sample ID: LCSD 320-132741/15

Matrix: Air

Analysis Batch: 132741

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	17.6		ppb v/v		88	71 - 131	5	25
Benzene	20.0	19.1		ppb v/v		96	68 - 128	1	25
Benzyl chloride	20.0	18.8		ppb v/v		94	58 - 120	2	25
Bromodichloromethane	20.0	18.8		ppb v/v		94	65 - 130	0	25
Bromoform	20.0	20.2		ppb v/v		101	64 - 144	1	25
Bromomethane	20.0	20.8		ppb v/v		104	70 - 131	1	25
2-Butanone (MEK)	20.0	18.6		ppb v/v		93	71 - 131	5	25
Carbon disulfide	20.0	18.3		ppb v/v		91	63 - 123	0	25
Carbon tetrachloride	20.0	18.9		ppb v/v		94	67 - 127	0	25
Chlorobenzene	20.0	19.6		ppb v/v		98	70 - 132	1	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-132741/15

Matrix: Air

Analysis Batch: 132741

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	20.0	19.2		ppb v/v		96	68 - 128	1	25
Chloroethane	20.0	20.7		ppb v/v		104	70 - 131	0	25
Chloroform	20.0	18.9		ppb v/v		95	69 - 129	0	25
Chloromethane	20.0	20.3		ppb v/v		101	67 - 127	1	25
1,2-Dibromoethane (EDB)	20.0	20.2		ppb v/v		101	68 - 131	1	25
1,2-Dichlorobenzene	20.0	22.8		ppb v/v		114	73 - 143	2	25
1,3-Dichlorobenzene	20.0	22.4		ppb v/v		112	77 - 136	1	25
1,4-Dichlorobenzene	20.0	22.9		ppb v/v		114	73 - 143	1	25
Dichlorodifluoromethane	20.0	18.5		ppb v/v		92	69 - 129	2	25
1,1-Dichloroethane	20.0	18.5		ppb v/v		93	65 - 125	0	25
1,2-Dichloroethane	20.0	18.6		ppb v/v		93	71 - 131	0	25
1,1-Dichloroethene	20.0	17.2		ppb v/v		86	53 - 128	0	25
cis-1,2-Dichloroethene	20.0	19.2		ppb v/v		96	68 - 128	0	25
trans-1,2-Dichloroethene	20.0	18.6		ppb v/v		93	70 - 130	1	25
1,2-Dichloropropane	20.0	19.3		ppb v/v		96	74 - 128	0	25
cis-1,3-Dichloropropene	20.0	21.2		ppb v/v		106	78 - 132	0	25
trans-1,3-Dichloropropene	20.0	18.0		ppb v/v		90	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	19.1		ppb v/v		96	64 - 124	3	25
Ethylbenzene	20.0	20.1		ppb v/v		101	76 - 136	1	25
4-Ethyltoluene	20.0	20.6		ppb v/v		103	62 - 136	2	25
Hexachlorobutadiene	20.0	22.1		ppb v/v		111	42 - 150	1	25
2-Hexanone	20.0	21.9		ppb v/v		110	70 - 128	1	25
Methylene Chloride	20.0	17.4		ppb v/v		87	65 - 125	0	25
4-Methyl-2-pentanone (MIBK)	20.0	20.9		ppb v/v		104	73 - 133	0	25
Styrene	20.0	21.3		ppb v/v		106	76 - 144	1	25
1,1,2,2-Tetrachloroethane	20.0	21.5		ppb v/v		108	75 - 135	1	25
Tetrachloroethene	20.0	19.2		ppb v/v		96	56 - 138	1	25
Toluene	20.0	19.4		ppb v/v		97	71 - 132	1	25
1,2,4-Trichlorobenzene	20.0	25.2		ppb v/v		126	59 - 150	1	25
1,1,1-Trichloroethane	20.0	18.6		ppb v/v		93	65 - 124	0	25
1,1,2-Trichloroethane	20.0	20.2		ppb v/v		101	71 - 131	1	25
Trichloroethene	20.0	19.4		ppb v/v		97	64 - 127	0	25
Trichlorofluoromethane	20.0	19.1		ppb v/v		95	68 - 128	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.4		ppb v/v		87	50 - 132	1	25
1,2,4-Trimethylbenzene	20.0	21.0		ppb v/v		105	61 - 145	0	25
1,3,5-Trimethylbenzene	20.0	20.6		ppb v/v		103	65 - 136	1	25
Vinyl acetate	20.0	20.5		ppb v/v		103	77 - 134	2	25
Vinyl chloride	20.0	20.7		ppb v/v		103	69 - 129	1	25
m,p-Xylene	40.0	40.6		ppb v/v		102	75 - 138	1	25
o-Xylene	20.0	20.4		ppb v/v		102	77 - 132	1	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	41.8		ug/m3 Air		88	71 - 131	5	25
Benzene	64	61.1		ug/m3 Air		96	68 - 128	1	25
Benzyl chloride	100	97.3		ug/m3 Air		94	58 - 120	2	25
Bromodichloromethane	130	126		ug/m3 Air		94	65 - 130	0	25
Bromoform	210	209		ug/m3 Air		101	64 - 144	1	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-132741/15

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 132741

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	78	80.9		ug/m3 Air		104	70 - 131	1	25
2-Butanone (MEK)	59	54.7		ug/m3 Air		93	71 - 131	5	25
Carbon disulfide	62	57.0		ug/m3 Air		91	63 - 123	0	25
Carbon tetrachloride	130	119		ug/m3 Air		94	67 - 127	0	25
Chlorobenzene	92	90.4		ug/m3 Air		98	70 - 132	1	25
Dibromochloromethane	170	164		ug/m3 Air		96	68 - 128	1	25
Chloroethane	53	54.7		ug/m3 Air		104	70 - 131	0	25
Chloroform	98	92.3		ug/m3 Air		95	69 - 129	0	25
Chloromethane	41	41.9		ug/m3 Air		101	67 - 127	1	25
1,2-Dibromoethane (EDB)	150	156		ug/m3 Air		101	68 - 131	1	25
1,2-Dichlorobenzene	120	137		ug/m3 Air		114	73 - 143	2	25
1,3-Dichlorobenzene	120	135		ug/m3 Air		112	77 - 136	1	25
1,4-Dichlorobenzene	120	137		ug/m3 Air		114	73 - 143	1	25
Dichlorodifluoromethane	99	91.3		ug/m3 Air		92	69 - 129	2	25
1,1-Dichloroethane	81	75.1		ug/m3 Air		93	65 - 125	0	25
1,2-Dichloroethane	81	75.1		ug/m3 Air		93	71 - 131	0	25
1,1-Dichloroethene	79	68.3		ug/m3 Air		86	53 - 128	0	25
cis-1,2-Dichloroethene	79	76.0		ug/m3 Air		96	68 - 128	0	25
trans-1,2-Dichloroethene	79	73.7		ug/m3 Air		93	70 - 130	1	25
1,2-Dichloropropane	92	89.1		ug/m3 Air		96	74 - 128	0	25
cis-1,3-Dichloropropene	91	96.4		ug/m3 Air		106	78 - 132	0	25
trans-1,3-Dichloropropene	91	81.9		ug/m3 Air		90	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	134		ug/m3 Air		96	64 - 124	3	25
Ethylbenzene	87	87.3		ug/m3 Air		101	76 - 136	1	25
4-Ethyltoluene	98	101		ug/m3 Air		103	62 - 136	2	25
Hexachlorobutadiene	210	236		ug/m3 Air		111	42 - 150	1	25
2-Hexanone	82	89.8		ug/m3 Air		110	70 - 128	1	25
Methylene Chloride	69	60.4		ug/m3 Air		87	65 - 125	0	25
4-Methyl-2-pentanone (MIBK)	82	85.5		ug/m3 Air		104	73 - 133	0	25
Styrene	85	90.7		ug/m3 Air		106	76 - 144	1	25
1,1,2,2-Tetrachloroethane	140	148		ug/m3 Air		108	75 - 135	1	25
Tetrachloroethene	140	130		ug/m3 Air		96	56 - 138	1	25
Toluene	75	73.0		ug/m3 Air		97	71 - 132	1	25
1,2,4-Trichlorobenzene	150	187		ug/m3 Air		126	59 - 150	1	25
1,1,1-Trichloroethane	110	102		ug/m3 Air		93	65 - 124	0	25
1,1,2-Trichloroethane	110	110		ug/m3 Air		101	71 - 131	1	25
Trichloroethene	110	104		ug/m3 Air		97	64 - 127	0	25
Trichlorofluoromethane	110	107		ug/m3 Air		95	68 - 128	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	134		ug/m3 Air		87	50 - 132	1	25
1,2,4-Trimethylbenzene	98	103		ug/m3 Air		105	61 - 145	0	25
1,3,5-Trimethylbenzene	98	101		ug/m3 Air		103	65 - 136	1	25
Vinyl acetate	70	72.2		ug/m3 Air		103	77 - 134	2	25
Vinyl chloride	51	52.9		ug/m3 Air		103	69 - 129	1	25
m,p-Xylene	170	176		ug/m3 Air		102	75 - 138	1	25
o-Xylene	87	88.6		ug/m3 Air		102	77 - 132	1	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-132741/15**  
**Matrix: Air**  
**Analysis Batch: 132741**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		70 - 130
1,2-Dichloroethane-d4 (Surr)	96		70 - 130
Toluene-d8 (Surr)	100		70 - 130

**Lab Sample ID: MB 320-132802/9**  
**Matrix: Air**  
**Analysis Batch: 132802**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			10/16/16 19:05	1
Benzene	ND		0.40		ppb v/v			10/16/16 19:05	1
Benzyl chloride	ND		0.80		ppb v/v			10/16/16 19:05	1
Bromodichloromethane	ND		0.30		ppb v/v			10/16/16 19:05	1
Bromoform	ND		0.40		ppb v/v			10/16/16 19:05	1
Bromomethane	ND		0.80		ppb v/v			10/16/16 19:05	1
2-Butanone (MEK)	ND		0.80		ppb v/v			10/16/16 19:05	1
Carbon disulfide	ND		0.80		ppb v/v			10/16/16 19:05	1
Carbon tetrachloride	ND		0.80		ppb v/v			10/16/16 19:05	1
Chlorobenzene	ND		0.30		ppb v/v			10/16/16 19:05	1
Dibromochloromethane	ND		0.40		ppb v/v			10/16/16 19:05	1
Chloroethane	ND		0.80		ppb v/v			10/16/16 19:05	1
Chloroform	ND		0.30		ppb v/v			10/16/16 19:05	1
Chloromethane	ND		0.80		ppb v/v			10/16/16 19:05	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			10/16/16 19:05	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			10/16/16 19:05	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			10/16/16 19:05	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			10/16/16 19:05	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			10/16/16 19:05	1
1,1-Dichloroethane	ND		0.30		ppb v/v			10/16/16 19:05	1
1,2-Dichloroethane	ND		0.80		ppb v/v			10/16/16 19:05	1
1,1-Dichloroethene	ND		0.80		ppb v/v			10/16/16 19:05	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			10/16/16 19:05	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			10/16/16 19:05	1
1,2-Dichloropropane	ND		0.40		ppb v/v			10/16/16 19:05	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			10/16/16 19:05	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			10/16/16 19:05	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			10/16/16 19:05	1
Ethylbenzene	ND		0.40		ppb v/v			10/16/16 19:05	1
4-Ethyltoluene	ND		0.40		ppb v/v			10/16/16 19:05	1
Hexachlorobutadiene	ND		2.0		ppb v/v			10/16/16 19:05	1
2-Hexanone	ND		0.40		ppb v/v			10/16/16 19:05	1
Methylene Chloride	ND		0.40		ppb v/v			10/16/16 19:05	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			10/16/16 19:05	1
Styrene	ND		0.40		ppb v/v			10/16/16 19:05	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			10/16/16 19:05	1
Tetrachloroethene	ND		0.40		ppb v/v			10/16/16 19:05	1
Toluene	ND		0.40		ppb v/v			10/16/16 19:05	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			10/16/16 19:05	1

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-132802/9**

**Matrix: Air**

**Analysis Batch: 132802**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.30		ppb v/v			10/16/16 19:05	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			10/16/16 19:05	1
Trichloroethene	ND		0.40		ppb v/v			10/16/16 19:05	1
Trichlorofluoromethane	ND		0.40		ppb v/v			10/16/16 19:05	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			10/16/16 19:05	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			10/16/16 19:05	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			10/16/16 19:05	1
Vinyl acetate	ND		0.80		ppb v/v			10/16/16 19:05	1
Vinyl chloride	ND		0.40		ppb v/v			10/16/16 19:05	1
m,p-Xylene	ND		0.80		ppb v/v			10/16/16 19:05	1
o-Xylene	ND		0.40		ppb v/v			10/16/16 19:05	1

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			10/16/16 19:05	1
Benzene	ND		1.3		ug/m3 Air			10/16/16 19:05	1
Benzyl chloride	ND		4.1		ug/m3 Air			10/16/16 19:05	1
Bromodichloromethane	ND		2.0		ug/m3 Air			10/16/16 19:05	1
Bromoform	ND		4.1		ug/m3 Air			10/16/16 19:05	1
Bromomethane	ND		3.1		ug/m3 Air			10/16/16 19:05	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			10/16/16 19:05	1
Carbon disulfide	ND		2.5		ug/m3 Air			10/16/16 19:05	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			10/16/16 19:05	1
Chlorobenzene	ND		1.4		ug/m3 Air			10/16/16 19:05	1
Dibromochloromethane	ND		3.4		ug/m3 Air			10/16/16 19:05	1
Chloroethane	ND		2.1		ug/m3 Air			10/16/16 19:05	1
Chloroform	ND		1.5		ug/m3 Air			10/16/16 19:05	1
Chloromethane	ND		1.7		ug/m3 Air			10/16/16 19:05	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			10/16/16 19:05	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			10/16/16 19:05	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			10/16/16 19:05	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			10/16/16 19:05	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			10/16/16 19:05	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			10/16/16 19:05	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			10/16/16 19:05	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			10/16/16 19:05	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			10/16/16 19:05	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			10/16/16 19:05	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			10/16/16 19:05	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			10/16/16 19:05	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			10/16/16 19:05	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			10/16/16 19:05	1
Ethylbenzene	ND		1.7		ug/m3 Air			10/16/16 19:05	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			10/16/16 19:05	1
Hexachlorobutadiene	ND		21		ug/m3 Air			10/16/16 19:05	1
2-Hexanone	ND		1.6		ug/m3 Air			10/16/16 19:05	1
Methylene Chloride	ND		1.4		ug/m3 Air			10/16/16 19:05	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			10/16/16 19:05	1
Styrene	ND		1.7		ug/m3 Air			10/16/16 19:05	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-132802/9**  
**Matrix: Air**  
**Analysis Batch: 132802**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			10/16/16 19:05	1
Tetrachloroethene	ND		2.7		ug/m3 Air			10/16/16 19:05	1
Toluene	ND		1.5		ug/m3 Air			10/16/16 19:05	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			10/16/16 19:05	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			10/16/16 19:05	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			10/16/16 19:05	1
Trichloroethene	ND		2.1		ug/m3 Air			10/16/16 19:05	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			10/16/16 19:05	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			10/16/16 19:05	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			10/16/16 19:05	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			10/16/16 19:05	1
Vinyl acetate	ND		2.8		ug/m3 Air			10/16/16 19:05	1
Vinyl chloride	ND		1.0		ug/m3 Air			10/16/16 19:05	1
m,p-Xylene	ND		3.5		ug/m3 Air			10/16/16 19:05	1
o-Xylene	ND		1.7		ug/m3 Air			10/16/16 19:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		70 - 130		10/16/16 19:05	1
1,2-Dichloroethane-d4 (Surr)	103		70 - 130		10/16/16 19:05	1
Toluene-d8 (Surr)	98		70 - 130		10/16/16 19:05	1

**Lab Sample ID: LCS 320-132802/3**  
**Matrix: Air**  
**Analysis Batch: 132802**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	17.2		ppb v/v		86	71 - 131
Benzene	20.0	18.7		ppb v/v		94	68 - 128
Benzyl chloride	20.0	14.3		ppb v/v		72	58 - 120
Bromodichloromethane	20.0	18.6		ppb v/v		93	65 - 130
Bromoform	20.0	19.2		ppb v/v		96	64 - 144
Bromomethane	20.0	21.2		ppb v/v		106	70 - 131
2-Butanone (MEK)	20.0	17.0		ppb v/v		85	71 - 131
Carbon disulfide	20.0	19.1		ppb v/v		96	63 - 123
Carbon tetrachloride	20.0	18.1		ppb v/v		90	67 - 127
Chlorobenzene	20.0	18.5		ppb v/v		92	70 - 132
Dibromochloromethane	20.0	19.2		ppb v/v		96	68 - 128
Chloroethane	20.0	21.0		ppb v/v		105	70 - 131
Chloroform	20.0	18.5		ppb v/v		92	69 - 129
Chloromethane	20.0	23.0		ppb v/v		115	67 - 127
1,2-Dibromoethane (EDB)	20.0	20.2		ppb v/v		101	68 - 131
1,2-Dichlorobenzene	20.0	19.9		ppb v/v		100	73 - 143
1,3-Dichlorobenzene	20.0	20.8		ppb v/v		104	77 - 136
1,4-Dichlorobenzene	20.0	21.1		ppb v/v		106	73 - 143
Dichlorodifluoromethane	20.0	19.7		ppb v/v		98	69 - 129
1,1-Dichloroethane	20.0	18.5		ppb v/v		93	65 - 125
1,2-Dichloroethane	20.0	19.3		ppb v/v		97	71 - 131
1,1-Dichloroethene	20.0	17.9		ppb v/v		89	53 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-132802/3

Matrix: Air

Analysis Batch: 132802

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	18.9		ppb v/v		95	68 - 128
trans-1,2-Dichloroethene	20.0	19.3		ppb v/v		97	70 - 130
1,2-Dichloropropane	20.0	19.7		ppb v/v		99	74 - 128
cis-1,3-Dichloropropene	20.0	21.1		ppb v/v		105	78 - 132
trans-1,3-Dichloropropene	20.0	18.3		ppb v/v		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	14.3		ppb v/v		72	64 - 124
Ethylbenzene	20.0	18.8		ppb v/v		94	76 - 136
4-Ethyltoluene	20.0	16.8		ppb v/v		84	62 - 136
Hexachlorobutadiene	20.0	24.1		ppb v/v		121	42 - 150
2-Hexanone	20.0	16.8		ppb v/v		84	70 - 128
Methylene Chloride	20.0	18.5		ppb v/v		93	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	17.5		ppb v/v		88	73 - 133
Styrene	20.0	19.5		ppb v/v		98	76 - 144
1,1,2,2-Tetrachloroethane	20.0	17.0		ppb v/v		85	75 - 135
Tetrachloroethene	20.0	18.5		ppb v/v		93	56 - 138
Toluene	20.0	19.3		ppb v/v		97	71 - 132
1,2,4-Trichlorobenzene	20.0	24.8		ppb v/v		124	59 - 150
1,1,1-Trichloroethane	20.0	18.3		ppb v/v		92	65 - 124
1,1,2-Trichloroethane	20.0	19.6		ppb v/v		98	71 - 131
Trichloroethene	20.0	19.5		ppb v/v		97	64 - 127
Trichlorofluoromethane	20.0	19.6		ppb v/v		98	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.3		ppb v/v		86	50 - 132
1,2,4-Trimethylbenzene	20.0	16.5		ppb v/v		82	61 - 145
1,3,5-Trimethylbenzene	20.0	16.7		ppb v/v		83	65 - 136
Vinyl acetate	20.0	18.1		ppb v/v		90	77 - 134
Vinyl chloride	20.0	21.3		ppb v/v		107	69 - 129
m,p-Xylene	40.0	36.4		ppb v/v		91	75 - 138
o-Xylene	20.0	18.0		ppb v/v		90	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	40.8		ug/m3 Air		86	71 - 131
Benzene	64	59.8		ug/m3 Air		94	68 - 128
Benzyl chloride	100	74.1		ug/m3 Air		72	58 - 120
Bromodichloromethane	130	124		ug/m3 Air		93	65 - 130
Bromoform	210	199		ug/m3 Air		96	64 - 144
Bromomethane	78	82.4		ug/m3 Air		106	70 - 131
2-Butanone (MEK)	59	50.0		ug/m3 Air		85	71 - 131
Carbon disulfide	62	59.5		ug/m3 Air		96	63 - 123
Carbon tetrachloride	130	114		ug/m3 Air		90	67 - 127
Chlorobenzene	92	85.1		ug/m3 Air		92	70 - 132
Dibromochloromethane	170	163		ug/m3 Air		96	68 - 128
Chloroethane	53	55.3		ug/m3 Air		105	70 - 131
Chloroform	98	90.3		ug/m3 Air		92	69 - 129
Chloromethane	41	47.5		ug/m3 Air		115	67 - 127
1,2-Dibromoethane (EDB)	150	155		ug/m3 Air		101	68 - 131
1,2-Dichlorobenzene	120	120		ug/m3 Air		100	73 - 143
1,3-Dichlorobenzene	120	125		ug/m3 Air		104	77 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-132802/3**  
**Matrix: Air**  
**Analysis Batch: 132802**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	120	127		ug/m3 Air		106	73 - 143
Dichlorodifluoromethane	99	97.4		ug/m3 Air		98	69 - 129
1,1-Dichloroethane	81	75.0		ug/m3 Air		93	65 - 125
1,2-Dichloroethane	81	78.2		ug/m3 Air		97	71 - 131
1,1-Dichloroethene	79	70.8		ug/m3 Air		89	53 - 128
cis-1,2-Dichloroethene	79	75.1		ug/m3 Air		95	68 - 128
trans-1,2-Dichloroethene	79	76.6		ug/m3 Air		97	70 - 130
1,2-Dichloropropane	92	91.3		ug/m3 Air		99	74 - 128
cis-1,3-Dichloropropene	91	95.7		ug/m3 Air		105	78 - 132
trans-1,3-Dichloropropene	91	82.9		ug/m3 Air		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	100		ug/m3 Air		72	64 - 124
Ethylbenzene	87	81.5		ug/m3 Air		94	76 - 136
4-Ethyltoluene	98	82.6		ug/m3 Air		84	62 - 136
Hexachlorobutadiene	210	257		ug/m3 Air		121	42 - 150
2-Hexanone	82	68.8		ug/m3 Air		84	70 - 128
Methylene Chloride	69	64.4		ug/m3 Air		93	65 - 125
4-Methyl-2-pentanone (MIBK)	82	71.9		ug/m3 Air		88	73 - 133
Styrene	85	83.2		ug/m3 Air		98	76 - 144
1,1,1,2-Tetrachloroethane	140	117		ug/m3 Air		85	75 - 135
Tetrachloroethene	140	126		ug/m3 Air		93	56 - 138
Toluene	75	72.8		ug/m3 Air		97	71 - 132
1,2,4-Trichlorobenzene	150	184		ug/m3 Air		124	59 - 150
1,1,1-Trichloroethane	110	99.9		ug/m3 Air		92	65 - 124
1,1,2-Trichloroethane	110	107		ug/m3 Air		98	71 - 131
Trichloroethene	110	105		ug/m3 Air		97	64 - 127
Trichlorofluoromethane	110	110		ug/m3 Air		98	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	133		ug/m3 Air		86	50 - 132
1,2,4-Trimethylbenzene	98	80.9		ug/m3 Air		82	61 - 145
1,3,5-Trimethylbenzene	98	82.1		ug/m3 Air		83	65 - 136
Vinyl acetate	70	63.6		ug/m3 Air		90	77 - 134
Vinyl chloride	51	54.4		ug/m3 Air		107	69 - 129
m,p-Xylene	170	158		ug/m3 Air		91	75 - 138
o-Xylene	87	78.2		ug/m3 Air		90	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		70 - 130
1,2-Dichloroethane-d4 (Surr)	107		70 - 130
Toluene-d8 (Surr)	103		70 - 130

**Lab Sample ID: LCSD 320-132802/4**  
**Matrix: Air**  
**Analysis Batch: 132802**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	17.6		ppb v/v		88	71 - 131	2	25
Benzene	20.0	18.7		ppb v/v		93	68 - 128	0	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-132802/4

Matrix: Air

Analysis Batch: 132802

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzyl chloride	20.0	15.1		ppb v/v		75	58 - 120	5	25
Bromodichloromethane	20.0	18.5		ppb v/v		92	65 - 130	0	25
Bromoform	20.0	19.3		ppb v/v		96	64 - 144	0	25
Bromomethane	20.0	20.9		ppb v/v		104	70 - 131	2	25
2-Butanone (MEK)	20.0	17.5		ppb v/v		88	71 - 131	3	25
Carbon disulfide	20.0	18.9		ppb v/v		94	63 - 123	1	25
Carbon tetrachloride	20.0	18.2		ppb v/v		91	67 - 127	1	25
Chlorobenzene	20.0	18.5		ppb v/v		93	70 - 132	0	25
Dibromochloromethane	20.0	19.1		ppb v/v		95	68 - 128	1	25
Chloroethane	20.0	20.5		ppb v/v		103	70 - 131	2	25
Chloroform	20.0	18.1		ppb v/v		91	69 - 129	2	25
Chloromethane	20.0	22.4		ppb v/v		112	67 - 127	3	25
1,2-Dibromoethane (EDB)	20.0	20.3		ppb v/v		101	68 - 131	0	25
1,2-Dichlorobenzene	20.0	20.6		ppb v/v		103	73 - 143	3	25
1,3-Dichlorobenzene	20.0	21.3		ppb v/v		107	77 - 136	2	25
1,4-Dichlorobenzene	20.0	21.6		ppb v/v		108	73 - 143	2	25
Dichlorodifluoromethane	20.0	19.8		ppb v/v		99	69 - 129	1	25
1,1-Dichloroethane	20.0	18.2		ppb v/v		91	65 - 125	2	25
1,2-Dichloroethane	20.0	19.2		ppb v/v		96	71 - 131	1	25
1,1-Dichloroethene	20.0	17.5		ppb v/v		88	53 - 128	2	25
cis-1,2-Dichloroethene	20.0	18.6		ppb v/v		93	68 - 128	2	25
trans-1,2-Dichloroethene	20.0	19.1		ppb v/v		95	70 - 130	1	25
1,2-Dichloropropane	20.0	19.5		ppb v/v		97	74 - 128	1	25
cis-1,3-Dichloropropene	20.0	20.9		ppb v/v		105	78 - 132	1	25
trans-1,3-Dichloropropene	20.0	18.2		ppb v/v		91	56 - 136	0	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	17.5		ppb v/v		87	64 - 124	20	25
Ethylbenzene	20.0	19.3		ppb v/v		97	76 - 136	3	25
4-Ethyltoluene	20.0	17.1		ppb v/v		86	62 - 136	2	25
Hexachlorobutadiene	20.0	25.1		ppb v/v		125	42 - 150	4	25
2-Hexanone	20.0	17.7		ppb v/v		89	70 - 128	5	25
Methylene Chloride	20.0	18.0		ppb v/v		90	65 - 125	3	25
4-Methyl-2-pentanone (MIBK)	20.0	18.4		ppb v/v		92	73 - 133	5	25
Styrene	20.0	20.1		ppb v/v		100	76 - 144	3	25
1,1,2,2-Tetrachloroethane	20.0	17.8		ppb v/v		89	75 - 135	5	25
Tetrachloroethene	20.0	18.5		ppb v/v		92	56 - 138	0	25
Toluene	20.0	19.2		ppb v/v		96	71 - 132	1	25
1,2,4-Trichlorobenzene	20.0	26.3		ppb v/v		132	59 - 150	6	25
1,1,1-Trichloroethane	20.0	18.0		ppb v/v		90	65 - 124	2	25
1,1,2-Trichloroethane	20.0	19.5		ppb v/v		97	71 - 131	0	25
Trichloroethene	20.0	19.2		ppb v/v		96	64 - 127	2	25
Trichlorofluoromethane	20.0	19.2		ppb v/v		96	68 - 128	2	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.0		ppb v/v		85	50 - 132	2	25
1,2,4-Trimethylbenzene	20.0	19.0		ppb v/v		95	61 - 145	14	25
1,3,5-Trimethylbenzene	20.0	17.3		ppb v/v		86	65 - 136	4	25
Vinyl acetate	20.0	18.8		ppb v/v		94	77 - 134	4	25
Vinyl chloride	20.0	20.8		ppb v/v		104	69 - 129	2	25
m,p-Xylene	40.0	37.3		ppb v/v		93	75 - 138	3	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-132802/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 132802

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
o-Xylene	20.0	18.5		ppb v/v		92	77 - 132	2	25
Acetone	48	41.7		ug/m3 Air		88	71 - 131	2	25
Benzene	64	59.7		ug/m3 Air		93	68 - 128	0	25
Benzyl chloride	100	78.1		ug/m3 Air		75	58 - 120	5	25
Bromodichloromethane	130	124		ug/m3 Air		92	65 - 130	0	25
Bromoform	210	199		ug/m3 Air		96	64 - 144	0	25
Bromomethane	78	81.0		ug/m3 Air		104	70 - 131	2	25
2-Butanone (MEK)	59	51.7		ug/m3 Air		88	71 - 131	3	25
Carbon disulfide	62	58.8		ug/m3 Air		94	63 - 123	1	25
Carbon tetrachloride	130	114		ug/m3 Air		91	67 - 127	1	25
Chlorobenzene	92	85.2		ug/m3 Air		93	70 - 132	0	25
Dibromochloromethane	170	163		ug/m3 Air		95	68 - 128	1	25
Chloroethane	53	54.1		ug/m3 Air		103	70 - 131	2	25
Chloroform	98	88.6		ug/m3 Air		91	69 - 129	2	25
Chloromethane	41	46.3		ug/m3 Air		112	67 - 127	3	25
1,2-Dibromoethane (EDB)	150	156		ug/m3 Air		101	68 - 131	0	25
1,2-Dichlorobenzene	120	124		ug/m3 Air		103	73 - 143	3	25
1,3-Dichlorobenzene	120	128		ug/m3 Air		107	77 - 136	2	25
1,4-Dichlorobenzene	120	130		ug/m3 Air		108	73 - 143	2	25
Dichlorodifluoromethane	99	98.0		ug/m3 Air		99	69 - 129	1	25
1,1-Dichloroethane	81	73.8		ug/m3 Air		91	65 - 125	2	25
1,2-Dichloroethane	81	77.7		ug/m3 Air		96	71 - 131	1	25
1,1-Dichloroethene	79	69.4		ug/m3 Air		88	53 - 128	2	25
cis-1,2-Dichloroethene	79	73.7		ug/m3 Air		93	68 - 128	2	25
trans-1,2-Dichloroethene	79	75.6		ug/m3 Air		95	70 - 130	1	25
1,2-Dichloropropane	92	90.0		ug/m3 Air		97	74 - 128	1	25
cis-1,3-Dichloropropene	91	95.1		ug/m3 Air		105	78 - 132	1	25
trans-1,3-Dichloropropene	91	82.7		ug/m3 Air		91	56 - 136	0	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	122		ug/m3 Air		87	64 - 124	20	25
Ethylbenzene	87	83.9		ug/m3 Air		97	76 - 136	3	25
4-Ethyltoluene	98	84.3		ug/m3 Air		86	62 - 136	2	25
Hexachlorobutadiene	210	267		ug/m3 Air		125	42 - 150	4	25
2-Hexanone	82	72.7		ug/m3 Air		89	70 - 128	5	25
Methylene Chloride	69	62.7		ug/m3 Air		90	65 - 125	3	25
4-Methyl-2-pentanone (MIBK)	82	75.2		ug/m3 Air		92	73 - 133	5	25
Styrene	85	85.4		ug/m3 Air		100	76 - 144	3	25
1,1,2,2-Tetrachloroethane	140	122		ug/m3 Air		89	75 - 135	5	25
Tetrachloroethene	140	125		ug/m3 Air		92	56 - 138	0	25
Toluene	75	72.3		ug/m3 Air		96	71 - 132	1	25
1,2,4-Trichlorobenzene	150	195		ug/m3 Air		132	59 - 150	6	25
1,1,1-Trichloroethane	110	98.2		ug/m3 Air		90	65 - 124	2	25
1,1,2-Trichloroethane	110	106		ug/m3 Air		97	71 - 131	0	25
Trichloroethene	110	103		ug/m3 Air		96	64 - 127	2	25
Trichlorofluoromethane	110	108		ug/m3 Air		96	68 - 128	2	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	130		ug/m3 Air		85	50 - 132	2	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-132802/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 132802

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,4-Trimethylbenzene	98	93.2		ug/m3 Air		95	61 - 145	14	25
1,3,5-Trimethylbenzene	98	85.0		ug/m3 Air		86	65 - 136	4	25
Vinyl acetate	70	66.2		ug/m3 Air		94	77 - 134	4	25
Vinyl chloride	51	53.2		ug/m3 Air		104	69 - 129	2	25
m,p-Xylene	170	162		ug/m3 Air		93	75 - 138	3	25
o-Xylene	87	80.2		ug/m3 Air		92	77 - 132	2	25

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
4-Bromofluorobenzene (Surr)	105		70 - 130
1,2-Dichloroethane-d4 (Surr)	106		70 - 130
Toluene-d8 (Surr)	102		70 - 130

# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Air - GC/MS VOA

### Analysis Batch: 132741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-22374-1	SVE_SOUTH_PRECARBON_092916	Total/NA	Air	TO-15	
320-22374-2	SVE_SOUTH_POSTCARBON_092916	Total/NA	Air	TO-15	
320-22374-3	SVE_NORTH_EFFLUENT_092916	Total/NA	Air	TO-15	
MB 320-132741/17	Method Blank	Total/NA	Air	TO-15	
LCS 320-132741/14	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-132741/15	Lab Control Sample Dup	Total/NA	Air	TO-15	

### Analysis Batch: 132802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-22374-1 - DL	SVE_SOUTH_PRECARBON_092916	Total/NA	Air	TO-15	
MB 320-132802/9	Method Blank	Total/NA	Air	TO-15	
LCS 320-132802/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-132802/4	Lab Control Sample Dup	Total/NA	Air	TO-15	



# Lab Chronicle

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

**Client Sample ID: SVE\_SOUTH\_PRECARBON\_092916**

**Lab Sample ID: 320-22374-1**

**Date Collected: 09/29/16 14:05**

**Matrix: Air**

**Date Received: 10/05/16 09:55**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15	DL	105	4 mL	250 mL	132802	10/16/16 19:48	SRS	TAL SAC
Total/NA	Analysis	TO-15		59.8	7 mL	250 mL	132741	10/15/16 20:28	YK1	TAL SAC

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_092916**

**Lab Sample ID: 320-22374-2**

**Date Collected: 09/29/16 14:10**

**Matrix: Air**

**Date Received: 10/05/16 09:55**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		38.1	11 mL	250 mL	132741	10/15/16 21:18	YK1	TAL SAC

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_092916**

**Lab Sample ID: 320-22374-3**

**Date Collected: 09/29/16 14:30**

**Matrix: Air**

**Date Received: 10/05/16 09:55**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	413 mL	250 mL	132741	10/15/16 22:13	YK1	TAL SAC

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# Certification Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-16
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
USDA	Federal		P330-11-00092	04-17-17

# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

- 1
- 2
- 3
- 4
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- 13
- 14
- 15
- 16

# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-22374-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-22374-1	SVE_SOUTH_PRECARBON_092916	Air	09/29/16 14:05	10/05/16 09:55
320-22374-2	SVE_SOUTH_POSTCARBON_092916	Air	09/29/16 14:10	10/05/16 09:55
320-22374-3	SVE_NORTH_EFFLUENT_092916	Air	09/29/16 14:30	10/05/16 09:55

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16



# Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-22374-1

**Login Number: 22374**

**List Source: TestAmerica Sacramento**

**List Number: 1**

**Creator: Nelson, Kym D**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



JOB # **320-22374**  
Sample # **1**

Client/Project:		VFR ID:	
Canister Serial #:	34000851	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	13.44	10/11/16	SV	
FINAL PRESSURE (PSIA)	22.52	10/11/16	SV	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	1.68			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
10/15/16	14.70	44.10	1.68	SV	5.03
10/16/16	14.70	29.40	5.03	srs	10.05
			10.05		#DIV/0!

Analytical Dilution Factors							
	Date	Instr.	File #				
Canister DF = <b>5.03</b> X	10/15/2016	ATMS9		Load DF = <b>11.904762</b> X	Bag DF = <b>1</b> =	FINAL DF	
						<b>59.84268707</b>	
						BVf (mLs)	
						BVi (mLs)	
Canister DF = <b>10.05</b> X	10/16/2016	ATMS2		Load DF = <b>10.416667</b> X	Bag DF = <b>1</b> =	FINAL DF	
						<b>104.7247024</b>	
						BVf (mLs)	
						BVi (mLs)	
Canister DF = <b>1.68</b> X				Load DF = <b>#DIV/0!</b> X	Bag DF = <b>1</b> =	FINAL DF	
						<b>#DIV/0!</b>	
						BVf (mLs)	
						BVi (mLs)	



JOB # **320-22374**  
Sample # **2**

Client/Project:		VFR ID:	
Canister Serial #:	8428	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	13.30	10/11/16	SV	
FINAL PRESSURE (PSIA)	22.31	10/11/16	SV	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	1.68			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
10/15/16	14.70	44.10	1.68	SV	5.03
			5.03		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors						
	Date	Instr.	File #			
Canister DF = <b>5.03</b> X	10/15/2016	ATMS9		=	FINAL DF	<b>38.123/1839</b>
Load DF = <b>7.5757576</b> X				=	FINAL DF	<b>#DIV/0!</b>
Canister DF = <b>1.68</b> X				=	FINAL DF	<b>#DIV/0!</b>
Canister DF = <b>1.68</b> X				=	FINAL DF	<b>#DIV/0!</b>





JOB # **320-22374**  
Sample # **3**

Client/Project:		VFR ID:	
Canister Serial #:	34001367	Duration:	<input type="checkbox"/> Hrs <input type="checkbox"/> Min
Cleaning Job:		Flow:	mL/min
Client ID:		Initials:	
Site Location:			

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY				
READING	PRESS.	DATE	INITIALS	
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT	
<input type="checkbox"/> Helium Pre-dilution - Final Pressure (INCHES Hg)				
INITIAL PRESSURE (PSIA)	13.72	10/11/16	SV	
FINAL PRESSURE (PSIA)	22.58	10/11/16	SV	
Pressurization Gas: <input type="checkbox"/> N2 <input type="checkbox"/> He	SCREENED <input type="checkbox"/>	SCRN DIL. VS 250mLs:		
Initial Canister Dilution Factor =	1.65			

CANISTER REPRESSURIZATION					
Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.65		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors						
	Date	Instr.	File #			
Canister DF =	10/15/2016	ATMS9				
<b>1.65</b>				<b>X</b>	Load DF =	<b>0.6053269</b>
						<b>250</b>
						<b>413</b>
					Bag DF =	<b>1</b>
					BVf (mLs)	
					Bvi (mLs)	
					=	<b>0.996230384</b>
					FINAL DF	
Canister DF =					Load DF =	<b>#DIV/0!</b>
<b>1.65</b>				<b>X</b>	LVf (mLs)	
					LVi (mLs)	
					Bag DF =	<b>1</b>
					BVf (mLs)	
					Bvi (mLs)	
					=	<b>#DIV/0!</b>
					FINAL DF	
Canister DF =					Load DF =	<b>#DIV/0!</b>
<b>1.65</b>				<b>X</b>	LVf (mLs)	
					LVi (mLs)	
					Bag DF =	<b>1</b>
					BVf (mLs)	
					Bvi (mLs)	
					=	<b>#DIV/0!</b>
					FINAL DF	





Certification Type TO15 SCR  
Date Cleaned/Batch ID 09/02/16, 320-21497  
Date of QC 9/17/16  
Data File Number MS9091712-D

Loc: 320  
**21497**

**CANISTER ID NUMBERS**

<u>34001215</u>	<u>09530 *</u>	_____
<u>34000198</u>	<u>34001308</u>	_____
<u>8428</u>	<u>8337</u>	_____
<u>34000501</u>	<u>34000790</u>	_____
<u>34001367</u>	_____	_____
<u>34002087</u>	_____	_____
<u>34000851</u>	_____	_____
<u>8180</u>	_____	_____

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

[Signature] FOR AP      9/22/16  
1<sup>st</sup> level Reviewed By:      Date:  
[Signature]      9/23/16  
2nd level Reviewed By:      Date:

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21497-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 09530 Lab Sample ID: 320-21497-9  
 Matrix: Air Lab File ID: MS9091712.D  
 Analysis Method: TO-15 Date Collected: 09/02/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 09/17/2016 21:51  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 127673 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.63	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21497-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 09530 Lab Sample ID: 320-21497-9  
 Matrix: Air Lab File ID: MS9091712.D  
 Analysis Method: TO-15 Date Collected: 09/02/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 09/17/2016 21:51  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 127673 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21497-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 09530 Lab Sample ID: 320-21497-9  
 Matrix: Air Lab File ID: MS9091712.D  
 Analysis Method: TO-15 Date Collected: 09/02/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 09/17/2016 21:51  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 127673 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	0.074	J B	0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	89		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	108		70-130
2037-26-5	Toluene-d8 (Surr)	104		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160917-34628.b\MS9091712.D  
 Lims ID: 320-21497-A-9  
 Client ID: 09530  
 Sample Type: Client  
 Inject. Date: 17-Sep-2016 21:51:30 ALS Bottle#: 11 Worklist Smp#: 12  
 Purge Vol: 5.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21497-A-9  
 Misc. Info.: 500mL  
 Operator ID: KY Instrument ID: ATMS9  
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20160917-34628.b\TO15\_ATMS9N.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 19-Sep-2016 13:58:12 Calib Date: 15-Sep-2016 03:05:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20160914-34528.b\MS9091412.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK017

First Level Reviewer: phanthasena Date: 19-Sep-2016 13:58:12

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.418	12.430	-0.012	97	61658	4.00	
* 2 1,4-Difluorobenzene	114	14.523	14.529	-0.006	95	256730	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.442	20.442	0.000	88	228522	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.598	13.604	-0.006	98	89709	4.30	
\$ 5 Toluene-d8 (Surr)	100	17.686	17.692	-0.006	98	162071	4.16	
\$ 6 4-Bromofluorobenzene (Surr	174	22.358	22.364	-0.006	86	121945	3.57	
14 Propene	41	4.217	4.175	0.042	20	455	0.0451	
15 Dichlorodifluoromethane	85	4.284	4.248	0.036	90	1032	0.0245	
22 Butane	43	4.959	4.941	0.018	91	2152	0.0785	
31 Acetone	43	7.715	7.636	0.079	97	14387	0.6340	
74 Isooctane	57	13.531	13.537	-0.006	98	6663	0.0736	
88 n-Octane	43	17.692	17.698	-0.006	42	1367	0.0311	
114 tert-Butylbenzene	91	23.368	23.374	-0.006	1	150	0.002019	
127 Naphthalene	128	27.219	27.213	0.006	93	721	0.005697	

Reagents:

VAMSIS20\_00002 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160917-34628.b\MS9091712.D

Injection Date: 17-Sep-2016 21:51:30

Instrument ID: ATMS9

Operator ID: KY

Lims ID: 320-21497-A-9

Lab Sample ID: 320-21497-9

Worklist Smp#: 12

Client ID: 09530

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

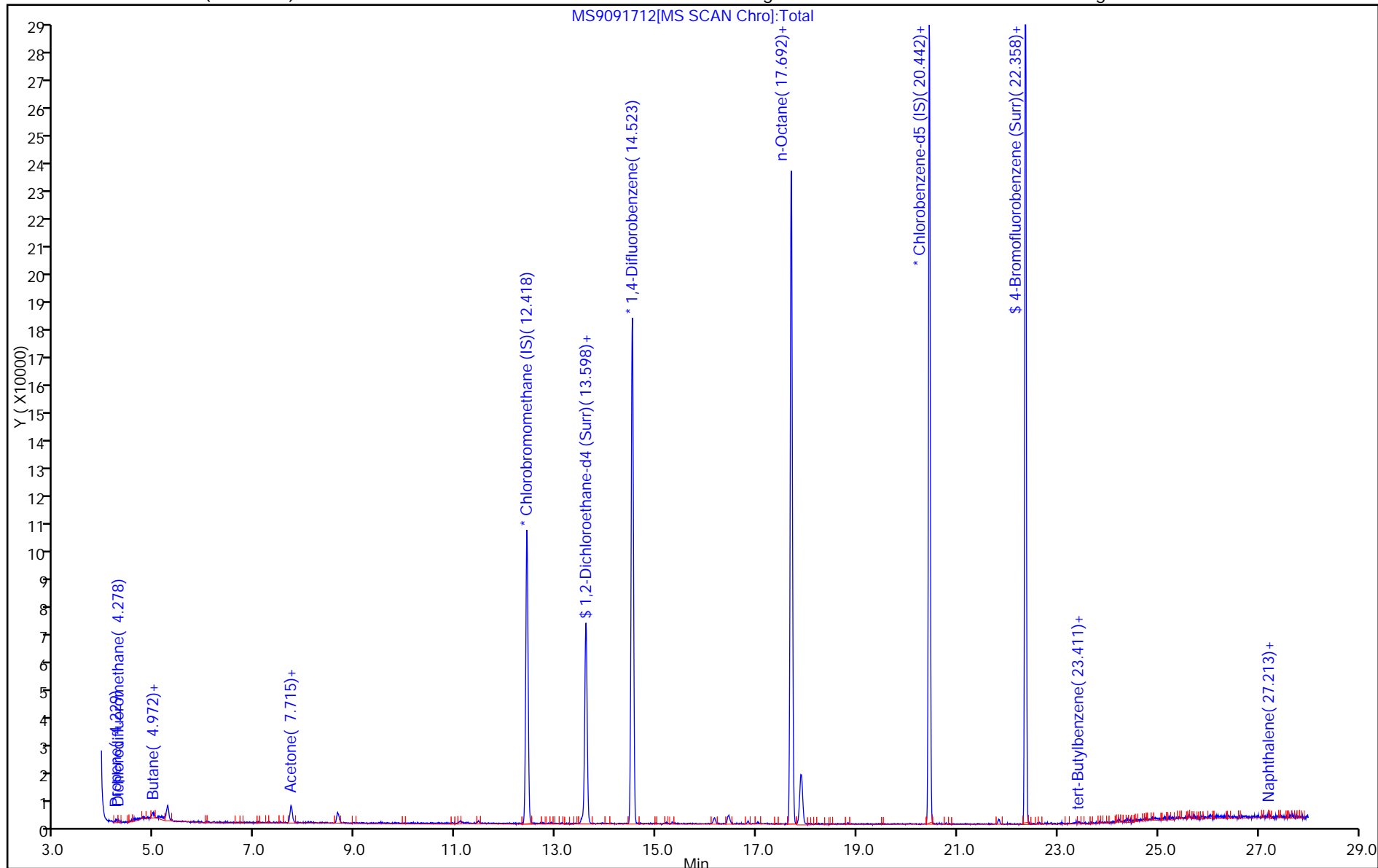
ALS Bottle#: 11

Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160917-34628.b\MS9091712.D

Injection Date: 17-Sep-2016 21:51:30

Instrument ID: ATMS9

Lims ID: 320-21497-A-9

Lab Sample ID: 320-21497-9

Client ID: 09530

Operator ID: KY

ALS Bottle#: 11 Worklist Smp#: 12

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

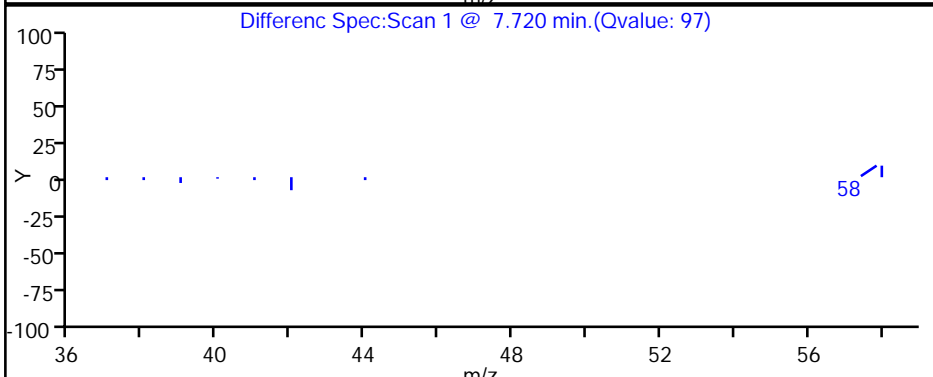
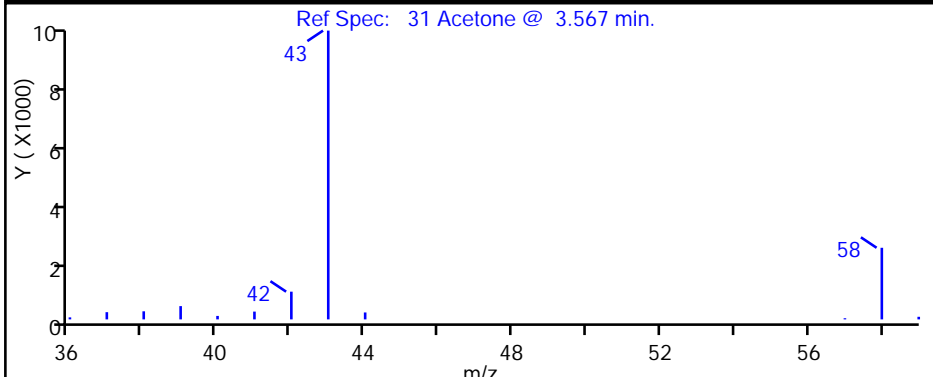
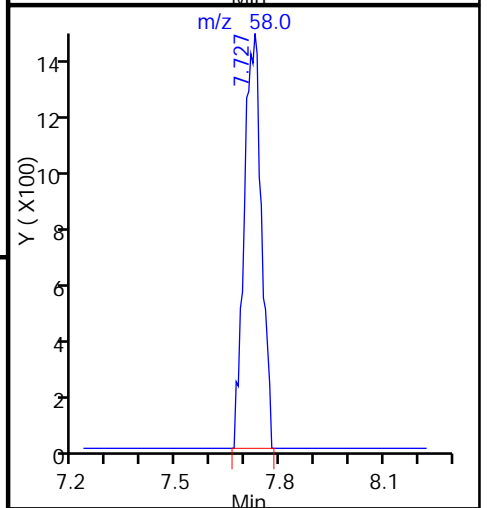
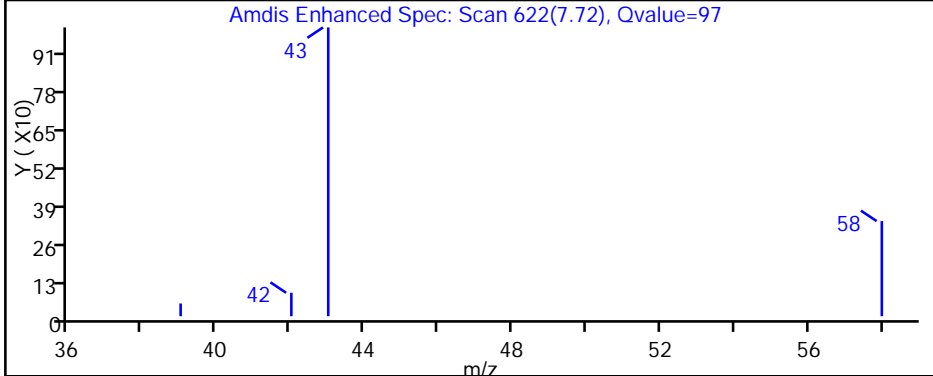
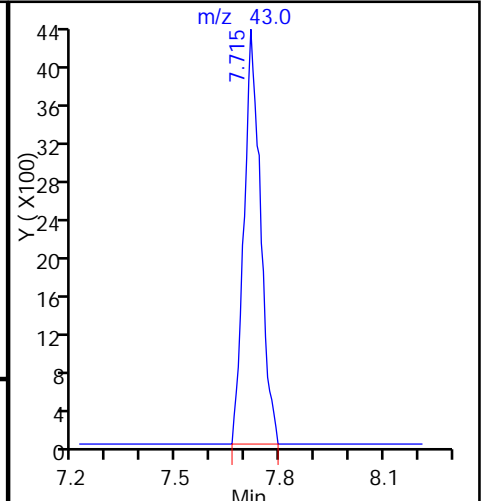
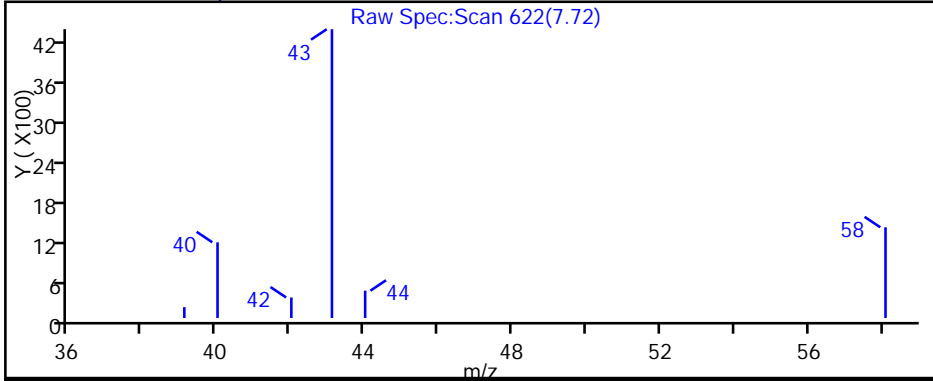
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Detector: MS SCAN

31 Acetone, CAS: 67-64-1





TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160917-34628.b\MS9091712.D

Injection Date: 17-Sep-2016 21:51:30

Instrument ID: ATMS9

Lims ID: 320-21497-A-9

Lab Sample ID: 320-21497-9

Client ID: 09530

Operator ID: KY

ALS Bottle#: 11 Worklist Smp#: 12

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

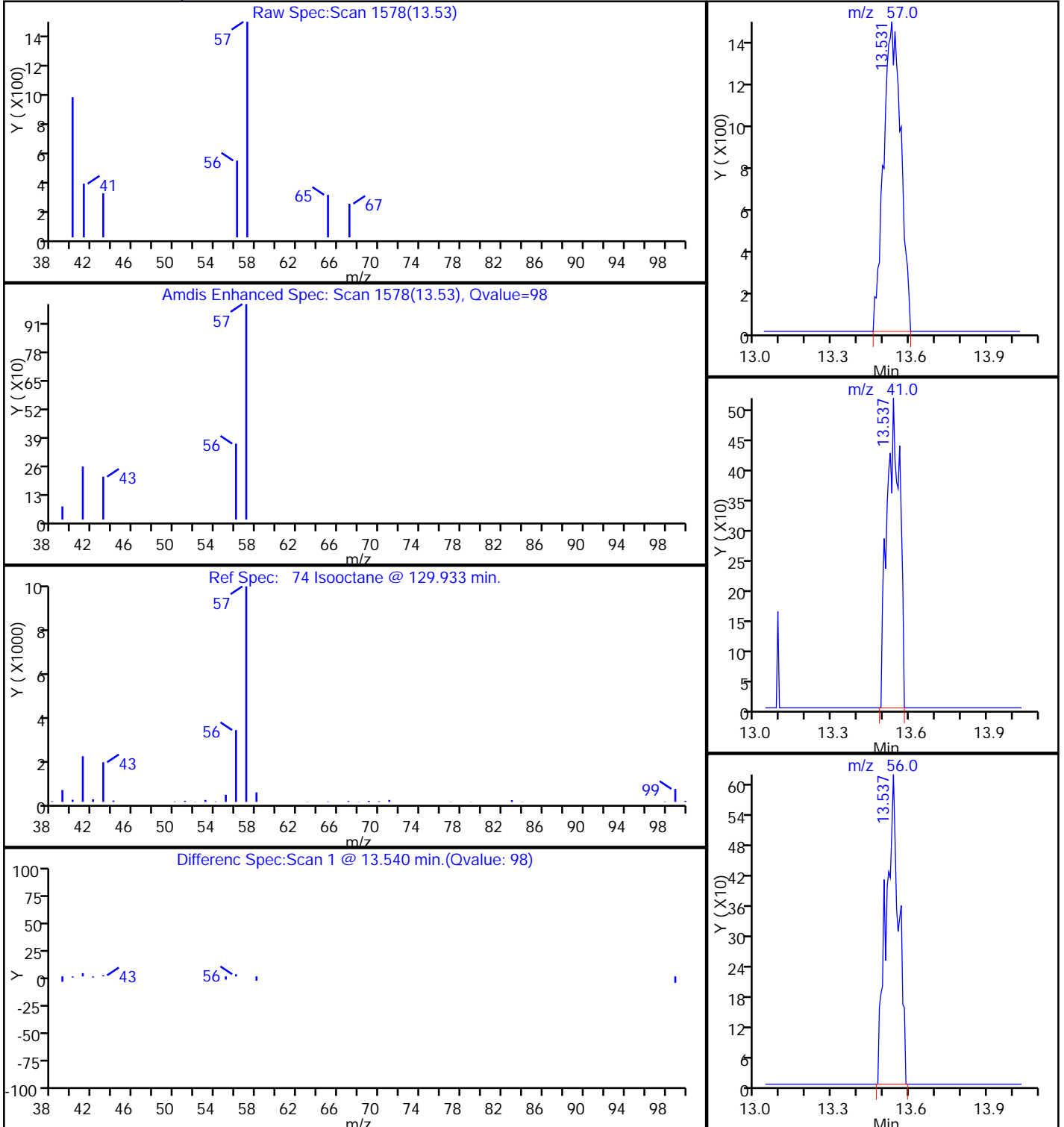
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

74 Isooctane, CAS: 540-84-1



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-23009-1  
Client Project/Site: NuStar Vapor Testing

For:  
Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
11/8/2016 3:54:36 PM

Cathy Gamble, Project Management Assistant I  
(253)922-2310  
[cathy.gamble@testamericainc.com](mailto:cathy.gamble@testamericainc.com)

### LINKS

Review your project  
results through  
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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

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**Job ID: 320-23009-1**

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**Laboratory: TestAmerica Sacramento**

## **Narrative**

### **Receipt**

The samples were received on 10/26/2016 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

### **Air - GC/MS VOA**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### **VOA Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Detection Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Client Sample ID: SVE-SOUTH\_PRECARBON\_102516

## Lab Sample ID: 320-23009-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	96		49		ppb v/v	122		TO-15	Total/NA
Tetrachloroethene	4700		49		ppb v/v	122		TO-15	Total/NA
Trichloroethene	280		49		ppb v/v	122		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	380		190		ug/m3 Air	122		TO-15	Total/NA
Tetrachloroethene	32000		330		ug/m3 Air	122		TO-15	Total/NA
Trichloroethene	1500		260		ug/m3 Air	122		TO-15	Total/NA

## Client Sample ID: SVE-SOUTH\_POSTCARBON\_102516

## Lab Sample ID: 320-23009-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	130		33		ppb v/v	83.2		TO-15	Total/NA
Tetrachloroethene	2800		33		ppb v/v	83.2		TO-15	Total/NA
1,1,1-Trichloroethane	34		25		ppb v/v	83.2		TO-15	Total/NA
Trichloroethene	510		33		ppb v/v	83.2		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	530		130		ug/m3 Air	83.2		TO-15	Total/NA
Tetrachloroethene	19000		230		ug/m3 Air	83.2		TO-15	Total/NA
1,1,1-Trichloroethane	180		140		ug/m3 Air	83.2		TO-15	Total/NA
Trichloroethene	2700		180		ug/m3 Air	83.2		TO-15	Total/NA

## Client Sample ID: SVE-NORTH\_EFFLUENT\_102516

## Lab Sample ID: 320-23009-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	6.5		5.0		ppb v/v	1		TO-15	Total/NA
2-Butanone (MEK)	1.1		0.80		ppb v/v	1		TO-15	Total/NA
Dichlorodifluoromethane	0.52		0.40		ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	1.2		0.40		ppb v/v	1		TO-15	Total/NA
Toluene	0.79		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	15		12		ug/m3 Air	1		TO-15	Total/NA
2-Butanone (MEK)	3.2		2.4		ug/m3 Air	1		TO-15	Total/NA
Dichlorodifluoromethane	2.6		2.0		ug/m3 Air	1		TO-15	Total/NA
Tetrachloroethene	7.9		2.7		ug/m3 Air	1		TO-15	Total/NA
Toluene	3.0		1.5		ug/m3 Air	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

**Client Sample ID: SVE-SOUTH\_PRECARBON\_102516**

**Lab Sample ID: 320-23009-1**

**Date Collected: 10/25/16 08:41**

**Matrix: Air**

**Date Received: 10/26/16 09:10**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		610		ppb v/v			11/04/16 16:31	122
Benzene	ND		49		ppb v/v			11/04/16 16:31	122
Benzyl chloride	ND		98		ppb v/v			11/04/16 16:31	122
Bromodichloromethane	ND		37		ppb v/v			11/04/16 16:31	122
Bromoform	ND		49		ppb v/v			11/04/16 16:31	122
Bromomethane	ND		98		ppb v/v			11/04/16 16:31	122
2-Butanone (MEK)	ND		98		ppb v/v			11/04/16 16:31	122
Carbon disulfide	ND		98		ppb v/v			11/04/16 16:31	122
Carbon tetrachloride	ND		98		ppb v/v			11/04/16 16:31	122
Chlorobenzene	ND		37		ppb v/v			11/04/16 16:31	122
Dibromochloromethane	ND		49		ppb v/v			11/04/16 16:31	122
Chloroethane	ND		98		ppb v/v			11/04/16 16:31	122
Chloroform	ND		37		ppb v/v			11/04/16 16:31	122
Chloromethane	ND		98		ppb v/v			11/04/16 16:31	122
1,2-Dibromoethane (EDB)	ND		98		ppb v/v			11/04/16 16:31	122
1,2-Dichlorobenzene	ND		49		ppb v/v			11/04/16 16:31	122
1,3-Dichlorobenzene	ND		49		ppb v/v			11/04/16 16:31	122
1,4-Dichlorobenzene	ND		49		ppb v/v			11/04/16 16:31	122
Dichlorodifluoromethane	ND		49		ppb v/v			11/04/16 16:31	122
1,1-Dichloroethane	ND		37		ppb v/v			11/04/16 16:31	122
1,2-Dichloroethane	ND		98		ppb v/v			11/04/16 16:31	122
1,1-Dichloroethene	ND		98		ppb v/v			11/04/16 16:31	122
<b>cis-1,2-Dichloroethene</b>	<b>96</b>		49		ppb v/v			11/04/16 16:31	122
trans-1,2-Dichloroethene	ND		49		ppb v/v			11/04/16 16:31	122
1,2-Dichloropropane	ND		49		ppb v/v			11/04/16 16:31	122
cis-1,3-Dichloropropene	ND		49		ppb v/v			11/04/16 16:31	122
trans-1,3-Dichloropropene	ND		49		ppb v/v			11/04/16 16:31	122
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		49		ppb v/v			11/04/16 16:31	122
Ethylbenzene	ND		49		ppb v/v			11/04/16 16:31	122
4-Ethyltoluene	ND		49		ppb v/v			11/04/16 16:31	122
Hexachlorobutadiene	ND		240		ppb v/v			11/04/16 16:31	122
2-Hexanone	ND		49		ppb v/v			11/04/16 16:31	122
Methylene Chloride	ND		49		ppb v/v			11/04/16 16:31	122
4-Methyl-2-pentanone (MIBK)	ND		49		ppb v/v			11/04/16 16:31	122
Styrene	ND		49		ppb v/v			11/04/16 16:31	122
1,1,2,2-Tetrachloroethane	ND		49		ppb v/v			11/04/16 16:31	122
<b>Tetrachloroethene</b>	<b>4700</b>		49		ppb v/v			11/04/16 16:31	122
Toluene	ND		49		ppb v/v			11/04/16 16:31	122
1,2,4-Trichlorobenzene	ND		240		ppb v/v			11/04/16 16:31	122
1,1,1-Trichloroethane	ND		37		ppb v/v			11/04/16 16:31	122
1,1,2-Trichloroethane	ND		49		ppb v/v			11/04/16 16:31	122
<b>Trichloroethene</b>	<b>280</b>		49		ppb v/v			11/04/16 16:31	122
Trichlorofluoromethane	ND		49		ppb v/v			11/04/16 16:31	122
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		49		ppb v/v			11/04/16 16:31	122
1,2,4-Trimethylbenzene	ND		98		ppb v/v			11/04/16 16:31	122
1,3,5-Trimethylbenzene	ND		49		ppb v/v			11/04/16 16:31	122
Vinyl acetate	ND		98		ppb v/v			11/04/16 16:31	122
Vinyl chloride	ND		49		ppb v/v			11/04/16 16:31	122

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

**Client Sample ID: SVE-SOUTH\_PRECARBON\_102516**

**Lab Sample ID: 320-23009-1**

**Date Collected: 10/25/16 08:41**

**Matrix: Air**

**Date Received: 10/26/16 09:10**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		98		ppb v/v			11/04/16 16:31	122
o-Xylene	ND		49		ppb v/v			11/04/16 16:31	122
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		1400		ug/m3 Air			11/04/16 16:31	122
Benzene	ND		160		ug/m3 Air			11/04/16 16:31	122
Benzyl chloride	ND		510		ug/m3 Air			11/04/16 16:31	122
Bromodichloromethane	ND		250		ug/m3 Air			11/04/16 16:31	122
Bromoform	ND		500		ug/m3 Air			11/04/16 16:31	122
Bromomethane	ND		380		ug/m3 Air			11/04/16 16:31	122
2-Butanone (MEK)	ND		290		ug/m3 Air			11/04/16 16:31	122
Carbon disulfide	ND		300		ug/m3 Air			11/04/16 16:31	122
Carbon tetrachloride	ND		610		ug/m3 Air			11/04/16 16:31	122
Chlorobenzene	ND		170		ug/m3 Air			11/04/16 16:31	122
Dibromochloromethane	ND		420		ug/m3 Air			11/04/16 16:31	122
Chloroethane	ND		260		ug/m3 Air			11/04/16 16:31	122
Chloroform	ND		180		ug/m3 Air			11/04/16 16:31	122
Chloromethane	ND		200		ug/m3 Air			11/04/16 16:31	122
1,2-Dibromoethane (EDB)	ND		750		ug/m3 Air			11/04/16 16:31	122
1,2-Dichlorobenzene	ND		290		ug/m3 Air			11/04/16 16:31	122
1,3-Dichlorobenzene	ND		290		ug/m3 Air			11/04/16 16:31	122
1,4-Dichlorobenzene	ND		290		ug/m3 Air			11/04/16 16:31	122
Dichlorodifluoromethane	ND		240		ug/m3 Air			11/04/16 16:31	122
1,1-Dichloroethane	ND		150		ug/m3 Air			11/04/16 16:31	122
1,2-Dichloroethane	ND		400		ug/m3 Air			11/04/16 16:31	122
1,1-Dichloroethene	ND		390		ug/m3 Air			11/04/16 16:31	122
<b>cis-1,2-Dichloroethene</b>	<b>380</b>		190		ug/m3 Air			11/04/16 16:31	122
trans-1,2-Dichloroethene	ND		190		ug/m3 Air			11/04/16 16:31	122
1,2-Dichloropropane	ND		230		ug/m3 Air			11/04/16 16:31	122
cis-1,3-Dichloropropene	ND		220		ug/m3 Air			11/04/16 16:31	122
trans-1,3-Dichloropropene	ND		220		ug/m3 Air			11/04/16 16:31	122
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		340		ug/m3 Air			11/04/16 16:31	122
Ethylbenzene	ND		210		ug/m3 Air			11/04/16 16:31	122
4-Ethyltoluene	ND		240		ug/m3 Air			11/04/16 16:31	122
Hexachlorobutadiene	ND		2600		ug/m3 Air			11/04/16 16:31	122
2-Hexanone	ND		200		ug/m3 Air			11/04/16 16:31	122
Methylene Chloride	ND		170		ug/m3 Air			11/04/16 16:31	122
4-Methyl-2-pentanone (MIBK)	ND		200		ug/m3 Air			11/04/16 16:31	122
Styrene	ND		210		ug/m3 Air			11/04/16 16:31	122
1,1,2,2-Tetrachloroethane	ND		340		ug/m3 Air			11/04/16 16:31	122
<b>Tetrachloroethene</b>	<b>32000</b>		330		ug/m3 Air			11/04/16 16:31	122
Toluene	ND		180		ug/m3 Air			11/04/16 16:31	122
1,2,4-Trichlorobenzene	ND		1800		ug/m3 Air			11/04/16 16:31	122
1,1,1-Trichloroethane	ND		200		ug/m3 Air			11/04/16 16:31	122
1,1,2-Trichloroethane	ND		270		ug/m3 Air			11/04/16 16:31	122
<b>Trichloroethene</b>	<b>1500</b>		260		ug/m3 Air			11/04/16 16:31	122
Trichlorofluoromethane	ND		270		ug/m3 Air			11/04/16 16:31	122
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		370		ug/m3 Air			11/04/16 16:31	122
1,2,4-Trimethylbenzene	ND		480		ug/m3 Air			11/04/16 16:31	122

TestAmerica Sacramento



# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

**Client Sample ID: SVE-SOUTH\_PRECARBON\_102516**

**Lab Sample ID: 320-23009-1**

Date Collected: 10/25/16 08:41

Matrix: Air

Date Received: 10/26/16 09:10

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trimethylbenzene	ND		240		ug/m3 Air			11/04/16 16:31	122
Vinyl acetate	ND		340		ug/m3 Air			11/04/16 16:31	122
Vinyl chloride	ND		120		ug/m3 Air			11/04/16 16:31	122
m,p-Xylene	ND		420		ug/m3 Air			11/04/16 16:31	122
o-Xylene	ND		210		ug/m3 Air			11/04/16 16:31	122

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		70 - 130		11/04/16 16:31	122
1,2-Dichloroethane-d4 (Surr)	95		70 - 130		11/04/16 16:31	122
Toluene-d8 (Surr)	101		70 - 130		11/04/16 16:31	122

**Client Sample ID: SVE-SOUTH\_POSTCARBON\_102516**

**Lab Sample ID: 320-23009-2**

Date Collected: 10/25/16 08:43

Matrix: Air

Date Received: 10/26/16 09:10

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		420		ppb v/v			11/04/16 17:23	83.2
Benzene	ND		33		ppb v/v			11/04/16 17:23	83.2
Benzyl chloride	ND		67		ppb v/v			11/04/16 17:23	83.2
Bromodichloromethane	ND		25		ppb v/v			11/04/16 17:23	83.2
Bromoform	ND		33		ppb v/v			11/04/16 17:23	83.2
Bromomethane	ND		67		ppb v/v			11/04/16 17:23	83.2
2-Butanone (MEK)	ND		67		ppb v/v			11/04/16 17:23	83.2
Carbon disulfide	ND		67		ppb v/v			11/04/16 17:23	83.2
Carbon tetrachloride	ND		67		ppb v/v			11/04/16 17:23	83.2
Chlorobenzene	ND		25		ppb v/v			11/04/16 17:23	83.2
Dibromochloromethane	ND		33		ppb v/v			11/04/16 17:23	83.2
Chloroethane	ND		67		ppb v/v			11/04/16 17:23	83.2
Chloroform	ND		25		ppb v/v			11/04/16 17:23	83.2
Chloromethane	ND		67		ppb v/v			11/04/16 17:23	83.2
1,2-Dibromoethane (EDB)	ND		67		ppb v/v			11/04/16 17:23	83.2
1,2-Dichlorobenzene	ND		33		ppb v/v			11/04/16 17:23	83.2
1,3-Dichlorobenzene	ND		33		ppb v/v			11/04/16 17:23	83.2
1,4-Dichlorobenzene	ND		33		ppb v/v			11/04/16 17:23	83.2
Dichlorodifluoromethane	ND		33		ppb v/v			11/04/16 17:23	83.2
1,1-Dichloroethane	ND		25		ppb v/v			11/04/16 17:23	83.2
1,2-Dichloroethane	ND		67		ppb v/v			11/04/16 17:23	83.2
1,1-Dichloroethene	ND		67		ppb v/v			11/04/16 17:23	83.2
<b>cis-1,2-Dichloroethene</b>	<b>130</b>		33		ppb v/v			11/04/16 17:23	83.2
trans-1,2-Dichloroethene	ND		33		ppb v/v			11/04/16 17:23	83.2
1,2-Dichloropropane	ND		33		ppb v/v			11/04/16 17:23	83.2
cis-1,3-Dichloropropene	ND		33		ppb v/v			11/04/16 17:23	83.2
trans-1,3-Dichloropropene	ND		33		ppb v/v			11/04/16 17:23	83.2
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		33		ppb v/v			11/04/16 17:23	83.2
Ethylbenzene	ND		33		ppb v/v			11/04/16 17:23	83.2
4-Ethyltoluene	ND		33		ppb v/v			11/04/16 17:23	83.2
Hexachlorobutadiene	ND		170		ppb v/v			11/04/16 17:23	83.2

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

**Client Sample ID: SVE-SOUTH\_POSTCARBON\_102516**

**Lab Sample ID: 320-23009-2**

**Date Collected: 10/25/16 08:43**

**Matrix: Air**

**Date Received: 10/26/16 09:10**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Hexanone	ND		33		ppb v/v			11/04/16 17:23	83.2
Methylene Chloride	ND		33		ppb v/v			11/04/16 17:23	83.2
4-Methyl-2-pentanone (MIBK)	ND		33		ppb v/v			11/04/16 17:23	83.2
Styrene	ND		33		ppb v/v			11/04/16 17:23	83.2
1,1,2,2-Tetrachloroethane	ND		33		ppb v/v			11/04/16 17:23	83.2
<b>Tetrachloroethene</b>	<b>2800</b>		33		ppb v/v			11/04/16 17:23	83.2
Toluene	ND		33		ppb v/v			11/04/16 17:23	83.2
1,2,4-Trichlorobenzene	ND		170		ppb v/v			11/04/16 17:23	83.2
<b>1,1,1-Trichloroethane</b>	<b>34</b>		25		ppb v/v			11/04/16 17:23	83.2
1,1,2-Trichloroethane	ND		33		ppb v/v			11/04/16 17:23	83.2
<b>Trichloroethene</b>	<b>510</b>		33		ppb v/v			11/04/16 17:23	83.2
Trichlorofluoromethane	ND		33		ppb v/v			11/04/16 17:23	83.2
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		33		ppb v/v			11/04/16 17:23	83.2
1,2,4-Trimethylbenzene	ND		67		ppb v/v			11/04/16 17:23	83.2
1,3,5-Trimethylbenzene	ND		33		ppb v/v			11/04/16 17:23	83.2
Vinyl acetate	ND		67		ppb v/v			11/04/16 17:23	83.2
Vinyl chloride	ND		33		ppb v/v			11/04/16 17:23	83.2
m,p-Xylene	ND		67		ppb v/v			11/04/16 17:23	83.2
o-Xylene	ND		33		ppb v/v			11/04/16 17:23	83.2
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		990		ug/m3 Air			11/04/16 17:23	83.2
Benzene	ND		110		ug/m3 Air			11/04/16 17:23	83.2
Benzyl chloride	ND		340		ug/m3 Air			11/04/16 17:23	83.2
Bromodichloromethane	ND		170		ug/m3 Air			11/04/16 17:23	83.2
Bromoform	ND		340		ug/m3 Air			11/04/16 17:23	83.2
Bromomethane	ND		260		ug/m3 Air			11/04/16 17:23	83.2
2-Butanone (MEK)	ND		200		ug/m3 Air			11/04/16 17:23	83.2
Carbon disulfide	ND		210		ug/m3 Air			11/04/16 17:23	83.2
Carbon tetrachloride	ND		420		ug/m3 Air			11/04/16 17:23	83.2
Chlorobenzene	ND		110		ug/m3 Air			11/04/16 17:23	83.2
Dibromochloromethane	ND		280		ug/m3 Air			11/04/16 17:23	83.2
Chloroethane	ND		180		ug/m3 Air			11/04/16 17:23	83.2
Chloroform	ND		120		ug/m3 Air			11/04/16 17:23	83.2
Chloromethane	ND		140		ug/m3 Air			11/04/16 17:23	83.2
1,2-Dibromoethane (EDB)	ND		510		ug/m3 Air			11/04/16 17:23	83.2
1,2-Dichlorobenzene	ND		200		ug/m3 Air			11/04/16 17:23	83.2
1,3-Dichlorobenzene	ND		200		ug/m3 Air			11/04/16 17:23	83.2
1,4-Dichlorobenzene	ND		200		ug/m3 Air			11/04/16 17:23	83.2
Dichlorodifluoromethane	ND		160		ug/m3 Air			11/04/16 17:23	83.2
1,1-Dichloroethane	ND		100		ug/m3 Air			11/04/16 17:23	83.2
1,2-Dichloroethane	ND		270		ug/m3 Air			11/04/16 17:23	83.2
1,1-Dichloroethene	ND		260		ug/m3 Air			11/04/16 17:23	83.2
<b>cis-1,2-Dichloroethene</b>	<b>530</b>		130		ug/m3 Air			11/04/16 17:23	83.2
trans-1,2-Dichloroethene	ND		130		ug/m3 Air			11/04/16 17:23	83.2
1,2-Dichloropropane	ND		150		ug/m3 Air			11/04/16 17:23	83.2
cis-1,3-Dichloropropene	ND		150		ug/m3 Air			11/04/16 17:23	83.2
trans-1,3-Dichloropropene	ND		150		ug/m3 Air			11/04/16 17:23	83.2
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		230		ug/m3 Air			11/04/16 17:23	83.2

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

**Client Sample ID: SVE-SOUTH\_POSTCARBON\_102516**

**Lab Sample ID: 320-23009-2**

Date Collected: 10/25/16 08:43

Matrix: Air

Date Received: 10/26/16 09:10

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		140		ug/m3 Air			11/04/16 17:23	83.2
4-Ethyltoluene	ND		160		ug/m3 Air			11/04/16 17:23	83.2
Hexachlorobutadiene	ND		1800		ug/m3 Air			11/04/16 17:23	83.2
2-Hexanone	ND		140		ug/m3 Air			11/04/16 17:23	83.2
Methylene Chloride	ND		120		ug/m3 Air			11/04/16 17:23	83.2
4-Methyl-2-pentanone (MIBK)	ND		140		ug/m3 Air			11/04/16 17:23	83.2
Styrene	ND		140		ug/m3 Air			11/04/16 17:23	83.2
1,1,2,2-Tetrachloroethane	ND		230		ug/m3 Air			11/04/16 17:23	83.2
<b>Tetrachloroethene</b>	<b>19000</b>		230		ug/m3 Air			11/04/16 17:23	83.2
Toluene	ND		130		ug/m3 Air			11/04/16 17:23	83.2
1,2,4-Trichlorobenzene	ND		1200		ug/m3 Air			11/04/16 17:23	83.2
<b>1,1,1-Trichloroethane</b>	<b>180</b>		140		ug/m3 Air			11/04/16 17:23	83.2
1,1,2-Trichloroethane	ND		180		ug/m3 Air			11/04/16 17:23	83.2
<b>Trichloroethene</b>	<b>2700</b>		180		ug/m3 Air			11/04/16 17:23	83.2
Trichlorofluoromethane	ND		190		ug/m3 Air			11/04/16 17:23	83.2
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		260		ug/m3 Air			11/04/16 17:23	83.2
1,2,4-Trimethylbenzene	ND		330		ug/m3 Air			11/04/16 17:23	83.2
1,3,5-Trimethylbenzene	ND		160		ug/m3 Air			11/04/16 17:23	83.2
Vinyl acetate	ND		230		ug/m3 Air			11/04/16 17:23	83.2
Vinyl chloride	ND		85		ug/m3 Air			11/04/16 17:23	83.2
m,p-Xylene	ND		290		ug/m3 Air			11/04/16 17:23	83.2
o-Xylene	ND		140		ug/m3 Air			11/04/16 17:23	83.2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		70 - 130					11/04/16 17:23	83.2
1,2-Dichloroethane-d4 (Surr)	96		70 - 130					11/04/16 17:23	83.2
Toluene-d8 (Surr)	101		70 - 130					11/04/16 17:23	83.2

**Client Sample ID: SVE-NORTH\_EFFLUENT\_102516**

**Lab Sample ID: 320-23009-3**

Date Collected: 10/25/16 07:59

Matrix: Air

Date Received: 10/26/16 09:10

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>6.5</b>		5.0		ppb v/v			11/04/16 18:19	1
Benzene	ND		0.40		ppb v/v			11/04/16 18:19	1
Benzyl chloride	ND		0.80		ppb v/v			11/04/16 18:19	1
Bromodichloromethane	ND		0.30		ppb v/v			11/04/16 18:19	1
Bromoform	ND		0.40		ppb v/v			11/04/16 18:19	1
Bromomethane	ND		0.80		ppb v/v			11/04/16 18:19	1
<b>2-Butanone (MEK)</b>	<b>1.1</b>		0.80		ppb v/v			11/04/16 18:19	1
Carbon disulfide	ND		0.80		ppb v/v			11/04/16 18:19	1
Carbon tetrachloride	ND		0.80		ppb v/v			11/04/16 18:19	1
Chlorobenzene	ND		0.30		ppb v/v			11/04/16 18:19	1
Dibromochloromethane	ND		0.40		ppb v/v			11/04/16 18:19	1
Chloroethane	ND		0.80		ppb v/v			11/04/16 18:19	1
Chloroform	ND		0.30		ppb v/v			11/04/16 18:19	1
Chloromethane	ND		0.80		ppb v/v			11/04/16 18:19	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

**Client Sample ID: SVE-NORTH\_EFFLUENT\_102516**

**Lab Sample ID: 320-23009-3**

Date Collected: 10/25/16 07:59

Matrix: Air

Date Received: 10/26/16 09:10

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			11/04/16 18:19	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			11/04/16 18:19	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			11/04/16 18:19	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			11/04/16 18:19	1
<b>Dichlorodifluoromethane</b>	<b>0.52</b>		0.40		ppb v/v			11/04/16 18:19	1
1,1-Dichloroethane	ND		0.30		ppb v/v			11/04/16 18:19	1
1,2-Dichloroethane	ND		0.80		ppb v/v			11/04/16 18:19	1
1,1-Dichloroethene	ND		0.80		ppb v/v			11/04/16 18:19	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			11/04/16 18:19	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			11/04/16 18:19	1
1,2-Dichloropropane	ND		0.40		ppb v/v			11/04/16 18:19	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			11/04/16 18:19	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			11/04/16 18:19	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			11/04/16 18:19	1
Ethylbenzene	ND		0.40		ppb v/v			11/04/16 18:19	1
4-Ethyltoluene	ND		0.40		ppb v/v			11/04/16 18:19	1
Hexachlorobutadiene	ND		2.0		ppb v/v			11/04/16 18:19	1
2-Hexanone	ND		0.40		ppb v/v			11/04/16 18:19	1
Methylene Chloride	ND		0.40		ppb v/v			11/04/16 18:19	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			11/04/16 18:19	1
Styrene	ND		0.40		ppb v/v			11/04/16 18:19	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			11/04/16 18:19	1
<b>Tetrachloroethene</b>	<b>1.2</b>		0.40		ppb v/v			11/04/16 18:19	1
<b>Toluene</b>	<b>0.79</b>		0.40		ppb v/v			11/04/16 18:19	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			11/04/16 18:19	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			11/04/16 18:19	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			11/04/16 18:19	1
Trichloroethene	ND		0.40		ppb v/v			11/04/16 18:19	1
Trichlorofluoromethane	ND		0.40		ppb v/v			11/04/16 18:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			11/04/16 18:19	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			11/04/16 18:19	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			11/04/16 18:19	1
Vinyl acetate	ND		0.80		ppb v/v			11/04/16 18:19	1
Vinyl chloride	ND		0.40		ppb v/v			11/04/16 18:19	1
m,p-Xylene	ND		0.80		ppb v/v			11/04/16 18:19	1
o-Xylene	ND		0.40		ppb v/v			11/04/16 18:19	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>15</b>		12		ug/m3 Air			11/04/16 18:19	1
Benzene	ND		1.3		ug/m3 Air			11/04/16 18:19	1
Benzyl chloride	ND		4.1		ug/m3 Air			11/04/16 18:19	1
Bromodichloromethane	ND		2.0		ug/m3 Air			11/04/16 18:19	1
Bromoform	ND		4.1		ug/m3 Air			11/04/16 18:19	1
Bromomethane	ND		3.1		ug/m3 Air			11/04/16 18:19	1
<b>2-Butanone (MEK)</b>	<b>3.2</b>		2.4		ug/m3 Air			11/04/16 18:19	1
Carbon disulfide	ND		2.5		ug/m3 Air			11/04/16 18:19	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			11/04/16 18:19	1
Chlorobenzene	ND		1.4		ug/m3 Air			11/04/16 18:19	1
Dibromochloromethane	ND		3.4		ug/m3 Air			11/04/16 18:19	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

**Client Sample ID: SVE-NORTH\_EFFLUENT\_102516**

**Lab Sample ID: 320-23009-3**

**Date Collected: 10/25/16 07:59**

**Matrix: Air**

**Date Received: 10/26/16 09:10**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		2.1		ug/m3 Air			11/04/16 18:19	1
Chloroform	ND		1.5		ug/m3 Air			11/04/16 18:19	1
Chloromethane	ND		1.7		ug/m3 Air			11/04/16 18:19	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			11/04/16 18:19	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			11/04/16 18:19	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			11/04/16 18:19	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			11/04/16 18:19	1
<b>Dichlorodifluoromethane</b>	<b>2.6</b>		2.0		ug/m3 Air			11/04/16 18:19	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			11/04/16 18:19	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			11/04/16 18:19	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			11/04/16 18:19	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			11/04/16 18:19	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			11/04/16 18:19	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			11/04/16 18:19	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			11/04/16 18:19	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			11/04/16 18:19	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			11/04/16 18:19	1
Ethylbenzene	ND		1.7		ug/m3 Air			11/04/16 18:19	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			11/04/16 18:19	1
Hexachlorobutadiene	ND		21		ug/m3 Air			11/04/16 18:19	1
2-Hexanone	ND		1.6		ug/m3 Air			11/04/16 18:19	1
Methylene Chloride	ND		1.4		ug/m3 Air			11/04/16 18:19	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			11/04/16 18:19	1
Styrene	ND		1.7		ug/m3 Air			11/04/16 18:19	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			11/04/16 18:19	1
<b>Tetrachloroethene</b>	<b>7.9</b>		2.7		ug/m3 Air			11/04/16 18:19	1
<b>Toluene</b>	<b>3.0</b>		1.5		ug/m3 Air			11/04/16 18:19	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			11/04/16 18:19	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			11/04/16 18:19	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			11/04/16 18:19	1
Trichloroethene	ND		2.1		ug/m3 Air			11/04/16 18:19	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			11/04/16 18:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			11/04/16 18:19	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			11/04/16 18:19	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			11/04/16 18:19	1
Vinyl acetate	ND		2.8		ug/m3 Air			11/04/16 18:19	1
Vinyl chloride	ND		1.0		ug/m3 Air			11/04/16 18:19	1
m,p-Xylene	ND		3.5		ug/m3 Air			11/04/16 18:19	1
o-Xylene	ND		1.7		ug/m3 Air			11/04/16 18:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		70 - 130					11/04/16 18:19	1
1,2-Dichloroethane-d4 (Surr)	97		70 - 130					11/04/16 18:19	1
Toluene-d8 (Surr)	101		70 - 130					11/04/16 18:19	1

TestAmerica Sacramento

# Surrogate Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (70-130)	12DCE (70-130)	TOL (70-130)
320-23009-1	SVE-SOUTH_PRECARBON_10	91	95	101
320-23009-2	SVE-SOUTH_POSTCARBON_1 02516	87	96	101
320-23009-3	SVE-NORTH_EFFLUENT_1025 6	98	97	101
LCS 320-136085/3	Lab Control Sample	103	94	100
LCSD 320-136085/4	Lab Control Sample Dup	103	96	100
MB 320-136085/6	Method Blank	92	94	101

### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 320-136085/6

Matrix: Air

Analysis Batch: 136085

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			11/04/16 14:25	1
Benzene	ND		0.40		ppb v/v			11/04/16 14:25	1
Benzyl chloride	ND		0.80		ppb v/v			11/04/16 14:25	1
Bromodichloromethane	ND		0.30		ppb v/v			11/04/16 14:25	1
Bromoform	ND		0.40		ppb v/v			11/04/16 14:25	1
Bromomethane	ND		0.80		ppb v/v			11/04/16 14:25	1
2-Butanone (MEK)	ND		0.80		ppb v/v			11/04/16 14:25	1
Carbon disulfide	ND		0.80		ppb v/v			11/04/16 14:25	1
Carbon tetrachloride	ND		0.80		ppb v/v			11/04/16 14:25	1
Chlorobenzene	ND		0.30		ppb v/v			11/04/16 14:25	1
Dibromochloromethane	ND		0.40		ppb v/v			11/04/16 14:25	1
Chloroethane	ND		0.80		ppb v/v			11/04/16 14:25	1
Chloroform	ND		0.30		ppb v/v			11/04/16 14:25	1
Chloromethane	ND		0.80		ppb v/v			11/04/16 14:25	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			11/04/16 14:25	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			11/04/16 14:25	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			11/04/16 14:25	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			11/04/16 14:25	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			11/04/16 14:25	1
1,1-Dichloroethane	ND		0.30		ppb v/v			11/04/16 14:25	1
1,2-Dichloroethane	ND		0.80		ppb v/v			11/04/16 14:25	1
1,1-Dichloroethene	ND		0.80		ppb v/v			11/04/16 14:25	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			11/04/16 14:25	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			11/04/16 14:25	1
1,2-Dichloropropane	ND		0.40		ppb v/v			11/04/16 14:25	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			11/04/16 14:25	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			11/04/16 14:25	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			11/04/16 14:25	1
Ethylbenzene	ND		0.40		ppb v/v			11/04/16 14:25	1
4-Ethyltoluene	ND		0.40		ppb v/v			11/04/16 14:25	1
Hexachlorobutadiene	ND		2.0		ppb v/v			11/04/16 14:25	1
2-Hexanone	ND		0.40		ppb v/v			11/04/16 14:25	1
Methylene Chloride	ND		0.40		ppb v/v			11/04/16 14:25	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			11/04/16 14:25	1
Styrene	ND		0.40		ppb v/v			11/04/16 14:25	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			11/04/16 14:25	1
Tetrachloroethene	ND		0.40		ppb v/v			11/04/16 14:25	1
Toluene	ND		0.40		ppb v/v			11/04/16 14:25	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			11/04/16 14:25	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			11/04/16 14:25	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			11/04/16 14:25	1
Trichloroethene	ND		0.40		ppb v/v			11/04/16 14:25	1
Trichlorofluoromethane	ND		0.40		ppb v/v			11/04/16 14:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			11/04/16 14:25	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			11/04/16 14:25	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			11/04/16 14:25	1
Vinyl acetate	ND		0.80		ppb v/v			11/04/16 14:25	1
Vinyl chloride	ND		0.40		ppb v/v			11/04/16 14:25	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-136085/6**  
**Matrix: Air**  
**Analysis Batch: 136085**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		0.80		ppb v/v			11/04/16 14:25	1
o-Xylene	ND		0.40		ppb v/v			11/04/16 14:25	1
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			11/04/16 14:25	1
Benzene	ND		1.3		ug/m3 Air			11/04/16 14:25	1
Benzyl chloride	ND		4.1		ug/m3 Air			11/04/16 14:25	1
Bromodichloromethane	ND		2.0		ug/m3 Air			11/04/16 14:25	1
Bromoform	ND		4.1		ug/m3 Air			11/04/16 14:25	1
Bromomethane	ND		3.1		ug/m3 Air			11/04/16 14:25	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			11/04/16 14:25	1
Carbon disulfide	ND		2.5		ug/m3 Air			11/04/16 14:25	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			11/04/16 14:25	1
Chlorobenzene	ND		1.4		ug/m3 Air			11/04/16 14:25	1
Dibromochloromethane	ND		3.4		ug/m3 Air			11/04/16 14:25	1
Chloroethane	ND		2.1		ug/m3 Air			11/04/16 14:25	1
Chloroform	ND		1.5		ug/m3 Air			11/04/16 14:25	1
Chloromethane	ND		1.7		ug/m3 Air			11/04/16 14:25	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			11/04/16 14:25	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			11/04/16 14:25	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			11/04/16 14:25	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			11/04/16 14:25	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			11/04/16 14:25	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			11/04/16 14:25	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			11/04/16 14:25	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			11/04/16 14:25	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			11/04/16 14:25	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			11/04/16 14:25	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			11/04/16 14:25	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			11/04/16 14:25	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			11/04/16 14:25	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			11/04/16 14:25	1
Ethylbenzene	ND		1.7		ug/m3 Air			11/04/16 14:25	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			11/04/16 14:25	1
Hexachlorobutadiene	ND		21		ug/m3 Air			11/04/16 14:25	1
2-Hexanone	ND		1.6		ug/m3 Air			11/04/16 14:25	1
Methylene Chloride	ND		1.4		ug/m3 Air			11/04/16 14:25	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			11/04/16 14:25	1
Styrene	ND		1.7		ug/m3 Air			11/04/16 14:25	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			11/04/16 14:25	1
Tetrachloroethene	ND		2.7		ug/m3 Air			11/04/16 14:25	1
Toluene	ND		1.5		ug/m3 Air			11/04/16 14:25	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			11/04/16 14:25	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			11/04/16 14:25	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			11/04/16 14:25	1
Trichloroethene	ND		2.1		ug/m3 Air			11/04/16 14:25	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			11/04/16 14:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			11/04/16 14:25	1

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-136085/6**  
**Matrix: Air**  
**Analysis Batch: 136085**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			11/04/16 14:25	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			11/04/16 14:25	1
Vinyl acetate	ND		2.8		ug/m3 Air			11/04/16 14:25	1
Vinyl chloride	ND		1.0		ug/m3 Air			11/04/16 14:25	1
m,p-Xylene	ND		3.5		ug/m3 Air			11/04/16 14:25	1
o-Xylene	ND		1.7		ug/m3 Air			11/04/16 14:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		70 - 130		11/04/16 14:25	1
1,2-Dichloroethane-d4 (Surr)	94		70 - 130		11/04/16 14:25	1
Toluene-d8 (Surr)	101		70 - 130		11/04/16 14:25	1

**Lab Sample ID: LCS 320-136085/3**  
**Matrix: Air**  
**Analysis Batch: 136085**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	18.9		ppb v/v		95	71 - 131
Benzene	20.0	20.1		ppb v/v		101	68 - 128
Benzyl chloride	20.0	14.3		ppb v/v		72	58 - 120
Bromodichloromethane	20.0	19.2		ppb v/v		96	65 - 130
Bromoform	20.0	18.6		ppb v/v		93	64 - 144
Bromomethane	20.0	22.2		ppb v/v		111	70 - 131
2-Butanone (MEK)	20.0	20.0		ppb v/v		100	71 - 131
Carbon disulfide	20.0	19.5		ppb v/v		97	63 - 123
Carbon tetrachloride	20.0	19.3		ppb v/v		97	67 - 127
Chlorobenzene	20.0	19.7		ppb v/v		99	70 - 132
Dibromochloromethane	20.0	19.2		ppb v/v		96	68 - 128
Chloroethane	20.0	22.3		ppb v/v		112	70 - 131
Chloroform	20.0	19.4		ppb v/v		97	69 - 129
Chloromethane	20.0	21.9		ppb v/v		109	67 - 127
1,2-Dibromoethane (EDB)	20.0	20.3		ppb v/v		101	68 - 131
1,2-Dichlorobenzene	20.0	17.8		ppb v/v		89	73 - 143
1,3-Dichlorobenzene	20.0	18.5		ppb v/v		92	77 - 136
1,4-Dichlorobenzene	20.0	18.6		ppb v/v		93	73 - 143
Dichlorodifluoromethane	20.0	19.2		ppb v/v		96	69 - 129
1,1-Dichloroethane	20.0	19.5		ppb v/v		98	65 - 125
1,2-Dichloroethane	20.0	19.1		ppb v/v		96	71 - 131
1,1-Dichloroethene	20.0	18.2		ppb v/v		91	53 - 128
cis-1,2-Dichloroethene	20.0	20.0		ppb v/v		100	68 - 128
trans-1,2-Dichloroethene	20.0	19.5		ppb v/v		97	70 - 130
1,2-Dichloropropane	20.0	19.7		ppb v/v		98	74 - 128
cis-1,3-Dichloropropene	20.0	22.1		ppb v/v		111	78 - 132
trans-1,3-Dichloropropene	20.0	18.2		ppb v/v		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	20.6		ppb v/v		103	64 - 124
Ethylbenzene	20.0	20.0		ppb v/v		100	76 - 136
4-Ethyltoluene	20.0	18.1		ppb v/v		91	62 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-136085/3

Matrix: Air

Analysis Batch: 136085

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	14.6		ppb v/v		73	42 - 150
2-Hexanone	20.0	21.8		ppb v/v		109	70 - 128
Methylene Chloride	20.0	18.7		ppb v/v		94	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	21.8		ppb v/v		109	73 - 133
Styrene	20.0	20.4		ppb v/v		102	76 - 144
1,1,2,2-Tetrachloroethane	20.0	19.6		ppb v/v		98	75 - 135
Tetrachloroethene	20.0	19.3		ppb v/v		96	56 - 138
Toluene	20.0	20.1		ppb v/v		100	71 - 132
1,2,4-Trichlorobenzene	20.0	16.1		ppb v/v		80	59 - 150
1,1,1-Trichloroethane	20.0	19.0		ppb v/v		95	65 - 124
1,1,2-Trichloroethane	20.0	20.9		ppb v/v		104	71 - 131
Trichloroethene	20.0	20.1		ppb v/v		100	64 - 127
Trichlorofluoromethane	20.0	19.5		ppb v/v		98	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.3		ppb v/v		92	50 - 132
1,2,4-Trimethylbenzene	20.0	20.2		ppb v/v		101	61 - 145
1,3,5-Trimethylbenzene	20.0	18.7		ppb v/v		93	65 - 136
Vinyl acetate	20.0	21.1		ppb v/v		105	77 - 134
Vinyl chloride	20.0	21.9		ppb v/v		109	69 - 129
m,p-Xylene	40.0	39.7		ppb v/v		99	75 - 138
o-Xylene	20.0	19.8		ppb v/v		99	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	45.0		ug/m3 Air		95	71 - 131
Benzene	64	64.3		ug/m3 Air		101	68 - 128
Benzyl chloride	100	74.1		ug/m3 Air		72	58 - 120
Bromodichloromethane	130	129		ug/m3 Air		96	65 - 130
Bromoform	210	193		ug/m3 Air		93	64 - 144
Bromomethane	78	86.3		ug/m3 Air		111	70 - 131
2-Butanone (MEK)	59	58.8		ug/m3 Air		100	71 - 131
Carbon disulfide	62	60.7		ug/m3 Air		97	63 - 123
Carbon tetrachloride	130	122		ug/m3 Air		97	67 - 127
Chlorobenzene	92	90.8		ug/m3 Air		99	70 - 132
Dibromochloromethane	170	164		ug/m3 Air		96	68 - 128
Chloroethane	53	58.9		ug/m3 Air		112	70 - 131
Chloroform	98	94.7		ug/m3 Air		97	69 - 129
Chloromethane	41	45.2		ug/m3 Air		109	67 - 127
1,2-Dibromoethane (EDB)	150	156		ug/m3 Air		101	68 - 131
1,2-Dichlorobenzene	120	107		ug/m3 Air		89	73 - 143
1,3-Dichlorobenzene	120	111		ug/m3 Air		92	77 - 136
1,4-Dichlorobenzene	120	112		ug/m3 Air		93	73 - 143
Dichlorodifluoromethane	99	95.0		ug/m3 Air		96	69 - 129
1,1-Dichloroethane	81	79.0		ug/m3 Air		98	65 - 125
1,2-Dichloroethane	81	77.5		ug/m3 Air		96	71 - 131
1,1-Dichloroethene	79	72.0		ug/m3 Air		91	53 - 128
cis-1,2-Dichloroethene	79	79.5		ug/m3 Air		100	68 - 128
trans-1,2-Dichloroethene	79	77.3		ug/m3 Air		97	70 - 130
1,2-Dichloropropane	92	90.8		ug/m3 Air		98	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-136085/3**  
**Matrix: Air**  
**Analysis Batch: 136085**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	101		ug/m3 Air		111	78 - 132
trans-1,3-Dichloropropene	91	82.6		ug/m3 Air		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	144		ug/m3 Air		103	64 - 124
Ethylbenzene	87	87.1		ug/m3 Air		100	76 - 136
4-Ethyltoluene	98	89.2		ug/m3 Air		91	62 - 136
Hexachlorobutadiene	210	156		ug/m3 Air		73	42 - 150
2-Hexanone	82	89.2		ug/m3 Air		109	70 - 128
Methylene Chloride	69	65.1		ug/m3 Air		94	65 - 125
4-Methyl-2-pentanone (MIBK)	82	89.2		ug/m3 Air		109	73 - 133
Styrene	85	87.0		ug/m3 Air		102	76 - 144
1,1,2,2-Tetrachloroethane	140	134		ug/m3 Air		98	75 - 135
Tetrachloroethene	140	131		ug/m3 Air		96	56 - 138
Toluene	75	75.6		ug/m3 Air		100	71 - 132
1,2,4-Trichlorobenzene	150	119		ug/m3 Air		80	59 - 150
1,1,1-Trichloroethane	110	103		ug/m3 Air		95	65 - 124
1,1,2-Trichloroethane	110	114		ug/m3 Air		104	71 - 131
Trichloroethene	110	108		ug/m3 Air		100	64 - 127
Trichlorofluoromethane	110	110		ug/m3 Air		98	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	140		ug/m3 Air		92	50 - 132
1,2,4-Trimethylbenzene	98	99.1		ug/m3 Air		101	61 - 145
1,3,5-Trimethylbenzene	98	91.8		ug/m3 Air		93	65 - 136
Vinyl acetate	70	74.2		ug/m3 Air		105	77 - 134
Vinyl chloride	51	56.0		ug/m3 Air		109	69 - 129
m,p-Xylene	170	173		ug/m3 Air		99	75 - 138
o-Xylene	87	85.8		ug/m3 Air		99	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		70 - 130
1,2-Dichloroethane-d4 (Surr)	94		70 - 130
Toluene-d8 (Surr)	100		70 - 130

**Lab Sample ID: LCSD 320-136085/4**  
**Matrix: Air**  
**Analysis Batch: 136085**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	19.1		ppb v/v		95	71 - 131	1	25
Benzene	20.0	20.1		ppb v/v		100	68 - 128	0	25
Benzyl chloride	20.0	14.2		ppb v/v		71	58 - 120	1	25
Bromodichloromethane	20.0	19.1		ppb v/v		96	65 - 130	0	25
Bromoform	20.0	18.6		ppb v/v		93	64 - 144	0	25
Bromomethane	20.0	22.7		ppb v/v		113	70 - 131	2	25
2-Butanone (MEK)	20.0	19.9		ppb v/v		100	71 - 131	0	25
Carbon disulfide	20.0	19.7		ppb v/v		99	63 - 123	1	25
Carbon tetrachloride	20.0	19.1		ppb v/v		95	67 - 127	1	25
Chlorobenzene	20.0	19.9		ppb v/v		99	70 - 132	1	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-136085/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 136085

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	20.0	19.2		ppb v/v		96	68 - 128	0	25
Chloroethane	20.0	22.8		ppb v/v		114	70 - 131	2	25
Chloroform	20.0	19.9		ppb v/v		99	69 - 129	3	25
Chloromethane	20.0	22.3		ppb v/v		111	67 - 127	2	25
1,2-Dibromoethane (EDB)	20.0	20.3		ppb v/v		101	68 - 131	0	25
1,2-Dichlorobenzene	20.0	17.7		ppb v/v		88	73 - 143	1	25
1,3-Dichlorobenzene	20.0	18.4		ppb v/v		92	77 - 136	1	25
1,4-Dichlorobenzene	20.0	18.4		ppb v/v		92	73 - 143	1	25
Dichlorodifluoromethane	20.0	19.5		ppb v/v		97	69 - 129	1	25
1,1-Dichloroethane	20.0	19.9		ppb v/v		99	65 - 125	2	25
1,2-Dichloroethane	20.0	18.9		ppb v/v		94	71 - 131	1	25
1,1-Dichloroethene	20.0	18.4		ppb v/v		92	53 - 128	1	25
cis-1,2-Dichloroethene	20.0	20.4		ppb v/v		102	68 - 128	2	25
trans-1,2-Dichloroethene	20.0	19.8		ppb v/v		99	70 - 130	2	25
1,2-Dichloropropane	20.0	19.7		ppb v/v		98	74 - 128	0	25
cis-1,3-Dichloropropene	20.0	21.9		ppb v/v		109	78 - 132	1	25
trans-1,3-Dichloropropene	20.0	18.3		ppb v/v		91	56 - 136	1	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	20.7		ppb v/v		104	64 - 124	1	25
Ethylbenzene	20.0	20.1		ppb v/v		101	76 - 136	0	25
4-Ethyltoluene	20.0	18.0		ppb v/v		90	62 - 136	1	25
Hexachlorobutadiene	20.0	14.1		ppb v/v		70	42 - 150	4	25
2-Hexanone	20.0	21.5		ppb v/v		108	70 - 128	1	25
Methylene Chloride	20.0	19.1		ppb v/v		95	65 - 125	2	25
4-Methyl-2-pentanone (MIBK)	20.0	21.4		ppb v/v		107	73 - 133	2	25
Styrene	20.0	20.4		ppb v/v		102	76 - 144	0	25
1,1,2,2-Tetrachloroethane	20.0	19.5		ppb v/v		98	75 - 135	0	25
Tetrachloroethene	20.0	19.3		ppb v/v		96	56 - 138	0	25
Toluene	20.0	19.8		ppb v/v		99	71 - 132	1	25
1,2,4-Trichlorobenzene	20.0	15.5		ppb v/v		78	59 - 150	3	25
1,1,1-Trichloroethane	20.0	19.3		ppb v/v		96	65 - 124	2	25
1,1,2-Trichloroethane	20.0	20.8		ppb v/v		104	71 - 131	1	25
Trichloroethene	20.0	19.8		ppb v/v		99	64 - 127	1	25
Trichlorofluoromethane	20.0	19.8		ppb v/v		99	68 - 128	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.5		ppb v/v		93	50 - 132	1	25
1,2,4-Trimethylbenzene	20.0	20.0		ppb v/v		100	61 - 145	1	25
1,3,5-Trimethylbenzene	20.0	18.7		ppb v/v		94	65 - 136	0	25
Vinyl acetate	20.0	21.2		ppb v/v		106	77 - 134	1	25
Vinyl chloride	20.0	22.4		ppb v/v		112	69 - 129	2	25
m,p-Xylene	40.0	40.1		ppb v/v		100	75 - 138	1	25
o-Xylene	20.0	19.8		ppb v/v		99	77 - 132	0	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	45.3		ug/m3 Air		95	71 - 131	1	25
Benzene	64	64.1		ug/m3 Air		100	68 - 128	0	25
Benzyl chloride	100	73.7		ug/m3 Air		71	58 - 120	1	25
Bromodichloromethane	130	128		ug/m3 Air		96	65 - 130	0	25
Bromoform	210	192		ug/m3 Air		93	64 - 144	0	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-136085/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 136085

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	78	88.0		ug/m3 Air		113	70 - 131	2	25
2-Butanone (MEK)	59	58.8		ug/m3 Air		100	71 - 131	0	25
Carbon disulfide	62	61.5		ug/m3 Air		99	63 - 123	1	25
Carbon tetrachloride	130	120		ug/m3 Air		95	67 - 127	1	25
Chlorobenzene	92	91.5		ug/m3 Air		99	70 - 132	1	25
Dibromochloromethane	170	164		ug/m3 Air		96	68 - 128	0	25
Chloroethane	53	60.0		ug/m3 Air		114	70 - 131	2	25
Chloroform	98	97.1		ug/m3 Air		99	69 - 129	3	25
Chloromethane	41	46.0		ug/m3 Air		111	67 - 127	2	25
1,2-Dibromoethane (EDB)	150	156		ug/m3 Air		101	68 - 131	0	25
1,2-Dichlorobenzene	120	106		ug/m3 Air		88	73 - 143	1	25
1,3-Dichlorobenzene	120	110		ug/m3 Air		92	77 - 136	1	25
1,4-Dichlorobenzene	120	111		ug/m3 Air		92	73 - 143	1	25
Dichlorodifluoromethane	99	96.2		ug/m3 Air		97	69 - 129	1	25
1,1-Dichloroethane	81	80.4		ug/m3 Air		99	65 - 125	2	25
1,2-Dichloroethane	81	76.5		ug/m3 Air		94	71 - 131	1	25
1,1-Dichloroethene	79	72.9		ug/m3 Air		92	53 - 128	1	25
cis-1,2-Dichloroethene	79	80.8		ug/m3 Air		102	68 - 128	2	25
trans-1,2-Dichloroethene	79	78.7		ug/m3 Air		99	70 - 130	2	25
1,2-Dichloropropane	92	90.9		ug/m3 Air		98	74 - 128	0	25
cis-1,3-Dichloropropene	91	99.4		ug/m3 Air		109	78 - 132	1	25
trans-1,3-Dichloropropene	91	83.0		ug/m3 Air		91	56 - 136	1	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	145		ug/m3 Air		104	64 - 124	1	25
Ethylbenzene	87	87.3		ug/m3 Air		101	76 - 136	0	25
4-Ethyltoluene	98	88.7		ug/m3 Air		90	62 - 136	1	25
Hexachlorobutadiene	210	150		ug/m3 Air		70	42 - 150	4	25
2-Hexanone	82	88.1		ug/m3 Air		108	70 - 128	1	25
Methylene Chloride	69	66.3		ug/m3 Air		95	65 - 125	2	25
4-Methyl-2-pentanone (MIBK)	82	87.7		ug/m3 Air		107	73 - 133	2	25
Styrene	85	87.1		ug/m3 Air		102	76 - 144	0	25
1,1,2,2-Tetrachloroethane	140	134		ug/m3 Air		98	75 - 135	0	25
Tetrachloroethene	140	131		ug/m3 Air		96	56 - 138	0	25
Toluene	75	74.8		ug/m3 Air		99	71 - 132	1	25
1,2,4-Trichlorobenzene	150	115		ug/m3 Air		78	59 - 150	3	25
1,1,1-Trichloroethane	110	105		ug/m3 Air		96	65 - 124	2	25
1,1,2-Trichloroethane	110	113		ug/m3 Air		104	71 - 131	1	25
Trichloroethene	110	107		ug/m3 Air		99	64 - 127	1	25
Trichlorofluoromethane	110	111		ug/m3 Air		99	68 - 128	1	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	142		ug/m3 Air		93	50 - 132	1	25
1,2,4-Trimethylbenzene	98	98.4		ug/m3 Air		100	61 - 145	1	25
1,3,5-Trimethylbenzene	98	92.0		ug/m3 Air		94	65 - 136	0	25
Vinyl acetate	70	74.6		ug/m3 Air		106	77 - 134	1	25
Vinyl chloride	51	57.2		ug/m3 Air		112	69 - 129	2	25
m,p-Xylene	170	174		ug/m3 Air		100	75 - 138	1	25
o-Xylene	87	85.9		ug/m3 Air		99	77 - 132	0	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-136085/4

Matrix: Air

Analysis Batch: 136085

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

<u>Surrogate</u>	<i>LCSD</i>		<u>Limits</u>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>4-Bromofluorobenzene (Surr)</i>	103		70 - 130
<i>1,2-Dichloroethane-d4 (Surr)</i>	96		70 - 130
<i>Toluene-d8 (Surr)</i>	100		70 - 130

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# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Air - GC/MS VOA

### Analysis Batch: 136085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23009-1	SVE-SOUTH_PRECARBON_102516	Total/NA	Air	TO-15	
320-23009-2	SVE-SOUTH_POSTCARBON_102516	Total/NA	Air	TO-15	
320-23009-3	SVE-NORTH_EFFLUENT_102516	Total/NA	Air	TO-15	
MB 320-136085/6	Method Blank	Total/NA	Air	TO-15	
LCS 320-136085/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-136085/4	Lab Control Sample Dup	Total/NA	Air	TO-15	



# Lab Chronicle

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

**Client Sample ID: SVE-SOUTH\_PRECARBON\_102516**

**Lab Sample ID: 320-23009-1**

**Date Collected: 10/25/16 08:41**

**Matrix: Air**

**Date Received: 10/26/16 09:10**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		122	3.33 mL	250 mL	136085	11/04/16 16:31	AP1	TAL SAC

**Client Sample ID: SVE-SOUTH\_POSTCARBON\_102516**

**Lab Sample ID: 320-23009-2**

**Date Collected: 10/25/16 08:43**

**Matrix: Air**

**Date Received: 10/26/16 09:10**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		83.2	4.89 mL	250 mL	136085	11/04/16 17:23	AP1	TAL SAC

**Client Sample ID: SVE-NORTH\_EFFLUENT\_102516**

**Lab Sample ID: 320-23009-3**

**Date Collected: 10/25/16 07:59**

**Matrix: Air**

**Date Received: 10/26/16 09:10**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	448 mL	250 mL	136085	11/04/16 18:19	AP1	TAL SAC

## Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Certification Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-16 *
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
USDA	Federal		P330-11-00092	04-17-17

\* Certification renewal pending - certification considered valid.

# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23009-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23009-1	SVE-SOUTH_PRECARBON_102516	Air	10/25/16 08:41	10/26/16 09:10
320-23009-2	SVE-SOUTH_POSTCARBON_102516	Air	10/25/16 08:43	10/26/16 09:10
320-23009-3	SVE-NORTH_EFFLUENT_102516	Air	10/25/16 07:59	10/26/16 09:10

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**TestAmerica Sacramento**  
 880 Riverside Parkway  
 West Sacramento, CA 95605  
 phone 916.374.4378 fax 916.372.1059

**Canister Samples Chain of Custody Record**

**TestAmerica**  
 THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

<b>Client Contact Information</b>		<b>Project Manager:</b> STORMY SALISBURY		<b>Samples Collected By:</b> Kyle Rine		COC No. _____ of _____ COCs																																																																																																		
Company Name: Apex Companies		Phone: 503-924-4704 x 1925		EPA 15/16																																																																																																				
Address: 3015 SW 1st Ave		Email: ssalisbury@apexcos.com		ASTM D-1946 / 1945 / 3588																																																																																																				
City/State/Zip: Portland OR 97201				EPA 25C / 25.3																																																																																																				
Phone: 503-924-4704				EPA 3C																																																																																																				
FAX:				MA-APH																																																																																																				
Project Name: MUSTAR VANOUR REM				TO-15 (Med / Std / Low / SIM)																																																																																																				
Site/Location: MUSTAR VANOUR																																																																																																								
PO #: 1126-18																																																																																																								
<table border="1"> <thead> <tr> <th rowspan="2">Sample Identification</th> <th rowspan="2">Sample Date(s)</th> <th rowspan="2">Time Start</th> <th rowspan="2">Time Stop</th> <th rowspan="2">Canister Vacuum in Field, 'Hg (Start)'</th> <th rowspan="2">Canister Vacuum in Field, 'Hg (Stop)'</th> <th rowspan="2">Flow Controller ID</th> <th rowspan="2">Canister ID</th> <th rowspan="2">TO-15 (Med / Std / Low / SIM)</th> <th rowspan="2">MA-APH</th> <th rowspan="2">EPA 3C</th> <th rowspan="2">EPA 25C / 25.3</th> <th rowspan="2">ASTM D-1946 / 1945 / 3588</th> <th rowspan="2">EPA 15/16</th> <th rowspan="2">TO-3</th> <th colspan="5">Other (Please specify in notes section)</th> <th rowspan="2">Sample Specific Notes:</th> </tr> <tr> <th>Indoor Air</th> <th>Ambient Air</th> <th>Soil Gas</th> <th>Landfill Gas</th> <th>Other (Please specify in notes section)</th> </tr> </thead> <tbody> <tr> <td>SVE_South_Precarbon-102516</td> <td>10/25/16</td> <td>0840</td> <td>0841</td> <td>-30</td> <td>-2</td> <td>-</td> <td>59968</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SVE_South_Postcarbon-102516</td> <td>10/25/16</td> <td>0842</td> <td>0843</td> <td>-30</td> <td>-2</td> <td>-</td> <td>3320</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SVE_North_Effluent-102516</td> <td>10/25/16</td> <td>0758</td> <td>0759</td> <td>-30</td> <td>-3</td> <td>-</td> <td>5089</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>								Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, 'Hg (Start)'	Canister Vacuum in Field, 'Hg (Stop)'	Flow Controller ID	Canister ID	TO-15 (Med / Std / Low / SIM)	MA-APH	EPA 3C	EPA 25C / 25.3	ASTM D-1946 / 1945 / 3588	EPA 15/16	TO-3	Other (Please specify in notes section)					Sample Specific Notes:	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	SVE_South_Precarbon-102516	10/25/16	0840	0841	-30	-2	-	59968	X															SVE_South_Postcarbon-102516	10/25/16	0842	0843	-30	-2	-	3320	X																SVE_North_Effluent-102516	10/25/16	0758	0759	-30	-3	-	5089	X															
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		Interior	Ambient																																																																																																					
Special Instructions/QC Requirements & Comments: Email Results to: ssalisbury@apexcos.com																																																																																																								
Samples Shipped by: Kate Rine/Apex								Samples Received by: [Signature] 10/25/16 1130																																																																																																
Relinquished by: Jessica [Signature]								Received by: [Signature] 10/25/16 1320																																																																																																
Lab Use Only: Shipper Name: [Signature]								Condition: Jim Tubom 10/25/16 010																																																																																																



# Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-23009-1

**Login Number: 23009**  
**List Number: 1**  
**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





320-21906 Chain of Custody

SIM

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## Sacramento Canister QC Certification Individual Certification

Certification Type TO15, SIM  
Date Cleaned/Batch ID 09/19/16 320-21906  
Date of QC 20 'a/27/16

Loc: 320  
**21906**

*Paul*  
09/20/16

*Paul*  
09/20/16

Canister ID	Filename	Canister ID	Filename
<del>34000156</del> 34001564	M05092707		
34000392			
34001655	M05092709		
34002085			10
34001222			11
34000615			12
34001507			13
4452			14
34000015			15
340000291			16
3320			17
34001412			18

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

*[Signature]*  
1<sup>st</sup> level Reviewed By:

9/29/16.  
Date:

*[Signature]*  
2nd level Reviewed By:

10/5/16  
Date:





Certification Type

TO15 SCAN

Date Cleaned/Batch ID

09/22/16, 320-22036

Date of QC

9/23/16

Data File Number

C:\MSDCHEM\1\DATA\160923\

MS7-0923 20.d

**CANISTER ID NUMBERS**

34000560

34000896

8301

09968

34001348 \*

34000174

34001362

34001221

7754

34001508

34002028

34000787

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

1<sup>st</sup> level Reviewed By:

Date:

2nd level Reviewed By:

Date:



320-22551 Chain of Custody

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## Sacramento Canister QC Certification Batch Certification

Certification Type TO15, SGCN  
 Date Cleaned/Batch ID 10/10/16, 320-22551  
 Date of QC 10/11/16  
 Data File Number 1610112

### CANISTER ID NUMBERS

<u>34000153 *</u>	<u>5089</u>	
<u>34000820</u>	<u>34000446</u>	
<u>34000477</u>	<u>34000428</u>	
<u>5627</u>	<u>7754</u>	
<u>7835</u>		
<u>34001159</u>		
<u>34001126</u>		
<u>7524</u>		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

W for AP  
1<sup>st</sup> level Reviewed By:

10/13/16  
Date:

[Signature]  
2nd level Reviewed By:

10/14/16  
Date:



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001564 Lab Sample ID: 320-21906-1  
 Matrix: Air Lab File ID: MS5092707.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 905(mL) Date Analyzed: 09/28/2016 00:27  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
75-00-3	Chloroethane	ND		0.045	0.010
67-66-3	Chloroform	ND		0.020	0.0050
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
108-88-3	Toluene	ND		0.020	0.010
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.030	0.0050
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050
79-01-6	Trichloroethene	ND		0.020	0.0050
75-69-4	Trichlorofluoromethane	ND		0.045	0.010
75-01-4	Vinyl chloride	ND		0.020	0.010
179601-23-1	m,p-Xylene	ND		0.040	0.020

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001564 Lab Sample ID: 320-21906-1  
 Matrix: Air Lab File ID: MS5092707.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 905(mL) Date Analyzed: 09/28/2016 00:27  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	141	X	70-130
2037-26-5	Toluene-d8 (Surr)	104		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092707.D  
 Lims ID: 320-21906-A-1  
 Client ID: 34001564  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 00:27:30 ALS Bottle#: 5 Worklist Smp#: 7  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-01  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 15:16:13 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:23:15

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.568	11.590	-0.022	91	27475	2.00	
* 2 1,4-Difluorobenzene	114	13.731	13.743	-0.012	99	114550	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.391	20.392	-0.002	98	113055	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.763	12.774	-0.011	71	55172	2.82	
\$ 5 Toluene-d8 (Surr)	100	17.115	17.123	-0.008	100	70806	2.08	
\$ 6 4-Bromofluorobenzene (Surr	95	22.947	22.949	-0.002	98	78407	2.09	
8 Dichlorodifluoromethane	85	3.925	3.924	0.001	99	571	0.0125	
10 Chloromethane	50	4.307	4.298	0.009	100	2168	0.1088	
14 Chloroethane	64	5.508	5.504	0.004	92	80	0.009802	7
15 Trichlorofluoromethane	101	6.106	6.104	0.002	98	225	0.005257	7
18 Acetone	43	6.960	6.950	0.010	100	31050	NC	
22 Methylene Chloride	49	8.178	8.178	0.000	96	4378	0.1360	
38 Benzene	78	13.100	13.092	0.008	98	739	0.0137	
43 1,4-Dioxane	88	15.326	15.290	0.036	93	130	0.009413	7
46 Toluene	91	17.288	17.286	0.002	97	424	0.006268	7
47 trans-1,3-Dichloropropene	75	17.570	17.568	0.002	50	15	0.000473	7
53 Chlorobenzene	112	20.468	20.469	-0.001	52	67	0.001135	7
55 Ethylbenzene	91	20.662	20.663	-0.001	96	144	0.001474	7
56 m-Xylene & p-Xylene	91	20.847	20.848	-0.001	52	360	0.004797	7
57 o-Xylene	91	21.749	21.750	-0.001	92	194	0.002535	7
65 1,4-Dichlorobenzene	146	25.450	25.449	0.001	94	113	0.002131	7
66 Benzyl chloride	91	25.612	25.615	-0.003	100	68	0.000979	7
67 1,2-Dichlorobenzene	146	26.165	26.166	-0.001	97	108	0.002090	7
70 Naphthalene	128	29.905	29.905	0.000	100	12056	0.1421	

**QC Flag Legend**

Processing Flags

NC - Not Calibrated

7 - Failed Limit of Detection

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent

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- 15
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TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092707.D

Injection Date: 28-Sep-2016 00:27:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-1

Lab Sample ID: 320-21906-1

Client ID: 34001564

Operator ID: AO

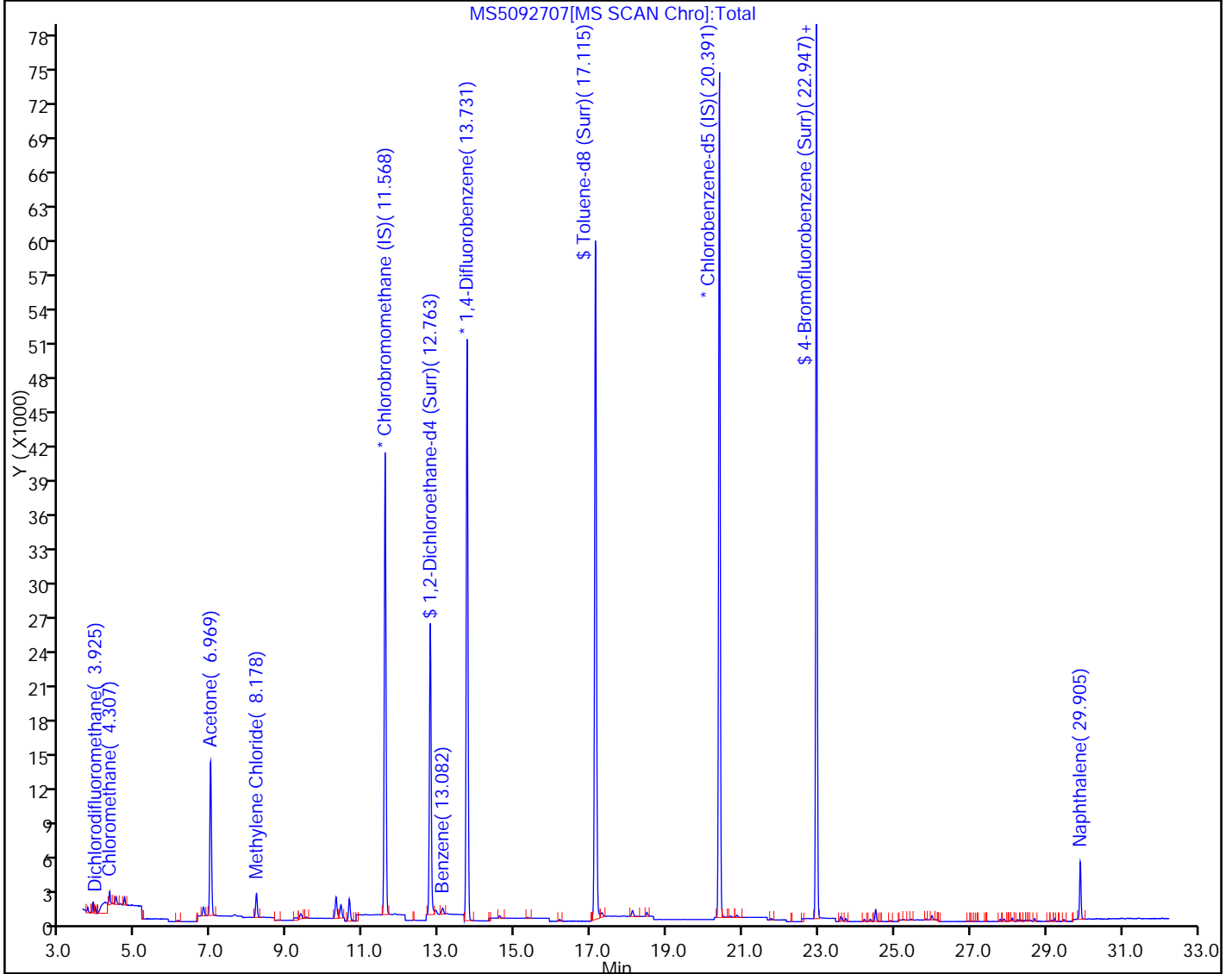
ALS Bottle#: 5 Worklist Smp#: 7

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001655 Lab Sample ID: 320-21906-3  
 Matrix: Air Lab File ID: MS5092709.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 890 (mL) Date Analyzed: 09/28/2016 02:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		0.020	0.010
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
75-00-3	Chloroethane	ND		0.045	0.010
67-66-3	Chloroform	ND		0.020	0.0050
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
75-09-2	Methylene Chloride	ND		0.20	0.10
91-20-3	Naphthalene	ND		0.013	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
108-88-3	Toluene	ND		0.020	0.010
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050
79-01-6	Trichloroethene	ND		0.020	0.0050
75-01-4	Vinyl chloride	ND		0.020	0.010
179601-23-1	m,p-Xylene	ND		0.040	0.020

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001655 Lab Sample ID: 320-21906-3  
 Matrix: Air Lab File ID: MS5092709.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 890 (mL) Date Analyzed: 09/28/2016 02:40  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	104		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	135	X	70-130
2037-26-5	Toluene-d8 (Surr)	99		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092709.D  
 Lims ID: 320-21906-A-3  
 Client ID: 34001655  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 02:40:30 ALS Bottle#: 7 Worklist Smp#: 9  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-03  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 15:16:13 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:23:33

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.590	11.590	0.000	95	29153	2.00	
* 2 1,4-Difluorobenzene	114	13.740	13.743	-0.003	99	121523	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.392	20.392	0.000	97	109294	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.765	12.774	-0.009	73	56176	2.70	
\$ 5 Toluene-d8 (Surr)	100	17.122	17.123	-0.001	100	71423	1.97	
\$ 6 4-Bromofluorobenzene (Surr	95	22.949	22.949	0.000	98	75062	2.07	
8 Dichlorodifluoromethane	85	3.952	3.924	0.028	98	716	0.0147	
10 Chloromethane	50	4.334	4.298	0.036	98	567	0.0268	7
14 Chloroethane	64	5.543	5.504	0.039	98	47	0.005427	7
15 Trichlorofluoromethane	101	6.131	6.104	0.027	99	963	0.0212	
18 Acetone	43	7.005	6.950	0.055	97	33387	NC	
19 1,1,2-Trichloro-1,2,2-trif	101	7.133	7.105	0.028	99	1908	0.0504	
22 Methylene Chloride	49	8.197	8.178	0.019	96	3034	0.0888	7
38 Benzene	78	13.102	13.092	0.010	80	388	0.006759	7
46 Toluene	91	17.295	17.286	0.009	94	438	0.006103	7
47 trans-1,3-Dichloropropene	75	17.523	17.568	-0.045	91	18	0.000587	7
56 m-Xylene & p-Xylene	91	20.848	20.848	0.000	51	202	0.002784	7
57 o-Xylene	91	21.750	21.750	0.000	91	79	0.001068	7
66 Benzyl chloride	91	25.698	25.615	0.083	63	75	0.001117	7
67 1,2-Dichlorobenzene	146	26.162	26.166	-0.004	96	63	0.001261	7

**QC Flag Legend**

Processing Flags

NC - Not Calibrated

7 - Failed Limit of Detection

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092709.D

Injection Date: 28-Sep-2016 02:40:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-3

Lab Sample ID: 320-21906-3

Client ID: 34001655

Operator ID: AO

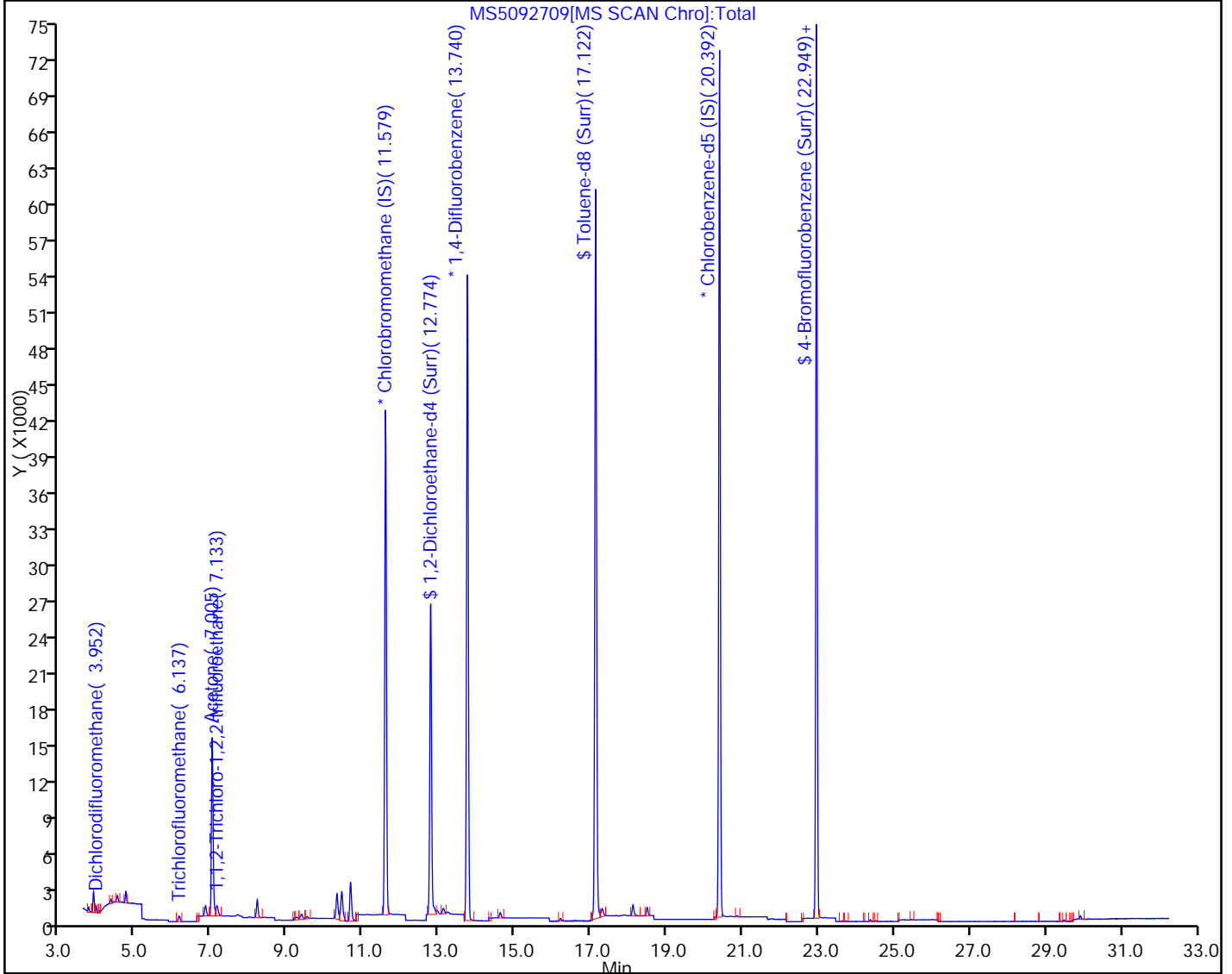
ALS Bottle#: 7 Worklist Smp#: 9

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34002085 Lab Sample ID: 320-21906-4  
 Matrix: Air Lab File ID: MS5092710.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 920 (mL) Date Analyzed: 09/28/2016 03:41  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		0.020	0.010
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
75-00-3	Chloroethane	ND		0.045	0.010
67-66-3	Chloroform	ND		0.020	0.0050
74-87-3	Chloromethane	ND		0.20	0.010
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
75-09-2	Methylene Chloride	ND		0.20	0.10
91-20-3	Naphthalene	ND		0.013	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
108-88-3	Toluene	ND		0.020	0.010
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050
79-01-6	Trichloroethene	ND		0.020	0.0050
75-01-4	Vinyl chloride	ND		0.020	0.010

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34002085 Lab Sample ID: 320-21906-4  
 Matrix: Air Lab File ID: MS5092710.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 920 (mL) Date Analyzed: 09/28/2016 03:41  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
179601-23-1	m,p-Xylene	ND		0.040	0.020
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	103		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	135	X	70-130
2037-26-5	Toluene-d8 (Surr)	99		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092710.D  
 Lims ID: 320-21906-A-4  
 Client ID: 34002085  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 03:41:30 ALS Bottle#: 8 Worklist Smp#: 10  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-04  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 15:16:13 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:23:44

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.579	11.590	-0.011	94	27556	2.00	
* 2 1,4-Difluorobenzene	114	13.733	13.743	-0.010	99	120671	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.392	20.392	0.000	98	112666	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.765	12.774	-0.009	72	55540	2.69	
\$ 5 Toluene-d8 (Surr)	100	17.122	17.123	-0.001	100	71364	1.99	
\$ 6 4-Bromofluorobenzene (Surr	95	22.949	22.949	0.000	99	77085	2.06	
8 Dichlorodifluoromethane	85	3.925	3.924	0.001	82	3219	0.0701	
15 Trichlorofluoromethane	101	6.115	6.104	0.011	100	5140	0.1197	
18 Acetone	43	6.987	6.950	0.037	99	8597	NC	
19 1,1,2-Trichloro-1,2,2-trif	101	7.115	7.105	0.010	99	5646	0.1577	
22 Methylene Chloride	49	8.178	8.178	0.000	95	2495	0.0773	7
38 Benzene	78	13.093	13.092	0.001	97	284	0.004982	7
43 1,4-Dioxane	88	15.342	15.290	0.052	85	36	0.002474	7
46 Toluene	91	17.286	17.286	0.000	100	305	0.004280	7
53 Chlorobenzene	112	20.479	20.469	0.010	52	47	0.000799	7
56 m-Xylene & p-Xylene	91	20.858	20.848	0.010	52	136	0.001818	7
65 1,4-Dichlorobenzene	146	25.449	25.449	0.000	99	54	0.001022	7

**QC Flag Legend**

Processing Flags

NC - Not Calibrated

7 - Failed Limit of Detection

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092710.D

Injection Date: 28-Sep-2016 03:41:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-4

Lab Sample ID: 320-21906-4

Client ID: 34002085

Operator ID: AO

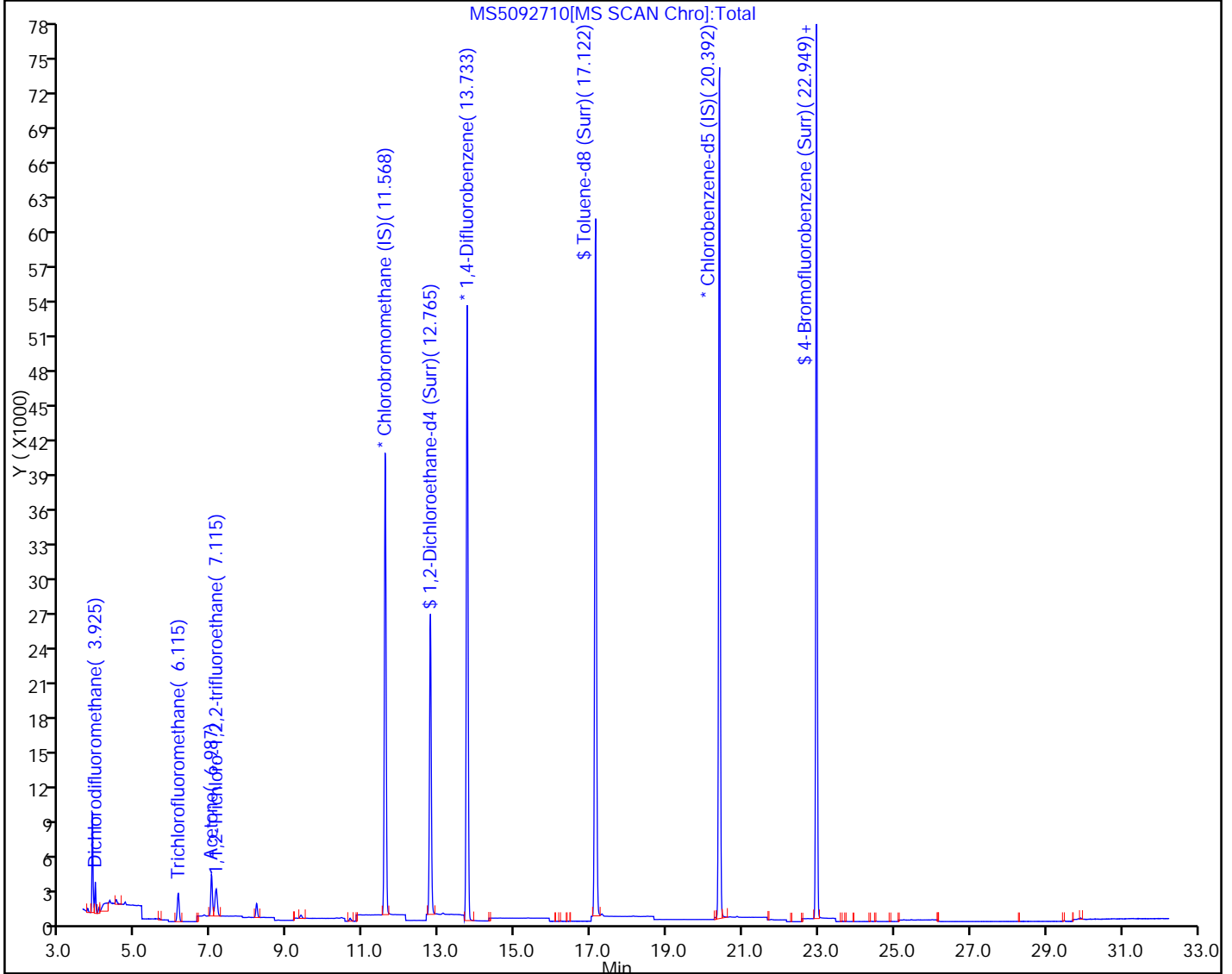
ALS Bottle#: 8 Worklist Smp#: 10

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001222 Lab Sample ID: 320-21906-5  
 Matrix: Air Lab File ID: MS5092711.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 855(mL) Date Analyzed: 09/28/2016 04:42  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		0.020	0.010
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
75-00-3	Chloroethane	ND		0.045	0.010
67-66-3	Chloroform	ND		0.020	0.0050
74-87-3	Chloromethane	ND		0.20	0.010
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
75-09-2	Methylene Chloride	ND		0.20	0.10
91-20-3	Naphthalene	ND		0.013	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
108-88-3	Toluene	ND		0.020	0.010
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050
79-01-6	Trichloroethene	ND		0.020	0.0050
75-01-4	Vinyl chloride	ND		0.020	0.010

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001222 Lab Sample ID: 320-21906-5  
 Matrix: Air Lab File ID: MS5092711.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 855 (mL) Date Analyzed: 09/28/2016 04:42  
 Soil Aliquot Vol.: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
179601-23-1	m,p-Xylene	ND		0.040	0.020
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	132	X	70-130
2037-26-5	Toluene-d8 (Surr)	99		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092711.D  
 Lims ID: 320-21906-A-5  
 Client ID: 34001222  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 04:42:30 ALS Bottle#: 9 Worklist Smp#: 11  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-05  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 15:16:13 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:23:54

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.568	11.590	-0.022	91	28120	2.00	
* 2 1,4-Difluorobenzene	114	13.732	13.743	-0.011	99	125938	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.392	20.392	0.000	98	117565	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.763	12.774	-0.011	71	56859	2.64	
\$ 5 Toluene-d8 (Surr)	100	17.113	17.123	-0.010	100	74007	1.97	
\$ 6 4-Bromofluorobenzene (Surr	95	22.949	22.949	0.000	99	81905	2.10	
8 Dichlorodifluoromethane	85	3.925	3.924	0.001	79	2540	0.0542	
15 Trichlorofluoromethane	101	6.102	6.104	-0.002	100	4640	0.1059	
18 Acetone	43	6.960	6.950	0.010	98	55418	NC	
19 1,1,2-Trichloro-1,2,2-trif	101	7.106	7.105	0.001	99	4800	0.1314	
22 Methylene Chloride	49	8.172	8.178	-0.006	95	3104	0.0942	7
38 Benzene	78	13.091	13.092	-0.001	27	377	0.006337	7
43 1,4-Dioxane	88	15.323	15.290	0.033	89	103	0.006784	7
45 cis-1,3-Dichloropropene	75	16.365	16.478	-0.113	66	82	0.002620	7
46 Toluene	91	17.296	17.286	0.010	95	559	0.007517	7
47 trans-1,3-Dichloropropene	75	17.505	17.568	-0.063	48	82	0.002487	7
55 Ethylbenzene	91	20.664	20.663	0.001	20	73	0.000718	7
56 m-Xylene & p-Xylene	91	20.848	20.848	0.000	52	182	0.002332	7
57 o-Xylene	91	21.746	21.750	-0.004	96	74	0.000930	7
65 1,4-Dichlorobenzene	146	25.449	25.449	0.000	93	62	0.001125	7

**QC Flag Legend**

Processing Flags

NC - Not Calibrated

7 - Failed Limit of Detection

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092711.D

Injection Date: 28-Sep-2016 04:42:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-5

Lab Sample ID: 320-21906-5

Client ID: 34001222

Operator ID: AO

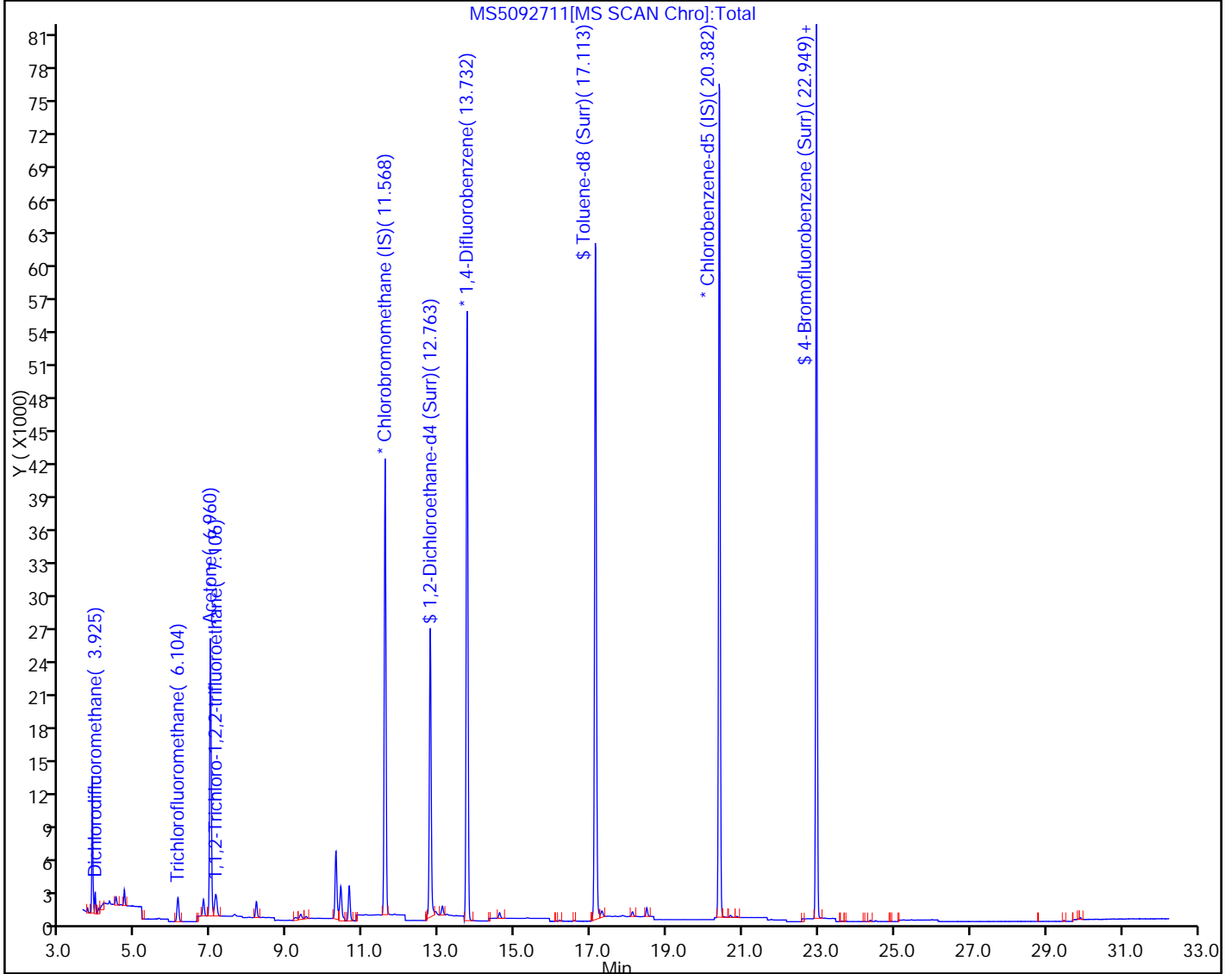
ALS Bottle#: 9 Worklist Smp#: 11

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000615 Lab Sample ID: 320-21906-6  
 Matrix: Air Lab File ID: MS5092712.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 860 (mL) Date Analyzed: 09/28/2016 05:43  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		0.020	0.010
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
75-00-3	Chloroethane	ND		0.045	0.010
67-66-3	Chloroform	ND		0.020	0.0050
74-87-3	Chloromethane	ND		0.20	0.010
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
75-09-2	Methylene Chloride	ND		0.20	0.10
91-20-3	Naphthalene	ND		0.013	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
108-88-3	Toluene	ND		0.020	0.010
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050
79-01-6	Trichloroethene	ND		0.020	0.0050
75-01-4	Vinyl chloride	ND		0.020	0.010

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000615 Lab Sample ID: 320-21906-6  
 Matrix: Air Lab File ID: MS5092712.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 860 (mL) Date Analyzed: 09/28/2016 05:43  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
179601-23-1	m,p-Xylene	ND		0.040	0.020
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	104		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	138	X	70-130
2037-26-5	Toluene-d8 (Surr)	99		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092712.D  
 Lims ID: 320-21906-A-6  
 Client ID: 34000615  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 05:43:30 ALS Bottle#: 10 Worklist Smp#: 12  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-06  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 17:24:35 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:24:35

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.579	11.590	-0.011	92	28233	2.00	
* 2 1,4-Difluorobenzene	114	13.737	13.743	-0.006	99	118759	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.392	20.392	0.000	97	107895	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.765	12.774	-0.009	72	56082	2.76	
\$ 5 Toluene-d8 (Surr)	100	17.122	17.123	-0.001	100	69759	1.97	
\$ 6 4-Bromofluorobenzene (Surr	95	22.949	22.949	0.000	98	74319	2.08	
8 Dichlorodifluoromethane	85	3.943	3.924	0.019	78	708	0.0151	
15 Trichlorofluoromethane	101	6.126	6.104	0.022	100	1346	0.0306	
18 Acetone	43	7.014	6.950	0.064	99	13236	NC	
19 1,1,2-Trichloro-1,2,2-trif	101	7.124	7.105	0.019	98	1744	0.0475	
22 Methylene Chloride	49	8.191	8.178	0.013	96	3016	0.0912	7

**QC Flag Legend**

Processing Flags

NC - Not Calibrated

7 - Failed Limit of Detection

**Reagents:**

VAMIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092712.D

Injection Date: 28-Sep-2016 05:43:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-6

Lab Sample ID: 320-21906-6

Client ID: 34000615

Operator ID: AO

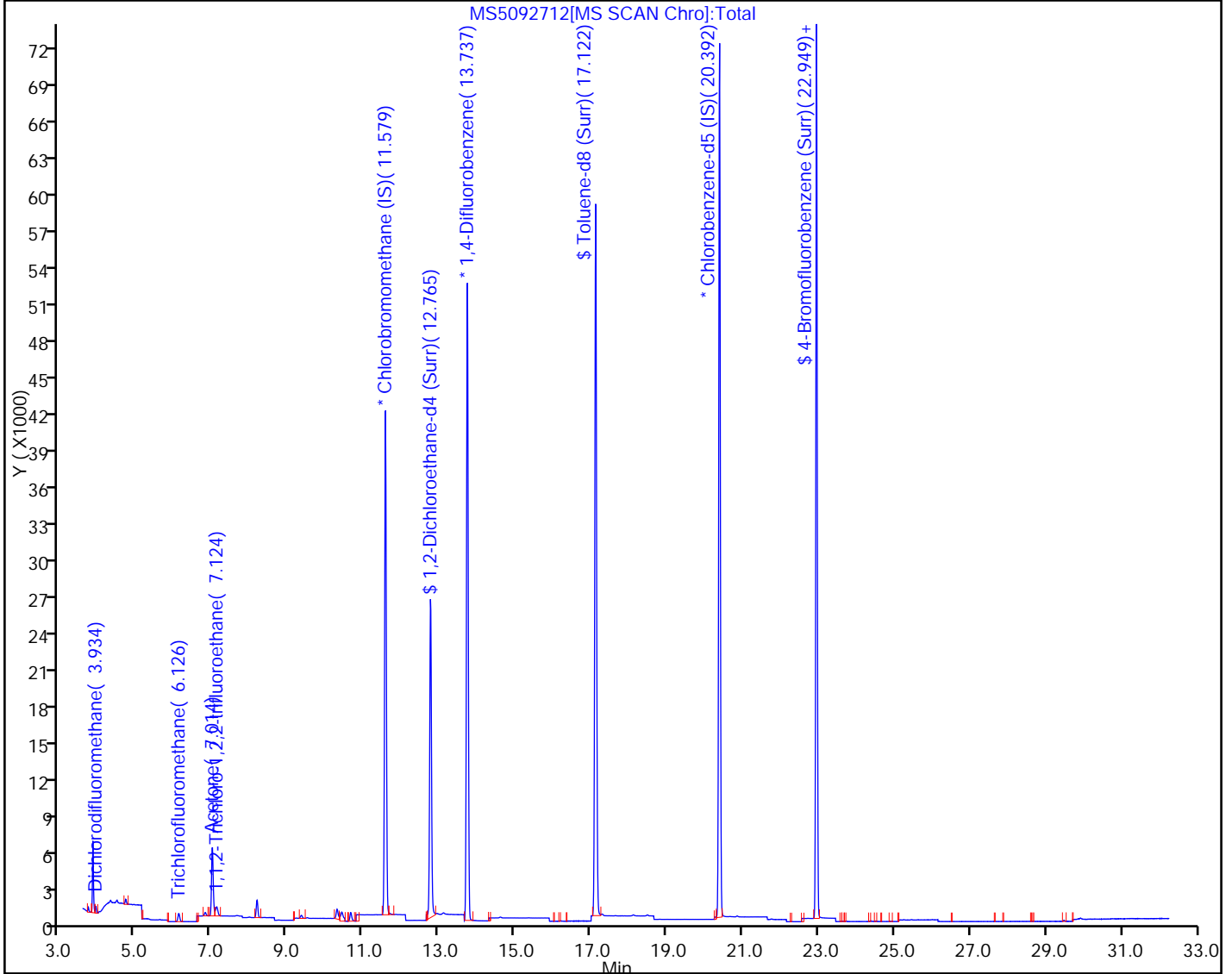
ALS Bottle#: 10 Worklist Smp#: 12

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



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FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001507 Lab Sample ID: 320-21906-7  
 Matrix: Air Lab File ID: MS5092713.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 845(mL) Date Analyzed: 09/28/2016 06:43  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		0.020	0.010
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
75-00-3	Chloroethane	ND		0.045	0.010
67-66-3	Chloroform	ND		0.020	0.0050
74-87-3	Chloromethane	ND		0.20	0.010
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
91-20-3	Naphthalene	ND		0.013	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
108-88-3	Toluene	ND		0.020	0.010
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050
79-01-6	Trichloroethene	ND		0.020	0.0050
75-01-4	Vinyl chloride	ND		0.020	0.010
179601-23-1	m,p-Xylene	ND		0.040	0.020

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001507 Lab Sample ID: 320-21906-7  
 Matrix: Air Lab File ID: MS5092713.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 845 (mL) Date Analyzed: 09/28/2016 06:43  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	103		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	142	X	70-130
2037-26-5	Toluene-d8 (Surr)	102		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092713.D  
 Lims ID: 320-21906-A-7  
 Client ID: 34001507  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 06:43:30 ALS Bottle#: 11 Worklist Smp#: 13  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-07  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 17:25:11 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:25:11

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.579	11.590	-0.011	92	26403	2.00	
* 2 1,4-Difluorobenzene	114	13.737	13.743	-0.007	99	109262	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.392	20.392	0.000	98	105090	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.765	12.774	-0.009	72	53089	2.84	
\$ 5 Toluene-d8 (Surr)	100	17.122	17.123	-0.001	100	66428	2.04	
\$ 6 4-Bromofluorobenzene (Surr	95	22.948	22.949	-0.001	98	71712	2.06	
8 Dichlorodifluoromethane	85	3.933	3.924	0.009	82	1011	0.0230	
15 Trichlorofluoromethane	101	6.119	6.104	0.015	99	1462	0.0355	
18 Acetone	43	7.005	6.950	0.055	99	10401	NC	
19 1,1,2-Trichloro-1,2,2-trif	101	7.115	7.105	0.010	96	1657	0.0483	
22 Methylene Chloride	49	8.184	8.178	0.006	95	3174	0.1026	

**QC Flag Legend**

Processing Flags

NC - Not Calibrated

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092713.D

Injection Date: 28-Sep-2016 06:43:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-7

Lab Sample ID: 320-21906-7

Client ID: 34001507

Operator ID: AO

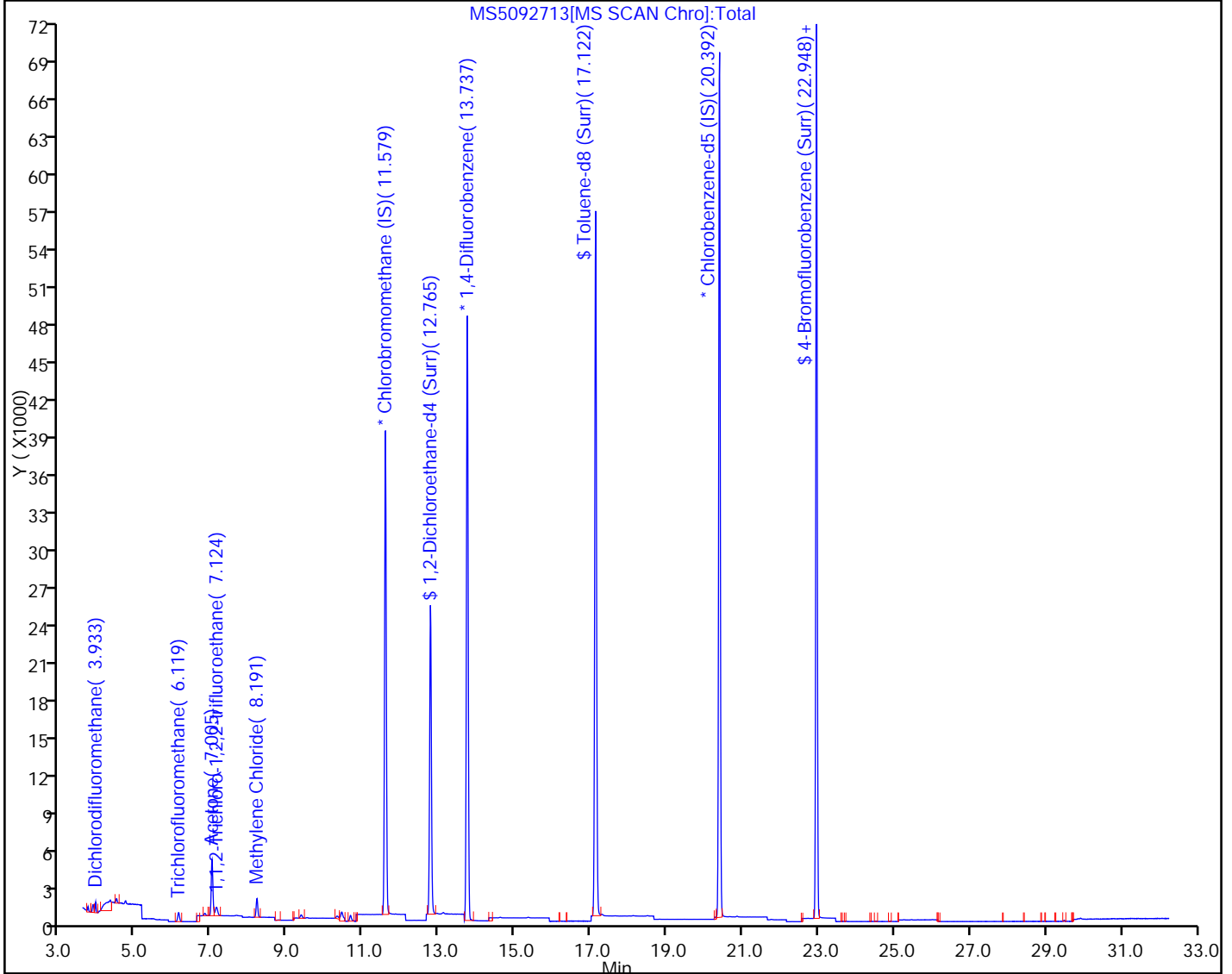
ALS Bottle#: 11 Worklist Smp#: 13

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 4452 Lab Sample ID: 320-21906-8  
 Matrix: Air Lab File ID: MS5092714.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 920 (mL) Date Analyzed: 09/28/2016 07:46  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		0.020	0.010
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
75-00-3	Chloroethane	ND		0.045	0.010
67-66-3	Chloroform	ND		0.020	0.0050
74-87-3	Chloromethane	ND		0.20	0.010
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
91-20-3	Naphthalene	ND		0.013	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
108-88-3	Toluene	ND		0.020	0.010
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.030	0.0050
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050
79-01-6	Trichloroethene	ND		0.020	0.0050

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 4452 Lab Sample ID: 320-21906-8  
 Matrix: Air Lab File ID: MS5092714.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 920 (mL) Date Analyzed: 09/28/2016 07:46  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-69-4	Trichlorofluoromethane	ND		0.045	0.010
75-01-4	Vinyl chloride	ND		0.020	0.010
179601-23-1	m,p-Xylene	ND		0.040	0.020
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	107		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	135	X	70-130
2037-26-5	Toluene-d8 (Surr)	98		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092714.D  
 Lims ID: 320-21906-A-8  
 Client ID: 4452  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 07:46:30 ALS Bottle#: 12 Worklist Smp#: 14  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-08  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 17:25:27 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:25:27

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.568	11.590	-0.022	92	26424	2.00	
* 2 1,4-Difluorobenzene	114	13.730	13.743	-0.013	99	119331	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.391	20.392	-0.001	98	111499	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.755	12.774	-0.019	58	55031	2.70	
\$ 5 Toluene-d8 (Surr)	100	17.113	17.123	-0.010	100	69755	1.96	
\$ 6 4-Bromofluorobenzene (Surr	95	22.948	22.949	-0.001	98	79270	2.15	
8 Dichlorodifluoromethane	85	3.924	3.924	0.000	99	515	0.0117	
18 Acetone	43	6.960	6.950	0.010	98	31101	NC	
22 Methylene Chloride	49	8.171	8.178	-0.007	95	3825	0.1236	

**QC Flag Legend**

Processing Flags

NC - Not Calibrated

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092714.D

Injection Date: 28-Sep-2016 07:46:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-8

Lab Sample ID: 320-21906-8

Client ID: 4452

Operator ID: AO

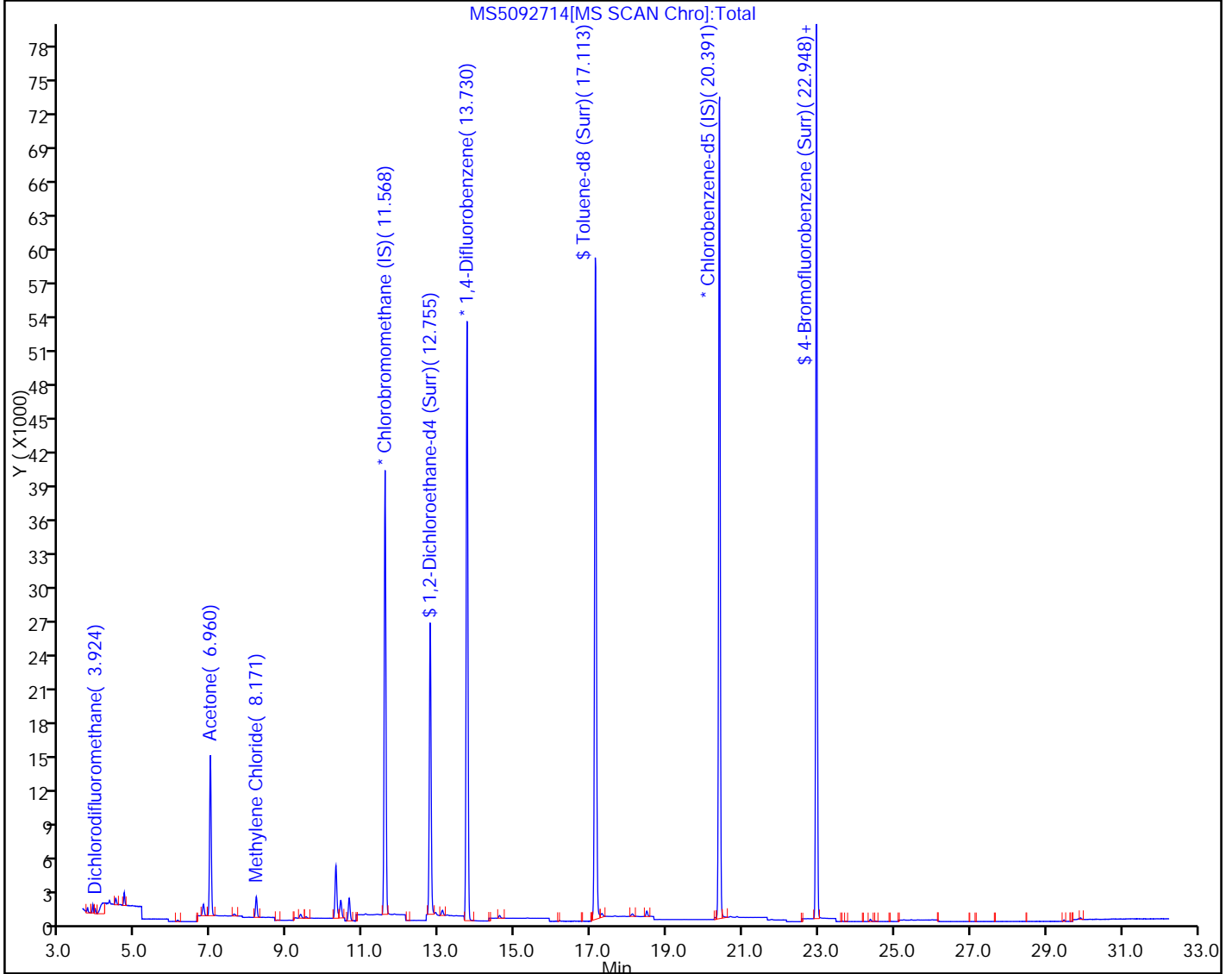
ALS Bottle#: 12 Worklist Smp#: 14

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



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FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000015 Lab Sample ID: 320-21906-9  
 Matrix: Air Lab File ID: MS5092715.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 890 (mL) Date Analyzed: 09/28/2016 08:46  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		0.020	0.010
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
75-00-3	Chloroethane	ND		0.045	0.010
67-66-3	Chloroform	ND		0.020	0.0050
74-87-3	Chloromethane	ND		0.20	0.010
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
91-20-3	Naphthalene	ND		0.013	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
108-88-3	Toluene	ND		0.020	0.010
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050
79-01-6	Trichloroethene	ND		0.020	0.0050
75-01-4	Vinyl chloride	ND		0.020	0.010
179601-23-1	m,p-Xylene	ND		0.040	0.020

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000015 Lab Sample ID: 320-21906-9  
 Matrix: Air Lab File ID: MS5092715.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 890 (mL) Date Analyzed: 09/28/2016 08:46  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	104		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	135	X	70-130
2037-26-5	Toluene-d8 (Surr)	98		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092715.D  
 Lims ID: 320-21906-A-9  
 Client ID: 34000015  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 08:46:30 ALS Bottle#: 13 Worklist Smp#: 15  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-09  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 17:25:39 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:25:39

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.579	11.590	-0.011	94	26196	2.00	
* 2 1,4-Difluorobenzene	114	13.734	13.743	-0.009	99	116034	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.389	20.392	-0.003	97	107585	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.765	12.774	-0.009	71	53478	2.69	
\$ 5 Toluene-d8 (Surr)	100	17.123	17.123	0.000	100	67687	1.96	
\$ 6 4-Bromofluorobenzene (Surr	95	22.947	22.949	-0.002	98	74213	2.08	
8 Dichlorodifluoromethane	85	3.925	3.924	0.001	82	4429	0.1015	
15 Trichlorofluoromethane	101	6.106	6.104	0.002	100	10603	0.2598	
18 Acetone	43	6.960	6.950	0.010	97	59333	NC	
19 1,1,2-Trichloro-1,2,2-trif	101	7.106	7.105	0.001	98	17287	0.5078	
22 Methylene Chloride	49	8.178	8.178	0.000	96	3858	0.1257	

**QC Flag Legend**

Processing Flags

NC - Not Calibrated

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092715.D

Injection Date: 28-Sep-2016 08:46:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-9

Lab Sample ID: 320-21906-9

Client ID: 34000015

Operator ID: AO

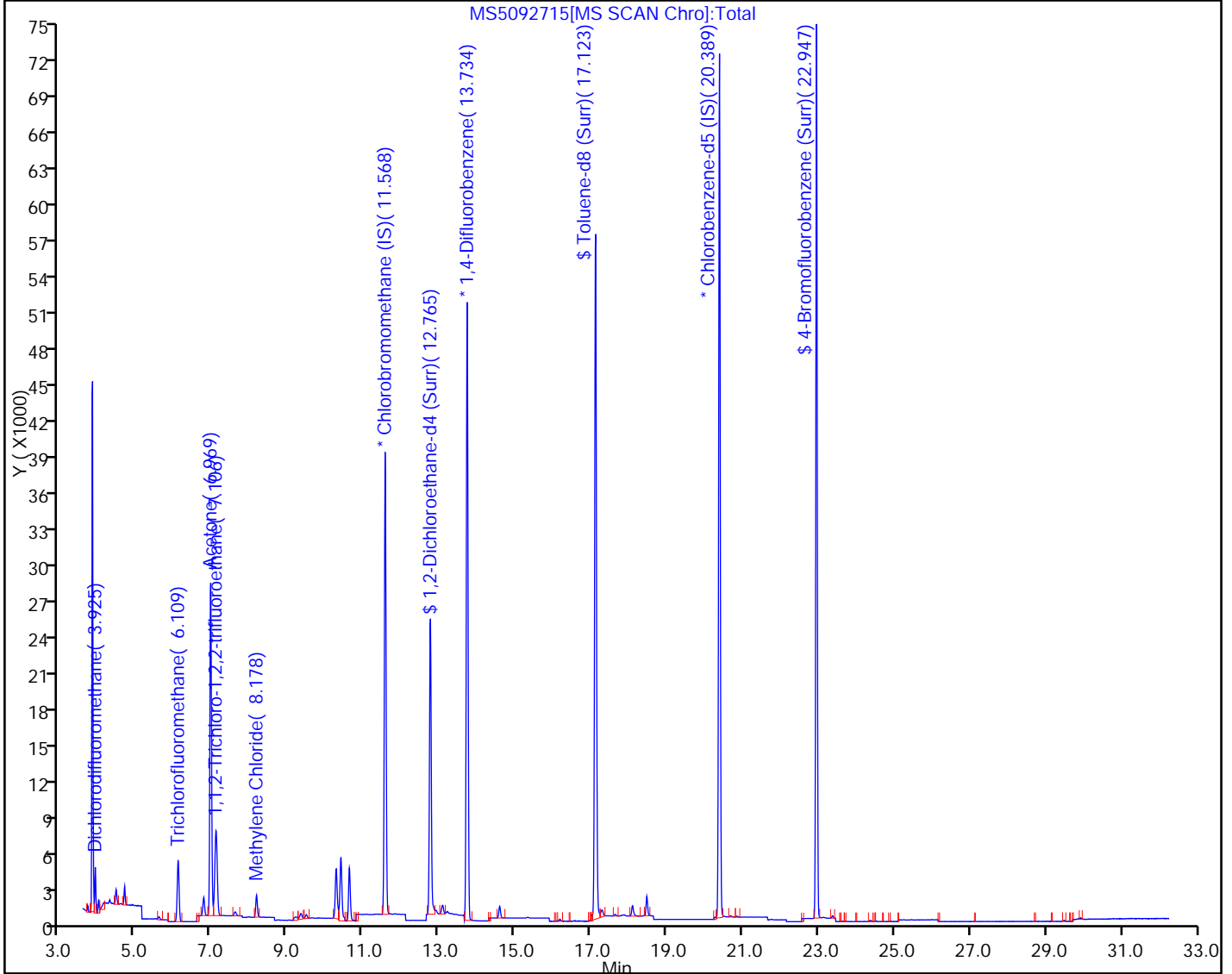
ALS Bottle#: 13 Worklist Smp#: 15

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



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FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000291 Lab Sample ID: 320-21906-10  
 Matrix: Air Lab File ID: MS5092716.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 870 (mL) Date Analyzed: 09/28/2016 09:47  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
67-66-3	Chloroform	ND		0.020	0.0050
74-87-3	Chloromethane	ND		0.20	0.010
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
91-20-3	Naphthalene	ND		0.013	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
108-88-3	Toluene	ND		0.020	0.010
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.030	0.0050
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050
79-01-6	Trichloroethene	ND		0.020	0.0050
75-69-4	Trichlorofluoromethane	ND		0.045	0.010
75-01-4	Vinyl chloride	ND		0.020	0.010

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000291 Lab Sample ID: 320-21906-10  
 Matrix: Air Lab File ID: MS5092716.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 870 (mL) Date Analyzed: 09/28/2016 09:47  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
179601-23-1	m,p-Xylene	ND		0.040	0.020
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	137	X	70-130
2037-26-5	Toluene-d8 (Surr)	98		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092716.D  
 Lims ID: 320-21906-A-10  
 Client ID: 34000291  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 09:47:30 ALS Bottle#: 14 Worklist Smp#: 16  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-10  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 17:25:58 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:25:57

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.590	11.590	0.000	95	27714	2.00	
* 2 1,4-Difluorobenzene	114	13.740	13.743	-0.003	99	118583	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.392	20.392	0.000	97	107056	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.765	12.774	-0.009	71	55537	2.74	
\$ 5 Toluene-d8 (Surr)	100	17.122	17.123	-0.001	100	68830	1.95	
\$ 6 4-Bromofluorobenzene (Surr	95	22.949	22.949	0.000	97	74460	2.10	
8 Dichlorodifluoromethane	85	3.943	3.924	0.019	100	513	0.0111	
14 Chloroethane	64	5.530	5.504	0.026	100	89	0.0108	7
18 Acetone	43	6.996	6.950	0.046	100	51105	NC	
22 Methylene Chloride	49	8.191	8.178	0.013	96	4024	0.1239	
38 Benzene	78	13.102	13.092	0.010	99	702	0.0125	
46 Toluene	91	17.295	17.286	0.009	98	369	0.005269	7

**QC Flag Legend**

Processing Flags

NC - Not Calibrated

7 - Failed Limit of Detection

**Reagents:**

VAMIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092716.D

Injection Date: 28-Sep-2016 09:47:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-10

Lab Sample ID: 320-21906-10

Client ID: 34000291

Operator ID: AO

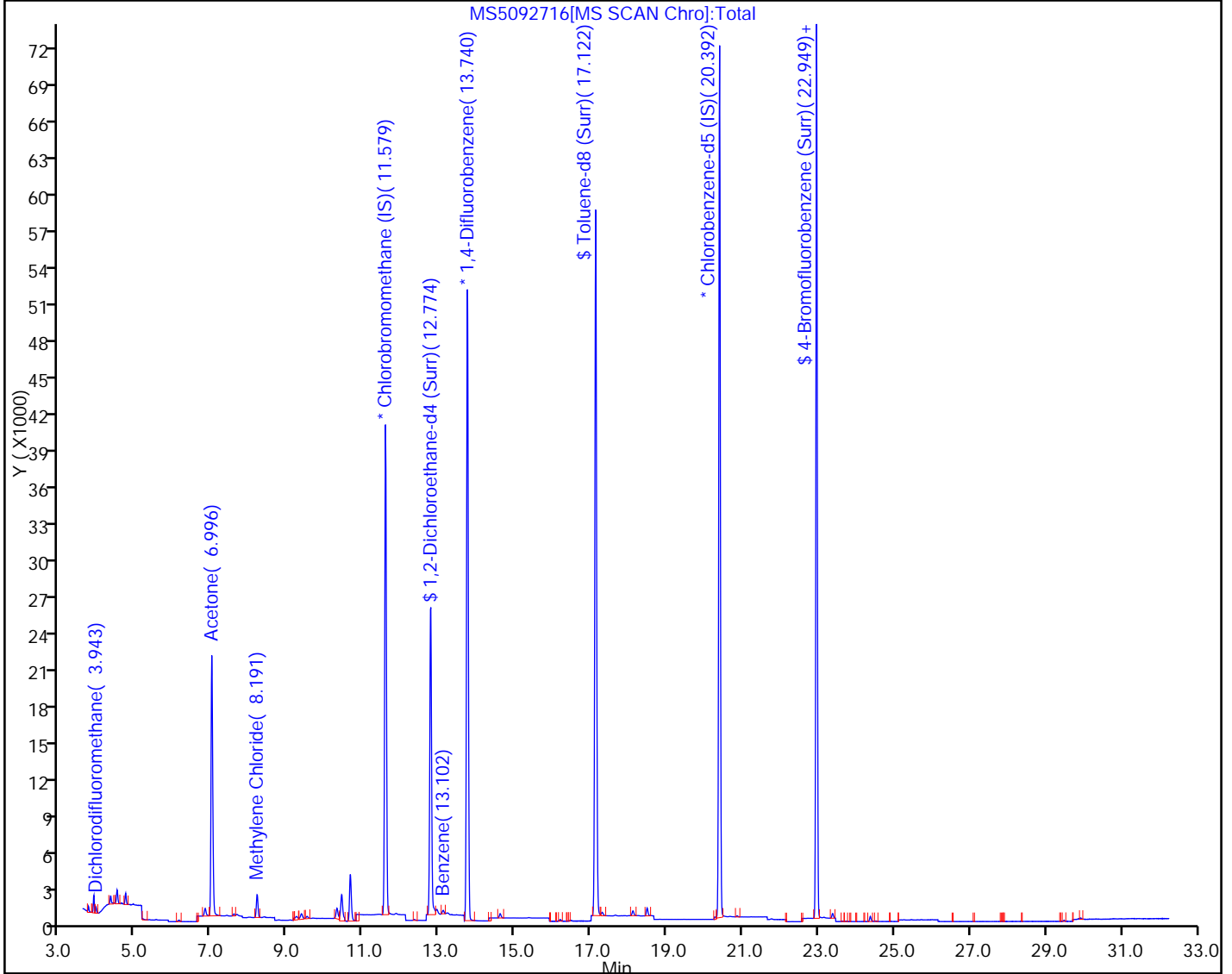
ALS Bottle#: 14 Worklist Smp#: 16

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



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FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 3320 Lab Sample ID: 320-21906-11  
 Matrix: Air Lab File ID: MS5092717.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 875 (mL) Date Analyzed: 09/28/2016 10:48  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		0.020	0.010
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
75-00-3	Chloroethane	ND		0.045	0.010
67-66-3	Chloroform	ND		0.020	0.0050
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
91-20-3	Naphthalene	ND		0.013	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.030	0.0050
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050
79-01-6	Trichloroethene	ND		0.020	0.0050
75-69-4	Trichlorofluoromethane	ND		0.045	0.010
75-01-4	Vinyl chloride	ND		0.020	0.010

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 3320 Lab Sample ID: 320-21906-11  
 Matrix: Air Lab File ID: MS5092717.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 875 (mL) Date Analyzed: 09/28/2016 10:48  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
179601-23-1	m,p-Xylene	ND		0.040	0.020
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	138	X	70-130
2037-26-5	Toluene-d8 (Surr)	100		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092717.D  
 Lims ID: 320-21906-A-11  
 Client ID: 3320  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 10:48:30 ALS Bottle#: 15 Worklist Smp#: 17  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-11  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 17:27:18 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:27:18

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.579	11.590	-0.011	93	26086	2.00	
* 2 1,4-Difluorobenzene	114	13.737	13.743	-0.006	99	113147	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.392	20.392	0.000	98	107799	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.765	12.774	-0.009	74	53468	2.76	
\$ 5 Toluene-d8 (Surr)	100	17.123	17.123	0.000	100	67036	1.99	
\$ 6 4-Bromofluorobenzene (Surr	95	22.949	22.949	0.000	99	75206	2.11	
8 Dichlorodifluoromethane	85	3.925	3.924	0.001	100	595	0.0137	
10 Chloromethane	50	4.307	4.307	0.009	99	1873	0.0990	M
15 Trichlorofluoromethane	101	6.120	6.104	0.016	96	259	0.006373	7
18 Acetone	43	6.978	6.950	0.028	99	35542	NC	
22 Methylene Chloride	49	8.178	8.178	0.000	95	4598	0.1504	
38 Benzene	78	13.102	13.092	0.010	27	396	0.007409	7
46 Toluene	91	17.296	17.286	0.010	92	820	0.0123	
56 m-Xylene & p-Xylene	91	20.848	20.848	0.000	50	149	0.002082	7

**QC Flag Legend**

## Processing Flags

NC - Not Calibrated

7 - Failed Limit of Detection

## Review Flags

M - Manually Integrated

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092717.D

Injection Date: 28-Sep-2016 10:48:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-11

Lab Sample ID: 320-21906-11

Client ID: 3320

Operator ID: AO

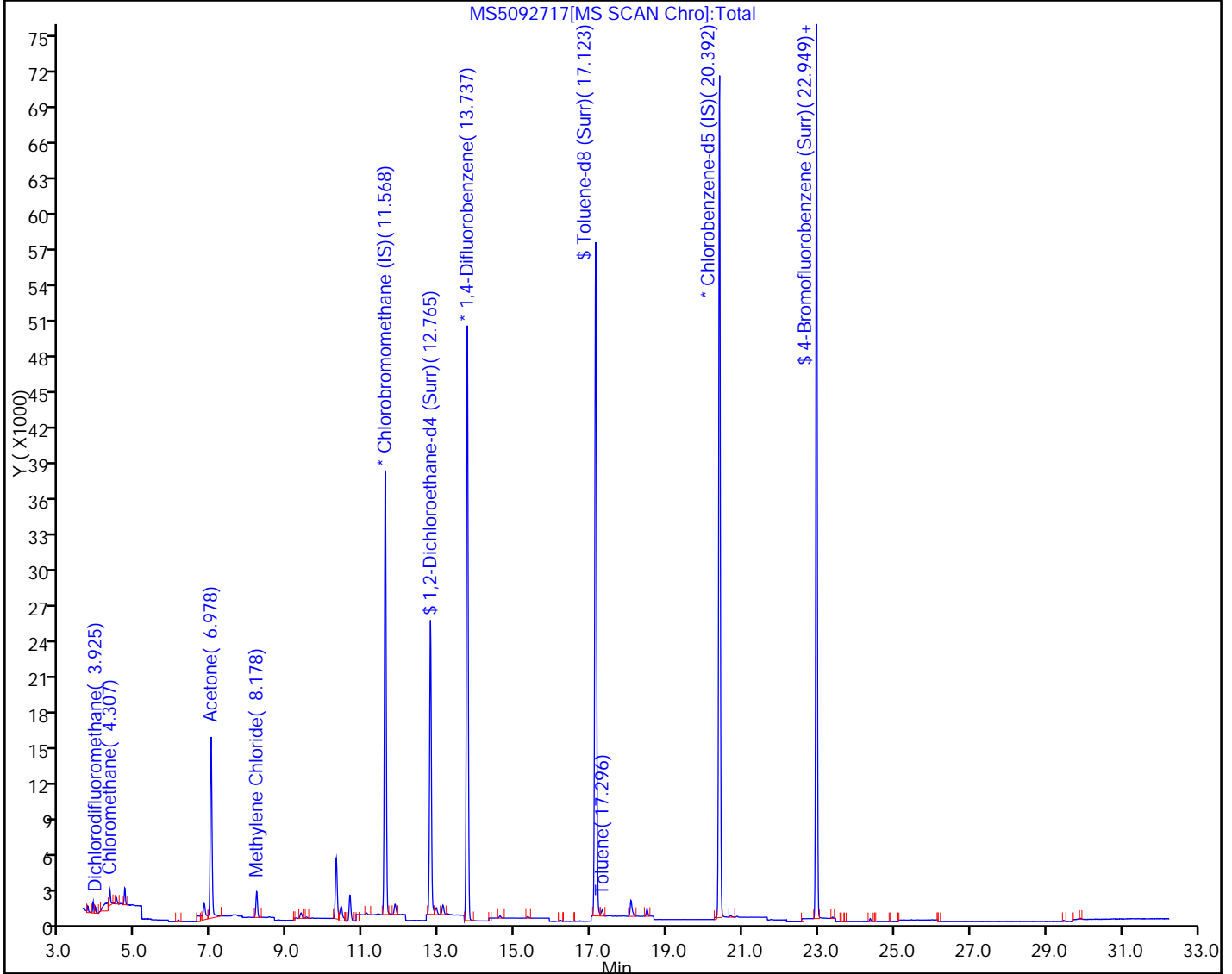
ALS Bottle#: 15 Worklist Smp#: 17

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001412 Lab Sample ID: 320-21906-12  
 Matrix: Air Lab File ID: MS5092718.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 800 (mL) Date Analyzed: 09/28/2016 11:48  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		0.020	0.010
100-44-7	Benzyl chloride	ND		0.10	0.010
75-27-4	Bromodichloromethane	ND		0.012	0.0050
56-23-5	Carbon tetrachloride	ND		0.010	0.0050
108-90-7	Chlorobenzene	ND		0.020	0.010
75-00-3	Chloroethane	ND		0.045	0.010
67-66-3	Chloroform	ND		0.020	0.0050
74-87-3	Chloromethane	ND		0.20	0.010
124-48-1	Dibromochloromethane	ND		0.010	0.0050
106-93-4	1,2-Dibromoethane (EDB)	ND		0.0070	0.0028
95-50-1	1,2-Dichlorobenzene	ND		0.050	0.010
541-73-1	1,3-Dichlorobenzene	ND		0.10	0.010
106-46-7	1,4-Dichlorobenzene	ND		0.10	0.010
75-71-8	Dichlorodifluoromethane	ND		0.020	0.0050
75-34-3	1,1-Dichloroethane	ND		0.020	0.0050
107-06-2	1,2-Dichloroethane	ND		0.020	0.0050
75-35-4	1,1-Dichloroethene	ND		0.020	0.0050
156-59-2	cis-1,2-Dichloroethene	ND		0.020	0.0050
156-60-5	trans-1,2-Dichloroethene	ND		0.020	0.0050
78-87-5	1,2-Dichloropropane	ND		0.040	0.0050
10061-01-5	cis-1,3-Dichloropropene	ND		0.020	0.0050
10061-02-6	trans-1,3-Dichloropropene	ND		0.020	0.0050
123-91-1	1,4-Dioxane	ND		0.10	0.010
100-41-4	Ethylbenzene	ND		0.020	0.010
87-68-3	Hexachlorobutadiene	ND		0.020	0.010
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.025	0.010
91-20-3	Naphthalene	ND		0.013	0.010
100-42-5	Styrene	ND		0.030	0.010
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.020	0.010
127-18-4	Tetrachloroethene	ND		0.020	0.010
108-88-3	Toluene	ND		0.020	0.010
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.030	0.0050
120-82-1	1,2,4-Trichlorobenzene	ND		0.050	0.010
71-55-6	1,1,1-Trichloroethane	ND		0.020	0.0050
79-00-5	1,1,2-Trichloroethane	ND		0.050	0.0050

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21906-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001412 Lab Sample ID: 320-21906-12  
 Matrix: Air Lab File ID: MS5092718.D  
 Analysis Method: TO-15 SIM Date Collected: 09/20/2016 00:00  
 Sample wt/vol: 800 (mL) Date Analyzed: 09/28/2016 11:48  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 129543 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.020	0.0050
75-69-4	Trichlorofluoromethane	ND		0.045	0.010
75-01-4	Vinyl chloride	ND		0.020	0.010
179601-23-1	m,p-Xylene	ND		0.040	0.020
95-47-6	o-Xylene	ND		0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	105		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	139	X	70-130
2037-26-5	Toluene-d8 (Surr)	96		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092718.D  
 Lims ID: 320-21906-A-12  
 Client ID: 34001412  
 Sample Type: Client  
 Inject. Date: 28-Sep-2016 11:48:30 ALS Bottle#: 16 Worklist Smp#: 18  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-21906-A-12  
 Misc. Info.: 1000ML  
 Operator ID: AO Instrument ID: ATMS5  
 Method: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\TO15 SIM.m  
 Limit Group: MSA - TO15\_SIM - ICAL  
 Last Update: 28-Sep-2016 17:27:18 Calib Date: 14-Sep-2016 06:02:30  
 Integrator: RTE ID Type: RT Order ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS5\20160913-34481.b\MS5091318.D  
 Column 1 : Det: MS SCAN  
 Process Host: XAWRK033

First Level Reviewer: ortizam

Date: 28-Sep-2016 17:26:34

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.590	11.590	0.000	94	27313	2.00	
* 2 1,4-Difluorobenzene	114	13.745	13.743	0.002	99	116325	2.00	
* 3 Chlorobenzene-d5 (IS)	117	20.392	20.392	0.000	96	104199	2.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	12.772	12.774	-0.002	71	55301	2.78	
\$ 5 Toluene-d8 (Surr)	100	17.122	17.123	-0.001	100	66661	1.93	
\$ 6 4-Bromofluorobenzene (Surr	95	22.949	22.949	0.000	98	72747	2.11	
18 Acetone	43	7.015	6.950	0.065	100	13036	NC	
22 Methylene Chloride	49	8.191	8.178	0.013	95	3419	0.1068	

**QC Flag Legend**

Processing Flags

NC - Not Calibrated

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS5\20160927-35031.b\MS5092718.D

Injection Date: 28-Sep-2016 11:48:30

Instrument ID: ATMS5

Lims ID: 320-21906-A-12

Lab Sample ID: 320-21906-12

Client ID: 34001412

Operator ID: AO

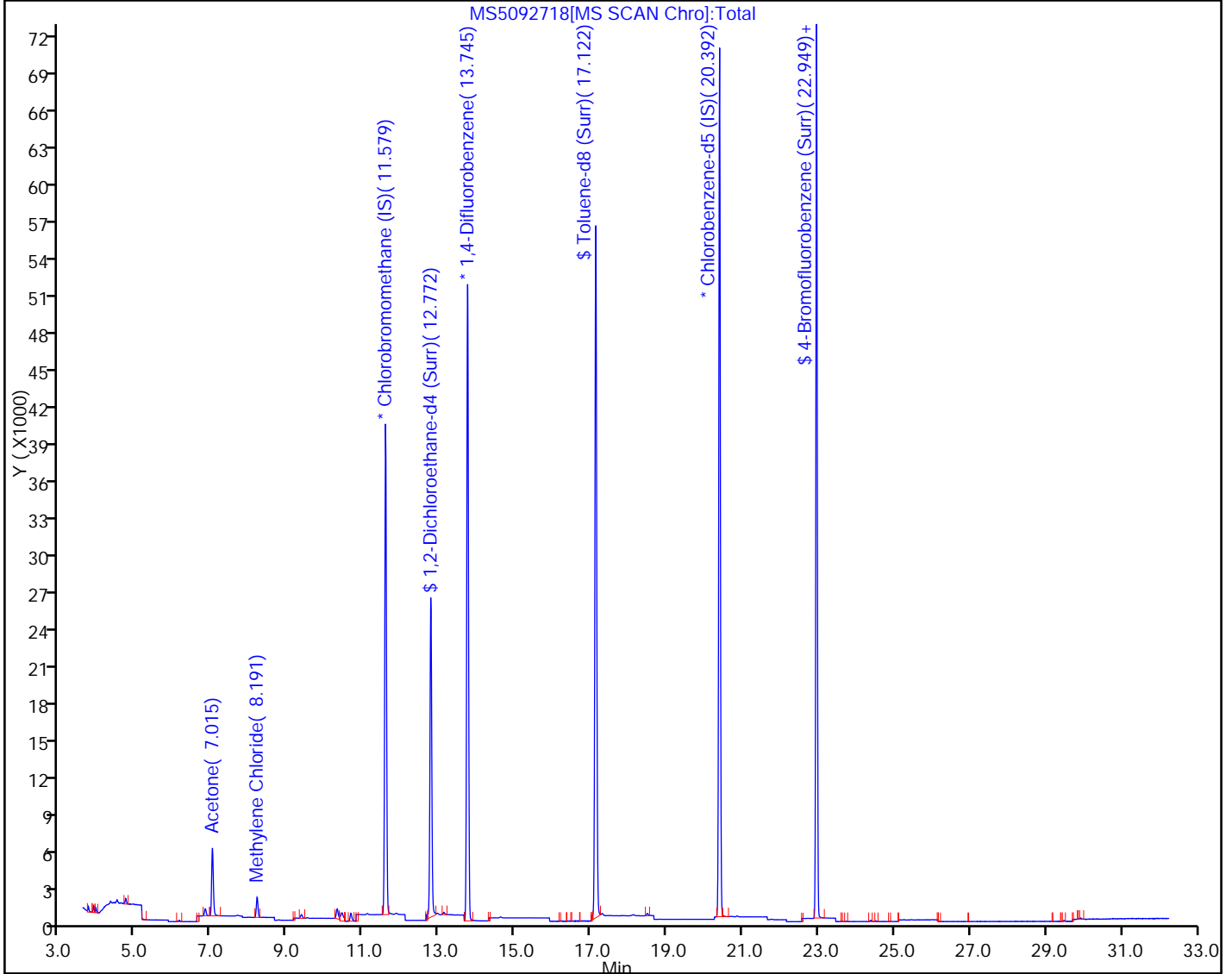
ALS Bottle#: 16 Worklist Smp#: 18

Purge Vol: 500.000 mL

Dil. Factor: 1.0000

Method: TO15 SIM

Limit Group: MSA - TO15\_SIM - ICAL



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-22036-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001348 Lab Sample ID: 320-22036-3  
 Matrix: Air Lab File ID: MS7092320.D  
 Analysis Method: TO-15 Date Collected: 09/22/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 09/24/2016 04:08  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 128776 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.33	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	0.21	J	0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-22036-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001348 Lab Sample ID: 320-22036-3  
 Matrix: Air Lab File ID: MS7092320.D  
 Analysis Method: TO-15 Date Collected: 09/22/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 09/24/2016 04:08  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 128776 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	0.12	J	0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	0.12	J B	0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-22036-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001348 Lab Sample ID: 320-22036-3  
 Matrix: Air Lab File ID: MS7092320.D  
 Analysis Method: TO-15 Date Collected: 09/22/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 09/24/2016 04:08  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 128776 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	94		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	105		70-130
2037-26-5	Toluene-d8 (Surr)	100		70-130



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20160923-34850.b\MS7092320.D  
 Lims ID: 320-22036-A-3  
 Client ID: 34001348  
 Sample Type: Client  
 Inject. Date: 24-Sep-2016 04:08:30 ALS Bottle#: 2 Worklist Smp#: 20  
 Purge Vol: 5.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-22036-A-3  
 Misc. Info.: 500 mL CAN CERT  
 Operator ID: LHS Instrument ID: ATMS7  
 Method: \\ChromNA\Sacramento\ChromData\ATMS7\20160923-34850.b\TO15\_ATMS7N.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 26-Sep-2016 10:42:58 Calib Date: 21-Sep-2016 10:43:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS7\20160920-34733.b\MS7092024.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK030

First Level Reviewer: phanthasena

Date: 26-Sep-2016 10:42:58

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.263	12.269	-0.006	96	46775	4.00	
* 2 1,4-Difluorobenzene	114	14.423	14.423	0.000	94	202605	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.109	21.103	0.006	87	175080	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.468	13.468	0.000	97	64859	4.22	
\$ 5 Toluene-d8 (Surr)	100	17.830	17.830	0.000	98	121726	4.00	
\$ 6 4-Bromofluorobenzene (Surr	95	23.652	23.652	0.000	88	67480	3.75	
11 Propene	41	3.831	3.825	0.006	82	869	0.1210	
16 Chloromethane	50	4.361	4.349	0.012	18	1462	0.2120	
32 Acetone	43	7.372	7.311	0.061	95	6133	0.3325	
39 Methylene Chloride	49	8.686	8.692	-0.006	93	1373	0.1208	
73 n-Octane	43	17.824	17.872	-0.048	46	1355	0.0323	
75 Toluene	91	18.006	18.012	-0.006	8	2059	0.0424	

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20160923-34850.b\MS7092320.D

Injection Date: 24-Sep-2016 04:08:30

Instrument ID: ATMS7

Operator ID: LHS

Lims ID: 320-22036-A-3

Lab Sample ID: 320-22036-3

Worklist Smp#: 20

Client ID: 34001348

Purge Vol: 5.000 mL

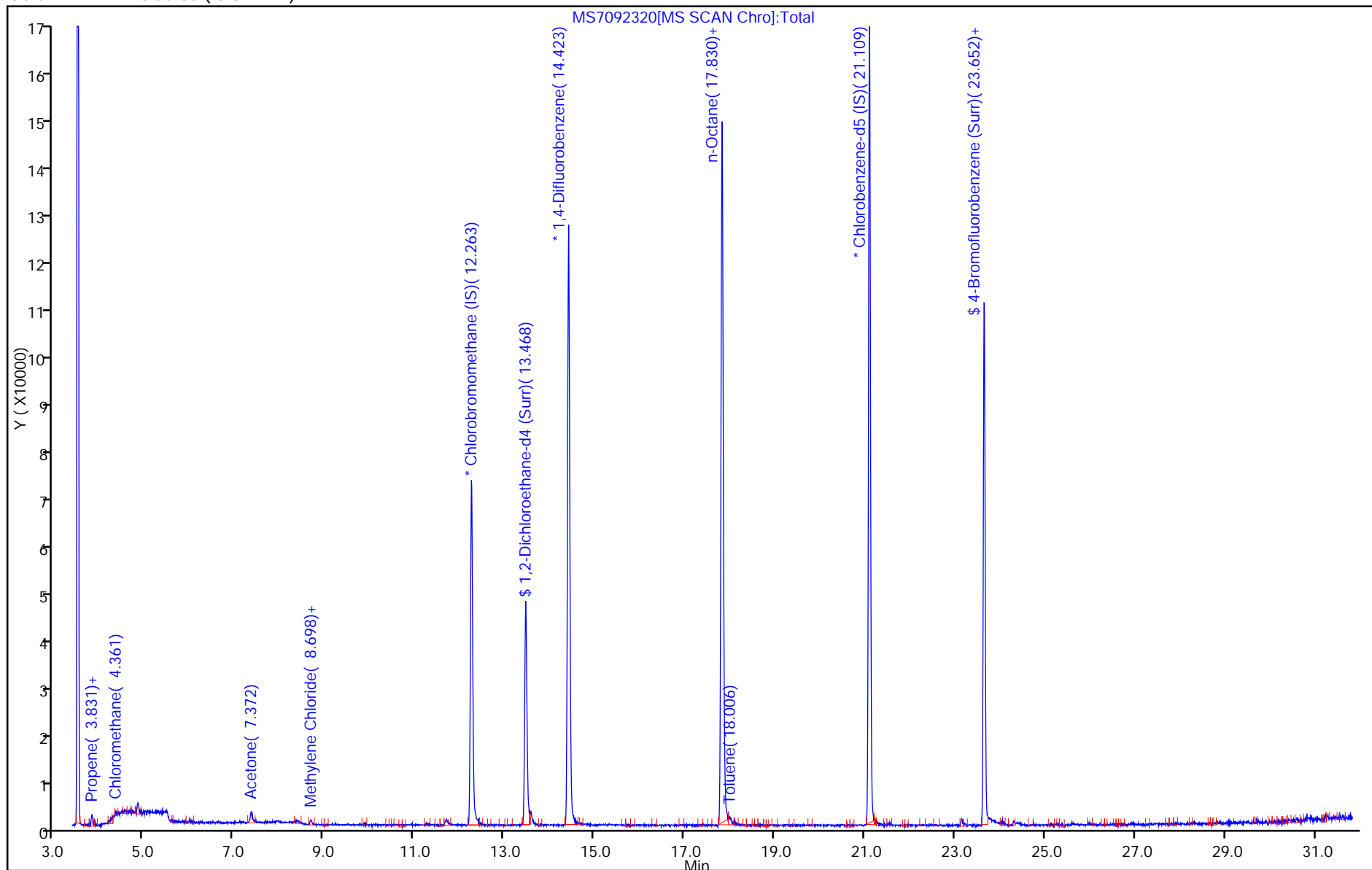
Dil. Factor: 1.0000

ALS Bottle#: 2

Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20160923-34850.b\MS7092320.D

Injection Date: 24-Sep-2016 04:08:30

Instrument ID: ATMS7

Lims ID: 320-22036-A-3

Lab Sample ID: 320-22036-3

Client ID: 34001348

Operator ID: LHS

ALS Bottle#: 2 Worklist Smp#: 20

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

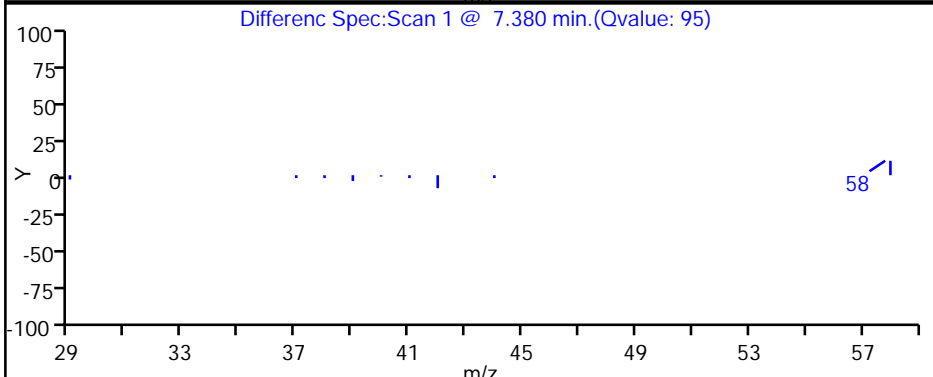
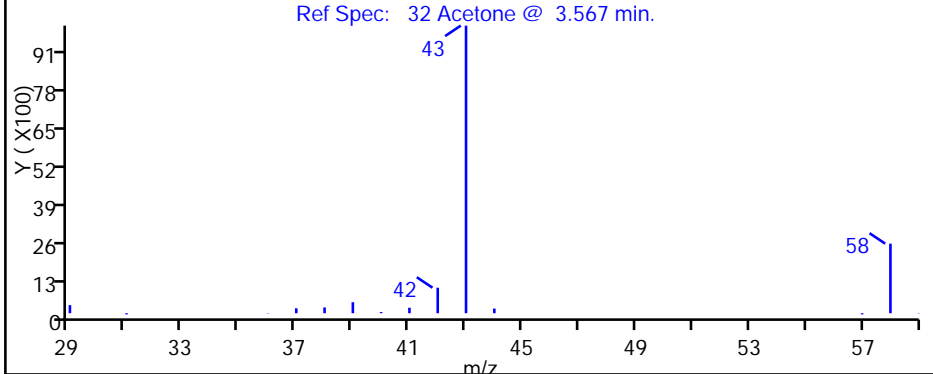
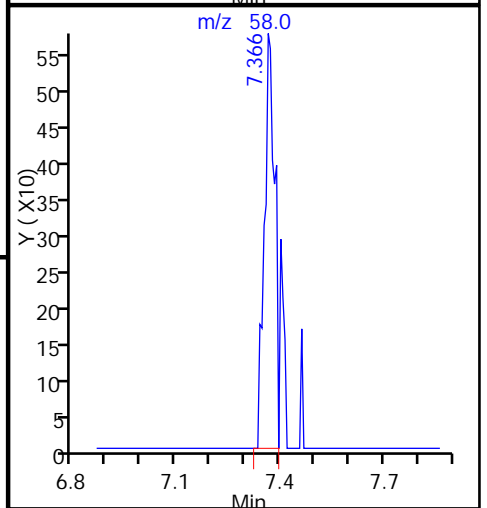
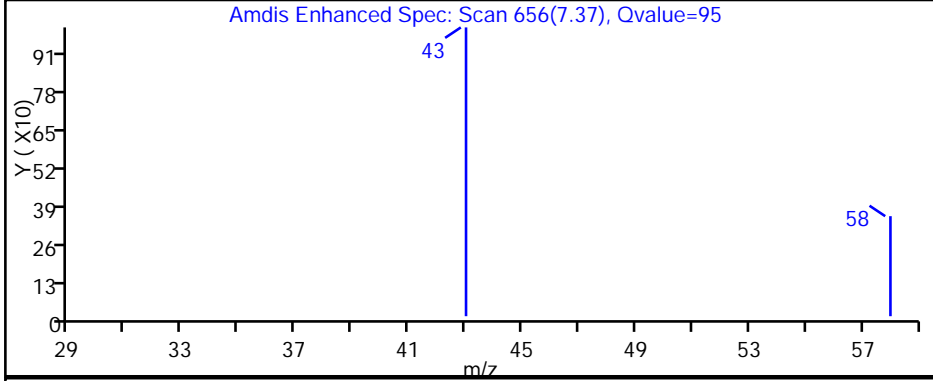
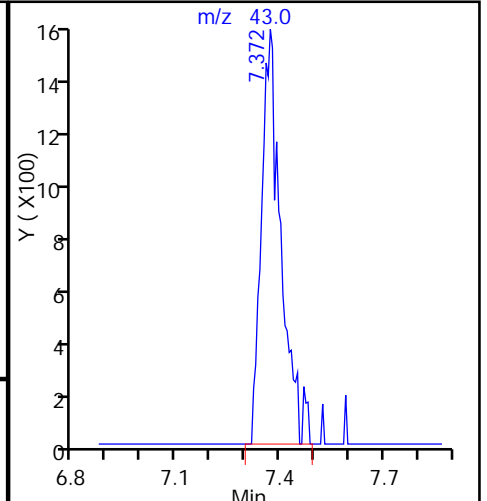
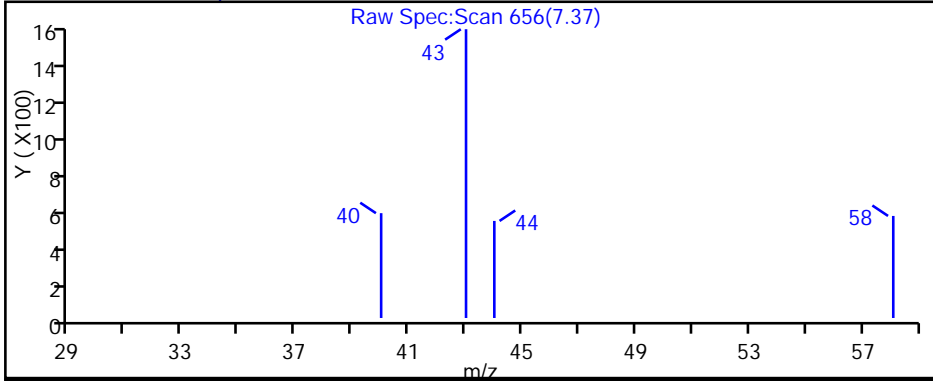
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20160923-34850.b\MS7092320.D

Injection Date: 24-Sep-2016 04:08:30

Instrument ID: ATMS7

Lims ID: 320-22036-A-3

Lab Sample ID: 320-22036-3

Client ID: 34001348

Operator ID: LHS

ALS Bottle#: 2 Worklist Smp#: 20

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

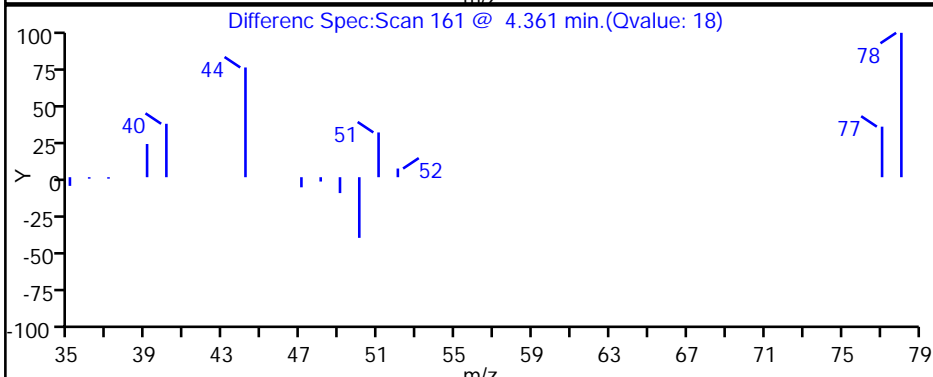
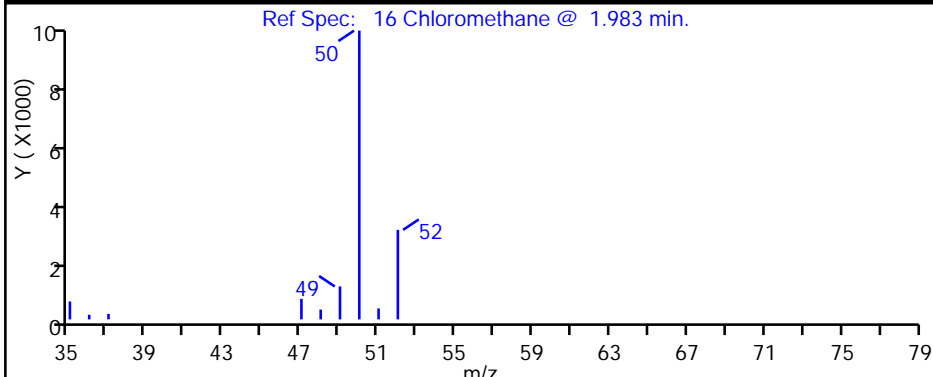
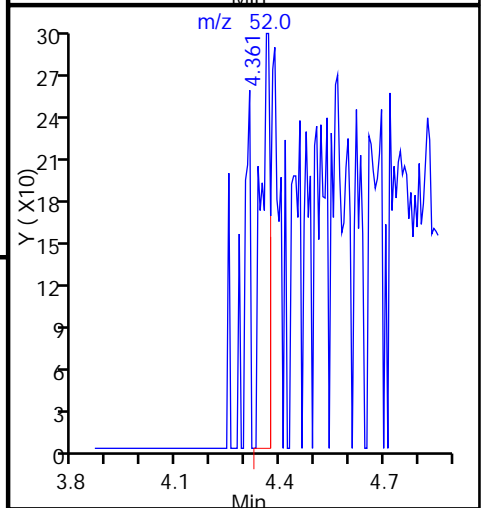
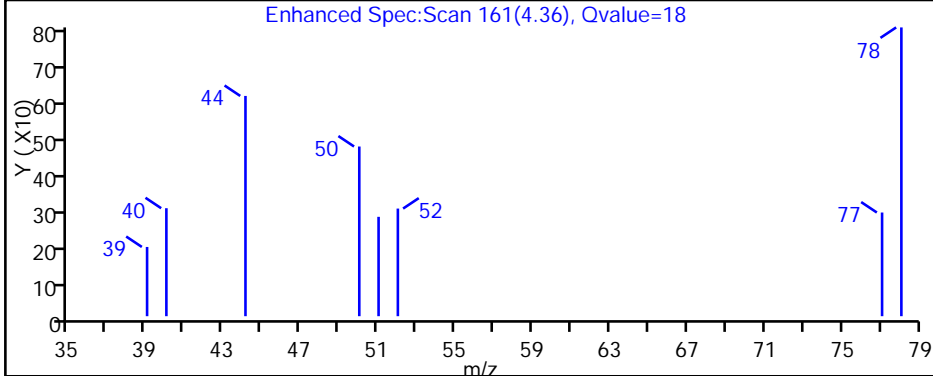
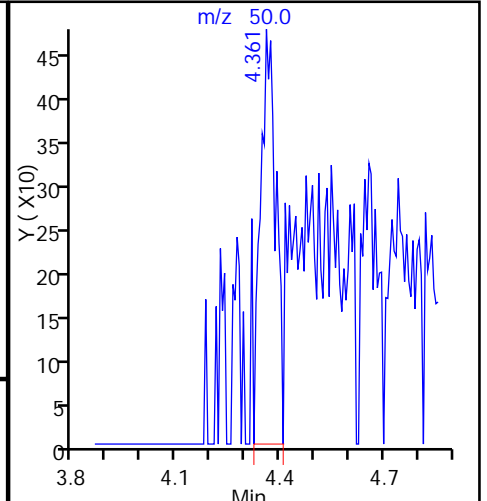
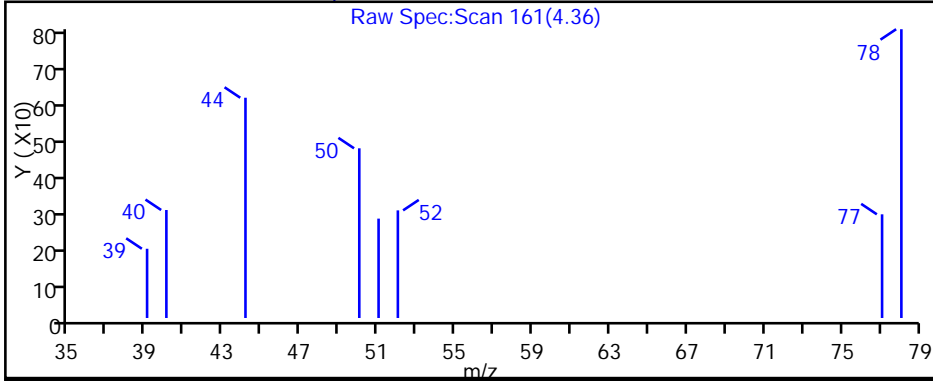
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

16 Chloromethane, CAS: 74-87-3



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20160923-34850.b\MS7092320.D

Injection Date: 24-Sep-2016 04:08:30

Instrument ID: ATMS7

Lims ID: 320-22036-A-3

Lab Sample ID: 320-22036-3

Client ID: 34001348

Operator ID: LHS

ALS Bottle#: 2 Worklist Smp#: 20

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

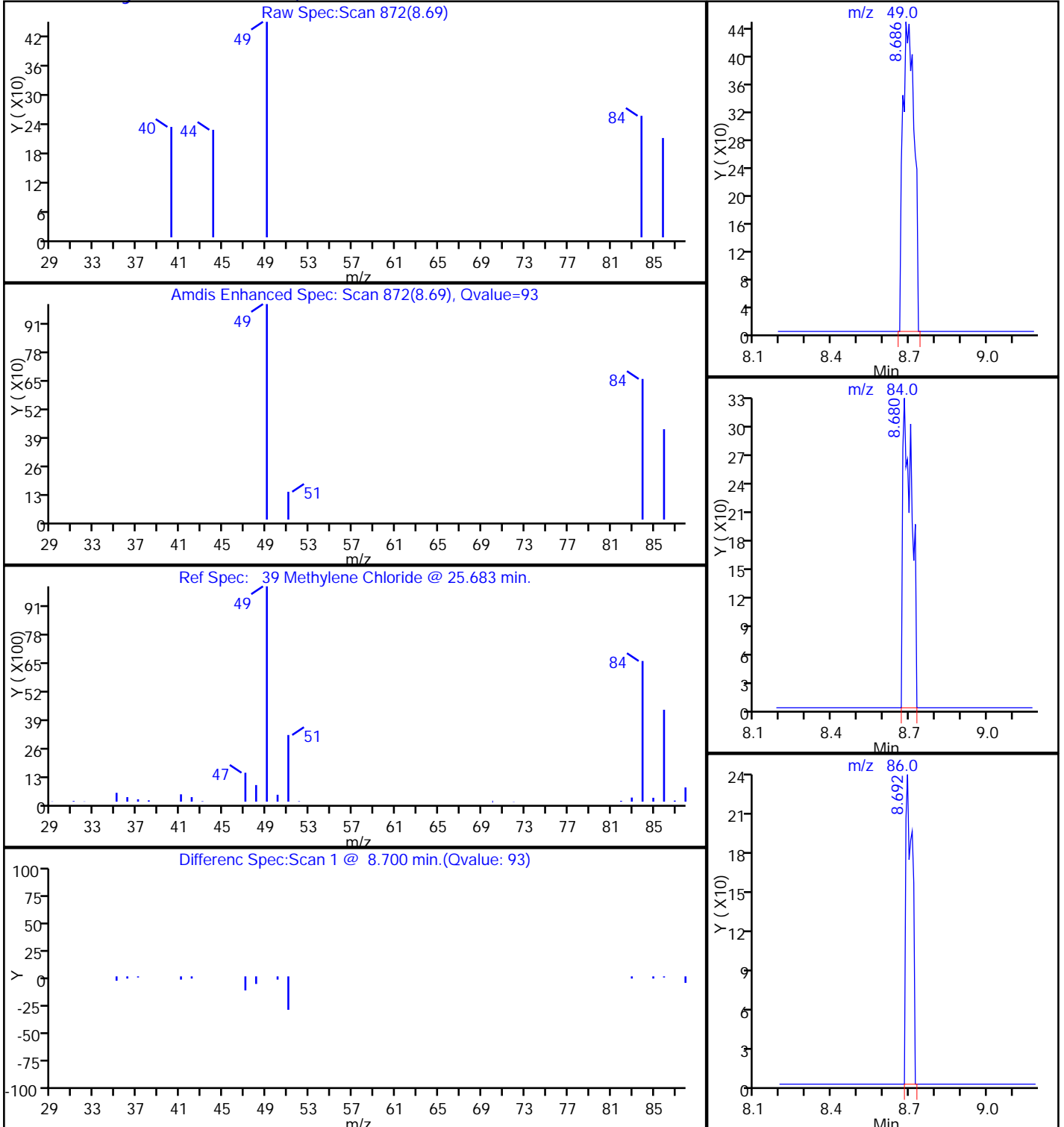
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

39 Methylene Chloride, CAS: 75-09-2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20160923-34850.b\MS7092320.D

Injection Date: 24-Sep-2016 04:08:30

Instrument ID: ATMS7

Lims ID: 320-22036-A-3

Lab Sample ID: 320-22036-3

Client ID: 34001348

Operator ID: LHS

ALS Bottle#: 2 Worklist Smp#: 20

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

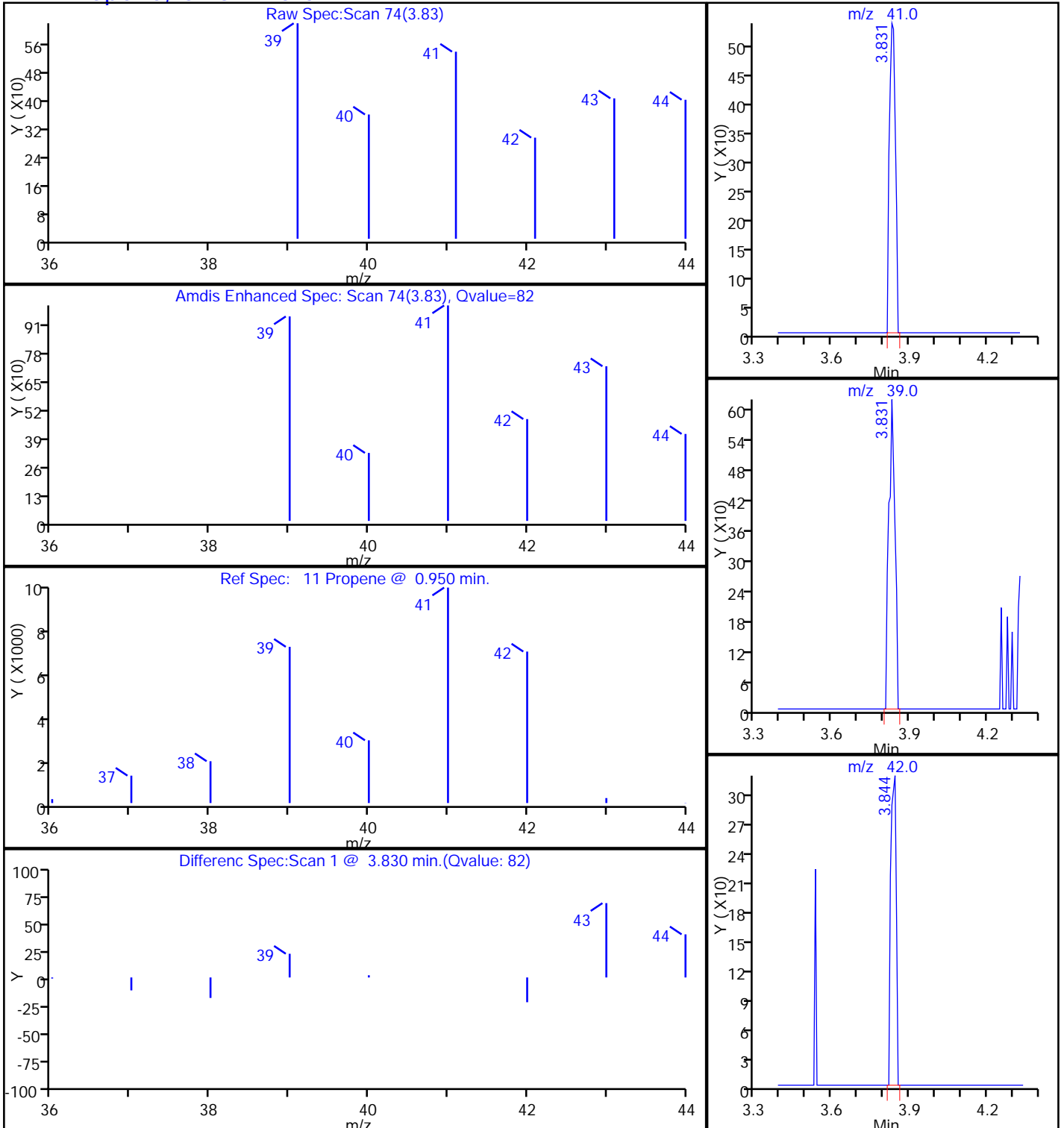
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

11 Propene, CAS: 115-07-1



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-22551-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000153 Lab Sample ID: 320-22551-1  
 Matrix: Air Lab File ID: 16101112.D  
 Analysis Method: TO-15 Date Collected: 10/10/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 10/12/2016 11:09  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 132051 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-22551-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000153 Lab Sample ID: 320-22551-1  
 Matrix: Air Lab File ID: 16101112.D  
 Analysis Method: TO-15 Date Collected: 10/10/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 10/12/2016 11:09  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 132051 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-22551-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000153 Lab Sample ID: 320-22551-1  
 Matrix: Air Lab File ID: 16101112.D  
 Analysis Method: TO-15 Date Collected: 10/10/2016 00:00  
 Sample wt/vol: 250 (mL) Date Analyzed: 10/12/2016 11:09  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 132051 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	90		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	96		70-130
2037-26-5	Toluene-d8 (Surr)	108		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS11\20161011-35543.b\16101112.D  
 Lims ID: 320-22551-A-1  
 Client ID: 34000153  
 Sample Type: Client  
 Inject. Date: 12-Oct-2016 11:09:30 ALS Bottle#: 7 Worklist Smp#: 12  
 Purge Vol: 500.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-22551-A-1  
 Misc. Info.: 500mL  
 Operator ID: KY Instrument ID: ATMS11  
 Method: \\ChromNA\Sacramento\ChromData\ATMS11\20161011-35543.b\TO15\_ATMS11.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 13-Oct-2016 08:26:16 Calib Date: 11-Oct-2016 18:37:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS11\20161011-35543.b\16101103.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK024

First Level Reviewer: vanommens

Date: 13-Oct-2016 08:26:16

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.437	12.437	0.000	92	31150	4.00	
* 2 1,4-Difluorobenzene	114	14.529	14.529	0.000	96	115250	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.440	20.440	0.000	90	98279	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.610	13.605	0.005	96	45083	3.85	
\$ 5 Toluene-d8 (Surr)	100	17.691	17.691	0.000	97	67478	4.34	
\$ 6 4-Bromofluorobenzene (Surr	174	22.355	22.350	0.005	92	48601	3.59	
14 Propene	41	4.269	4.258	0.011	27	591	0.0479	

**Reagents:**

VAMIS20\_00002 Amount Added: 50.00 Units: mL Run Reagent

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS11\20161011-35543.b\16101112.D

Injection Date: 12-Oct-2016 11:09:30

Instrument ID: ATMS11

Operator ID: KY

Lims ID: 320-22551-A-1

Lab Sample ID: 320-22551-1

Worklist Smp#: 12

Client ID: 34000153

Purge Vol: 500.000 mL

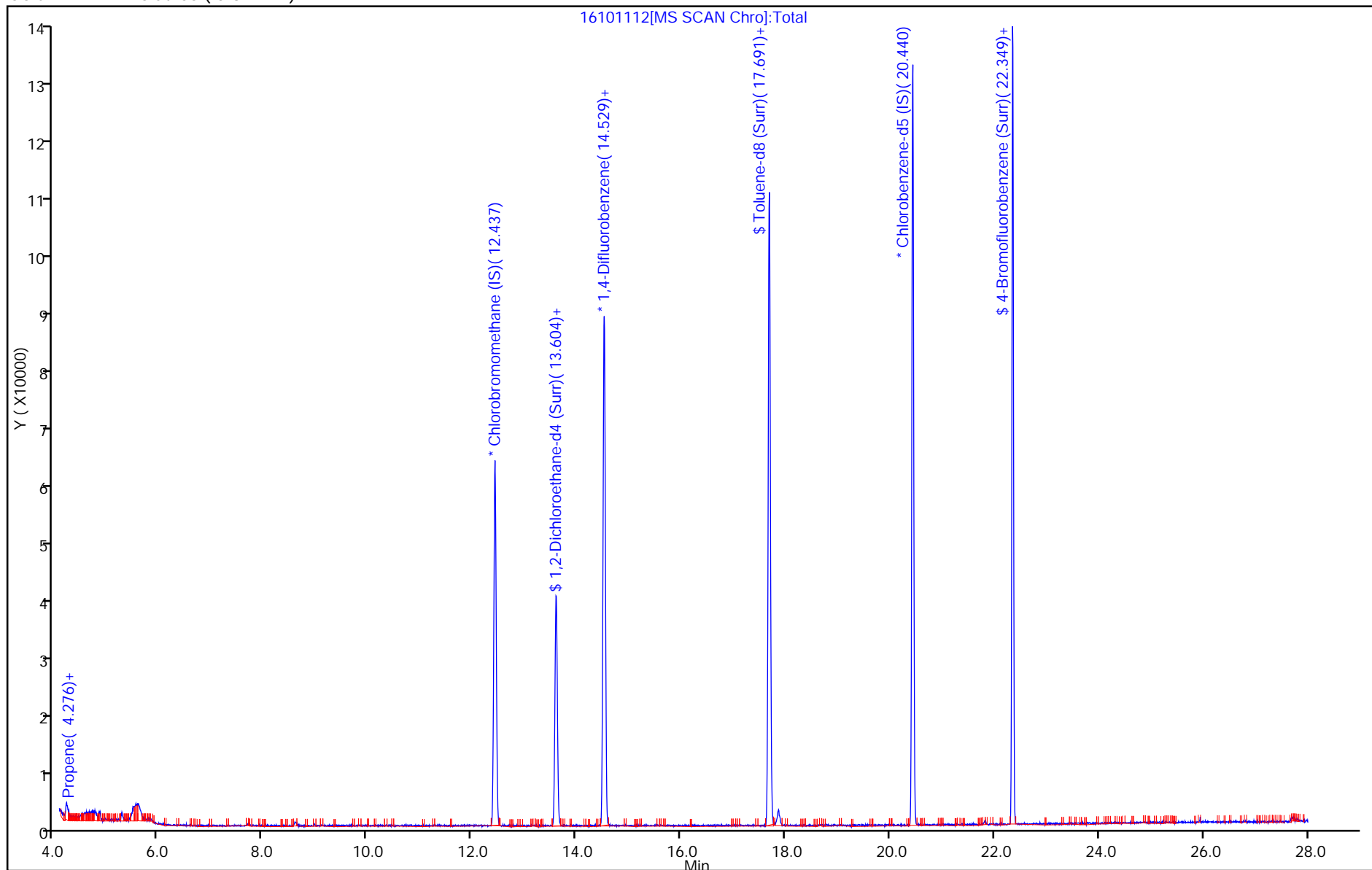
Dil. Factor: 1.0000

ALS Bottle#: 7

Method: TO15\_ATMS11

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-23875-1  
Client Project/Site: NuStar Vapor Testing

For:  
Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
12/14/2016 8:57:38 AM

Cathy Gamble, Project Management Assistant I  
(253)922-2310  
[cathy.gamble@testamericainc.com](mailto:cathy.gamble@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

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[www.testamericainc.com](http://www.testamericainc.com)

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Detection Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Client Sample ID: SVE\_SOUTH\_PRECARBON\_112816

## Lab Sample ID: 320-23875-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	110		85		ppb v/v	212		TO-15	Total/NA
Tetrachloroethene	7600		85		ppb v/v	212		TO-15	Total/NA
Trichloroethene	400		85		ppb v/v	212		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	420		340		ug/m3 Air	212		TO-15	Total/NA
Tetrachloroethene	52000		580		ug/m3 Air	212		TO-15	Total/NA
Trichloroethene	2100		460		ug/m3 Air	212		TO-15	Total/NA

## Client Sample ID: SVE\_SOUTH\_POSTCARBON\_112816

## Lab Sample ID: 320-23875-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroethane	140		52		ppb v/v	65		TO-15	Total/NA
Chloromethane	370		52		ppb v/v	65		TO-15	Total/NA
4-Methyl-2-pentanone (MIBK)	27		26		ppb v/v	65		TO-15	Total/NA
Tetrachloroethene	2700		26		ppb v/v	65		TO-15	Total/NA
1,1,1-Trichloroethane	67		20		ppb v/v	65		TO-15	Total/NA
Trichloroethene	600		26		ppb v/v	65		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroethane	360		140		ug/m3 Air	65		TO-15	Total/NA
Chloromethane	770		110		ug/m3 Air	65		TO-15	Total/NA
4-Methyl-2-pentanone (MIBK)	110		110		ug/m3 Air	65		TO-15	Total/NA
Tetrachloroethene	18000		180		ug/m3 Air	65		TO-15	Total/NA
1,1,1-Trichloroethane	360		110		ug/m3 Air	65		TO-15	Total/NA
Trichloroethene	3200		140		ug/m3 Air	65		TO-15	Total/NA

## Client Sample ID: SVE\_NORTH\_EFFLUENT\_112816

## Lab Sample ID: 320-23875-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	12		5.0		ppb v/v	1		TO-15	Total/NA
2-Butanone (MEK)	0.81		0.80		ppb v/v	1		TO-15	Total/NA
Dichlorodifluoromethane	0.48		0.40		ppb v/v	1		TO-15	Total/NA
4-Ethyltoluene	0.50		0.40		ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	0.41		0.40		ppb v/v	1		TO-15	Total/NA
Toluene	1.0		0.40		ppb v/v	1		TO-15	Total/NA
m,p-Xylene	1.4		0.80		ppb v/v	1		TO-15	Total/NA
o-Xylene	0.55		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	29		12		ug/m3 Air	1		TO-15	Total/NA
2-Butanone (MEK)	2.4		2.4		ug/m3 Air	1		TO-15	Total/NA
Dichlorodifluoromethane	2.4		2.0		ug/m3 Air	1		TO-15	Total/NA
4-Ethyltoluene	2.5		2.0		ug/m3 Air	1		TO-15	Total/NA
Tetrachloroethene	2.8		2.7		ug/m3 Air	1		TO-15	Total/NA
Toluene	3.9		1.5		ug/m3 Air	1		TO-15	Total/NA
m,p-Xylene	6.1		3.5		ug/m3 Air	1		TO-15	Total/NA
o-Xylene	2.4		1.7		ug/m3 Air	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

**Client Sample ID: SVE\_SOUTH\_PRECARBON\_112816**

**Lab Sample ID: 320-23875-1**

**Date Collected: 11/28/16 08:11**

**Matrix: Air**

**Date Received: 11/30/16 09:30**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		1100		ppb v/v			12/09/16 06:54	212
Benzene	ND		85		ppb v/v			12/09/16 06:54	212
Benzyl chloride	ND		170		ppb v/v			12/09/16 06:54	212
Bromodichloromethane	ND		64		ppb v/v			12/09/16 06:54	212
Bromoform	ND		85		ppb v/v			12/09/16 06:54	212
Bromomethane	ND		170		ppb v/v			12/09/16 06:54	212
2-Butanone (MEK)	ND		170		ppb v/v			12/09/16 06:54	212
Carbon disulfide	ND		170		ppb v/v			12/09/16 06:54	212
Carbon tetrachloride	ND		170		ppb v/v			12/09/16 06:54	212
Chlorobenzene	ND		64		ppb v/v			12/09/16 06:54	212
Dibromochloromethane	ND		85		ppb v/v			12/09/16 06:54	212
Chloroethane	ND		170		ppb v/v			12/09/16 06:54	212
Chloroform	ND		64		ppb v/v			12/09/16 06:54	212
Chloromethane	ND		170		ppb v/v			12/09/16 06:54	212
1,2-Dibromoethane (EDB)	ND		170		ppb v/v			12/09/16 06:54	212
1,2-Dichlorobenzene	ND		85		ppb v/v			12/09/16 06:54	212
1,3-Dichlorobenzene	ND		85		ppb v/v			12/09/16 06:54	212
1,4-Dichlorobenzene	ND		85		ppb v/v			12/09/16 06:54	212
Dichlorodifluoromethane	ND		85		ppb v/v			12/09/16 06:54	212
1,1-Dichloroethane	ND		64		ppb v/v			12/09/16 06:54	212
1,2-Dichloroethane	ND		170		ppb v/v			12/09/16 06:54	212
1,1-Dichloroethene	ND		170		ppb v/v			12/09/16 06:54	212
<b>cis-1,2-Dichloroethene</b>	<b>110</b>		85		ppb v/v			12/09/16 06:54	212
trans-1,2-Dichloroethene	ND		85		ppb v/v			12/09/16 06:54	212
1,2-Dichloropropane	ND		85		ppb v/v			12/09/16 06:54	212
cis-1,3-Dichloropropene	ND		85		ppb v/v			12/09/16 06:54	212
trans-1,3-Dichloropropene	ND		85		ppb v/v			12/09/16 06:54	212
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		85		ppb v/v			12/09/16 06:54	212
Ethylbenzene	ND		85		ppb v/v			12/09/16 06:54	212
4-Ethyltoluene	ND		85		ppb v/v			12/09/16 06:54	212
Hexachlorobutadiene	ND		420		ppb v/v			12/09/16 06:54	212
2-Hexanone	ND		85		ppb v/v			12/09/16 06:54	212
Methylene Chloride	ND		85		ppb v/v			12/09/16 06:54	212
4-Methyl-2-pentanone (MIBK)	ND		85		ppb v/v			12/09/16 06:54	212
Styrene	ND		85		ppb v/v			12/09/16 06:54	212
1,1,2,2-Tetrachloroethane	ND		85		ppb v/v			12/09/16 06:54	212
<b>Tetrachloroethene</b>	<b>7600</b>		85		ppb v/v			12/09/16 06:54	212
Toluene	ND		85		ppb v/v			12/09/16 06:54	212
1,2,4-Trichlorobenzene	ND		420		ppb v/v			12/09/16 06:54	212
1,1,1-Trichloroethane	ND		64		ppb v/v			12/09/16 06:54	212
1,1,2-Trichloroethane	ND		85		ppb v/v			12/09/16 06:54	212
<b>Trichloroethene</b>	<b>400</b>		85		ppb v/v			12/09/16 06:54	212
Trichlorofluoromethane	ND		85		ppb v/v			12/09/16 06:54	212
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		85		ppb v/v			12/09/16 06:54	212
1,2,4-Trimethylbenzene	ND		170		ppb v/v			12/09/16 06:54	212
1,3,5-Trimethylbenzene	ND		85		ppb v/v			12/09/16 06:54	212
Vinyl acetate	ND		170		ppb v/v			12/09/16 06:54	212
Vinyl chloride	ND		85		ppb v/v			12/09/16 06:54	212

TestAmerica Sacramento



# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

**Client Sample ID: SVE\_SOUTH\_PRECARBON\_112816**

**Lab Sample ID: 320-23875-1**

Date Collected: 11/28/16 08:11

Matrix: Air

Date Received: 11/30/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		170		ppb v/v			12/09/16 06:54	212
o-Xylene	ND		85		ppb v/v			12/09/16 06:54	212
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		2500		ug/m3 Air			12/09/16 06:54	212
Benzene	ND		270		ug/m3 Air			12/09/16 06:54	212
Benzyl chloride	ND		880		ug/m3 Air			12/09/16 06:54	212
Bromodichloromethane	ND		430		ug/m3 Air			12/09/16 06:54	212
Bromoform	ND		880		ug/m3 Air			12/09/16 06:54	212
Bromomethane	ND		660		ug/m3 Air			12/09/16 06:54	212
2-Butanone (MEK)	ND		500		ug/m3 Air			12/09/16 06:54	212
Carbon disulfide	ND		530		ug/m3 Air			12/09/16 06:54	212
Carbon tetrachloride	ND		1100		ug/m3 Air			12/09/16 06:54	212
Chlorobenzene	ND		290		ug/m3 Air			12/09/16 06:54	212
Dibromochloromethane	ND		720		ug/m3 Air			12/09/16 06:54	212
Chloroethane	ND		450		ug/m3 Air			12/09/16 06:54	212
Chloroform	ND		310		ug/m3 Air			12/09/16 06:54	212
Chloromethane	ND		350		ug/m3 Air			12/09/16 06:54	212
1,2-Dibromoethane (EDB)	ND		1300		ug/m3 Air			12/09/16 06:54	212
1,2-Dichlorobenzene	ND		510		ug/m3 Air			12/09/16 06:54	212
1,3-Dichlorobenzene	ND		510		ug/m3 Air			12/09/16 06:54	212
1,4-Dichlorobenzene	ND		510		ug/m3 Air			12/09/16 06:54	212
Dichlorodifluoromethane	ND		420		ug/m3 Air			12/09/16 06:54	212
1,1-Dichloroethane	ND		260		ug/m3 Air			12/09/16 06:54	212
1,2-Dichloroethane	ND		690		ug/m3 Air			12/09/16 06:54	212
1,1-Dichloroethene	ND		670		ug/m3 Air			12/09/16 06:54	212
<b>cis-1,2-Dichloroethene</b>	<b>420</b>		340		ug/m3 Air			12/09/16 06:54	212
trans-1,2-Dichloroethene	ND		340		ug/m3 Air			12/09/16 06:54	212
1,2-Dichloropropane	ND		390		ug/m3 Air			12/09/16 06:54	212
cis-1,3-Dichloropropene	ND		380		ug/m3 Air			12/09/16 06:54	212
trans-1,3-Dichloropropene	ND		380		ug/m3 Air			12/09/16 06:54	212
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		590		ug/m3 Air			12/09/16 06:54	212
Ethylbenzene	ND		370		ug/m3 Air			12/09/16 06:54	212
4-Ethyltoluene	ND		420		ug/m3 Air			12/09/16 06:54	212
Hexachlorobutadiene	ND		4500		ug/m3 Air			12/09/16 06:54	212
2-Hexanone	ND		350		ug/m3 Air			12/09/16 06:54	212
Methylene Chloride	ND		290		ug/m3 Air			12/09/16 06:54	212
4-Methyl-2-pentanone (MIBK)	ND		350		ug/m3 Air			12/09/16 06:54	212
Styrene	ND		360		ug/m3 Air			12/09/16 06:54	212
1,1,2,2-Tetrachloroethane	ND		580		ug/m3 Air			12/09/16 06:54	212
<b>Tetrachloroethene</b>	<b>52000</b>		580		ug/m3 Air			12/09/16 06:54	212
Toluene	ND		320		ug/m3 Air			12/09/16 06:54	212
1,2,4-Trichlorobenzene	ND		3100		ug/m3 Air			12/09/16 06:54	212
1,1,1-Trichloroethane	ND		350		ug/m3 Air			12/09/16 06:54	212
1,1,2-Trichloroethane	ND		460		ug/m3 Air			12/09/16 06:54	212
<b>Trichloroethene</b>	<b>2100</b>		460		ug/m3 Air			12/09/16 06:54	212
Trichlorofluoromethane	ND		480		ug/m3 Air			12/09/16 06:54	212
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		650		ug/m3 Air			12/09/16 06:54	212
1,2,4-Trimethylbenzene	ND		830		ug/m3 Air			12/09/16 06:54	212

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

**Client Sample ID: SVE\_SOUTH\_PRECARBON\_112816**

**Lab Sample ID: 320-23875-1**

Date Collected: 11/28/16 08:11

Matrix: Air

Date Received: 11/30/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trimethylbenzene	ND		420		ug/m3 Air			12/09/16 06:54	212
Vinyl acetate	ND		600		ug/m3 Air			12/09/16 06:54	212
Vinyl chloride	ND		220		ug/m3 Air			12/09/16 06:54	212
m,p-Xylene	ND		740		ug/m3 Air			12/09/16 06:54	212
o-Xylene	ND		370		ug/m3 Air			12/09/16 06:54	212

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	76		70 - 130		12/09/16 06:54	212
1,2-Dichloroethane-d4 (Surr)	106		70 - 130		12/09/16 06:54	212
Toluene-d8 (Surr)	91		70 - 130		12/09/16 06:54	212

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_112816**

**Lab Sample ID: 320-23875-2**

Date Collected: 11/28/16 08:14

Matrix: Air

Date Received: 11/30/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		330		ppb v/v			12/09/16 08:38	65
Benzene	ND		26		ppb v/v			12/09/16 08:38	65
Benzyl chloride	ND		52		ppb v/v			12/09/16 08:38	65
Bromodichloromethane	ND		20		ppb v/v			12/09/16 08:38	65
Bromoform	ND		26		ppb v/v			12/09/16 08:38	65
Bromomethane	ND		52		ppb v/v			12/09/16 08:38	65
2-Butanone (MEK)	ND		52		ppb v/v			12/09/16 08:38	65
Carbon disulfide	ND		52		ppb v/v			12/09/16 08:38	65
Carbon tetrachloride	ND		52		ppb v/v			12/09/16 08:38	65
Chlorobenzene	ND		20		ppb v/v			12/09/16 08:38	65
Dibromochloromethane	ND		26		ppb v/v			12/09/16 08:38	65
<b>Chloroethane</b>	<b>140</b>		52		ppb v/v			12/09/16 08:38	65
Chloroform	ND		20		ppb v/v			12/09/16 08:38	65
<b>Chloromethane</b>	<b>370</b>		52		ppb v/v			12/09/16 08:38	65
1,2-Dibromoethane (EDB)	ND		52		ppb v/v			12/09/16 08:38	65
1,2-Dichlorobenzene	ND		26		ppb v/v			12/09/16 08:38	65
1,3-Dichlorobenzene	ND		26		ppb v/v			12/09/16 08:38	65
1,4-Dichlorobenzene	ND		26		ppb v/v			12/09/16 08:38	65
Dichlorodifluoromethane	ND		26		ppb v/v			12/09/16 08:38	65
1,1-Dichloroethane	ND		20		ppb v/v			12/09/16 08:38	65
1,2-Dichloroethane	ND		52		ppb v/v			12/09/16 08:38	65
1,1-Dichloroethene	ND		52		ppb v/v			12/09/16 08:38	65
cis-1,2-Dichloroethene	ND		26		ppb v/v			12/09/16 08:38	65
trans-1,2-Dichloroethene	ND		26		ppb v/v			12/09/16 08:38	65
1,2-Dichloropropane	ND		26		ppb v/v			12/09/16 08:38	65
cis-1,3-Dichloropropene	ND		26		ppb v/v			12/09/16 08:38	65
trans-1,3-Dichloropropene	ND		26		ppb v/v			12/09/16 08:38	65
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		26		ppb v/v			12/09/16 08:38	65
Ethylbenzene	ND		26		ppb v/v			12/09/16 08:38	65
4-Ethyltoluene	ND		26		ppb v/v			12/09/16 08:38	65
Hexachlorobutadiene	ND		130		ppb v/v			12/09/16 08:38	65

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_112816**

**Lab Sample ID: 320-23875-2**

Date Collected: 11/28/16 08:14

Matrix: Air

Date Received: 11/30/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Hexanone	ND		26		ppb v/v			12/09/16 08:38	65
Methylene Chloride	ND		26		ppb v/v			12/09/16 08:38	65
<b>4-Methyl-2-pentanone (MIBK)</b>	<b>27</b>		26		ppb v/v			12/09/16 08:38	65
Styrene	ND		26		ppb v/v			12/09/16 08:38	65
1,1,2,2-Tetrachloroethane	ND		26		ppb v/v			12/09/16 08:38	65
<b>Tetrachloroethene</b>	<b>2700</b>		26		ppb v/v			12/09/16 08:38	65
Toluene	ND		26		ppb v/v			12/09/16 08:38	65
1,2,4-Trichlorobenzene	ND		130		ppb v/v			12/09/16 08:38	65
<b>1,1,1-Trichloroethane</b>	<b>67</b>		20		ppb v/v			12/09/16 08:38	65
1,1,2-Trichloroethane	ND		26		ppb v/v			12/09/16 08:38	65
<b>Trichloroethene</b>	<b>600</b>		26		ppb v/v			12/09/16 08:38	65
Trichlorofluoromethane	ND		26		ppb v/v			12/09/16 08:38	65
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		26		ppb v/v			12/09/16 08:38	65
1,2,4-Trimethylbenzene	ND		52		ppb v/v			12/09/16 08:38	65
1,3,5-Trimethylbenzene	ND		26		ppb v/v			12/09/16 08:38	65
Vinyl acetate	ND		52		ppb v/v			12/09/16 08:38	65
Vinyl chloride	ND		26		ppb v/v			12/09/16 08:38	65
m,p-Xylene	ND		52		ppb v/v			12/09/16 08:38	65
o-Xylene	ND		26		ppb v/v			12/09/16 08:38	65

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		770		ug/m3 Air			12/09/16 08:38	65
Benzene	ND		83		ug/m3 Air			12/09/16 08:38	65
Benzyl chloride	ND		270		ug/m3 Air			12/09/16 08:38	65
Bromodichloromethane	ND		130		ug/m3 Air			12/09/16 08:38	65
Bromoform	ND		270		ug/m3 Air			12/09/16 08:38	65
Bromomethane	ND		200		ug/m3 Air			12/09/16 08:38	65
2-Butanone (MEK)	ND		150		ug/m3 Air			12/09/16 08:38	65
Carbon disulfide	ND		160		ug/m3 Air			12/09/16 08:38	65
Carbon tetrachloride	ND		330		ug/m3 Air			12/09/16 08:38	65
Chlorobenzene	ND		90		ug/m3 Air			12/09/16 08:38	65
Dibromochloromethane	ND		220		ug/m3 Air			12/09/16 08:38	65
<b>Chloroethane</b>	<b>360</b>		140		ug/m3 Air			12/09/16 08:38	65
Chloroform	ND		95		ug/m3 Air			12/09/16 08:38	65
<b>Chloromethane</b>	<b>770</b>		110		ug/m3 Air			12/09/16 08:38	65
1,2-Dibromoethane (EDB)	ND		400		ug/m3 Air			12/09/16 08:38	65
1,2-Dichlorobenzene	ND		160		ug/m3 Air			12/09/16 08:38	65
1,3-Dichlorobenzene	ND		160		ug/m3 Air			12/09/16 08:38	65
1,4-Dichlorobenzene	ND		160		ug/m3 Air			12/09/16 08:38	65
Dichlorodifluoromethane	ND		130		ug/m3 Air			12/09/16 08:38	65
1,1-Dichloroethane	ND		79		ug/m3 Air			12/09/16 08:38	65
1,2-Dichloroethane	ND		210		ug/m3 Air			12/09/16 08:38	65
1,1-Dichloroethene	ND		210		ug/m3 Air			12/09/16 08:38	65
cis-1,2-Dichloroethene	ND		100		ug/m3 Air			12/09/16 08:38	65
trans-1,2-Dichloroethene	ND		100		ug/m3 Air			12/09/16 08:38	65
1,2-Dichloropropane	ND		120		ug/m3 Air			12/09/16 08:38	65
cis-1,3-Dichloropropene	ND		120		ug/m3 Air			12/09/16 08:38	65
trans-1,3-Dichloropropene	ND		120		ug/m3 Air			12/09/16 08:38	65
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		180		ug/m3 Air			12/09/16 08:38	65

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_112816**

**Lab Sample ID: 320-23875-2**

Date Collected: 11/28/16 08:14

Matrix: Air

Date Received: 11/30/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		110		ug/m3 Air			12/09/16 08:38	65
4-Ethyltoluene	ND		130		ug/m3 Air			12/09/16 08:38	65
Hexachlorobutadiene	ND		1400		ug/m3 Air			12/09/16 08:38	65
2-Hexanone	ND		110		ug/m3 Air			12/09/16 08:38	65
Methylene Chloride	ND		90		ug/m3 Air			12/09/16 08:38	65
<b>4-Methyl-2-pentanone (MIBK)</b>	<b>110</b>		110		ug/m3 Air			12/09/16 08:38	65
Styrene	ND		110		ug/m3 Air			12/09/16 08:38	65
1,1,2,2-Tetrachloroethane	ND		180		ug/m3 Air			12/09/16 08:38	65
<b>Tetrachloroethene</b>	<b>18000</b>		180		ug/m3 Air			12/09/16 08:38	65
Toluene	ND		98		ug/m3 Air			12/09/16 08:38	65
1,2,4-Trichlorobenzene	ND		960		ug/m3 Air			12/09/16 08:38	65
<b>1,1,1-Trichloroethane</b>	<b>360</b>		110		ug/m3 Air			12/09/16 08:38	65
1,1,2-Trichloroethane	ND		140		ug/m3 Air			12/09/16 08:38	65
<b>Trichloroethene</b>	<b>3200</b>		140		ug/m3 Air			12/09/16 08:38	65
Trichlorofluoromethane	ND		150		ug/m3 Air			12/09/16 08:38	65
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		200		ug/m3 Air			12/09/16 08:38	65
1,2,4-Trimethylbenzene	ND		260		ug/m3 Air			12/09/16 08:38	65
1,3,5-Trimethylbenzene	ND		130		ug/m3 Air			12/09/16 08:38	65
Vinyl acetate	ND		180		ug/m3 Air			12/09/16 08:38	65
Vinyl chloride	ND		66		ug/m3 Air			12/09/16 08:38	65
m,p-Xylene	ND		230		ug/m3 Air			12/09/16 08:38	65
o-Xylene	ND		110		ug/m3 Air			12/09/16 08:38	65

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	71		70 - 130		12/09/16 08:38	65
1,2-Dichloroethane-d4 (Surr)	108		70 - 130		12/09/16 08:38	65
Toluene-d8 (Surr)	94		70 - 130		12/09/16 08:38	65

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_112816**

**Lab Sample ID: 320-23875-3**

Date Collected: 11/28/16 07:47

Matrix: Air

Date Received: 11/30/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>12</b>		5.0		ppb v/v			12/12/16 17:48	1
Benzene	ND		0.40		ppb v/v			12/12/16 17:48	1
Benzyl chloride	ND		0.80		ppb v/v			12/12/16 17:48	1
Bromodichloromethane	ND		0.30		ppb v/v			12/12/16 17:48	1
Bromoform	ND		0.40		ppb v/v			12/12/16 17:48	1
Bromomethane	ND		0.80		ppb v/v			12/12/16 17:48	1
<b>2-Butanone (MEK)</b>	<b>0.81</b>		0.80		ppb v/v			12/12/16 17:48	1
Carbon disulfide	ND		0.80		ppb v/v			12/12/16 17:48	1
Carbon tetrachloride	ND		0.80		ppb v/v			12/12/16 17:48	1
Chlorobenzene	ND		0.30		ppb v/v			12/12/16 17:48	1
Dibromochloromethane	ND		0.40		ppb v/v			12/12/16 17:48	1
Chloroethane	ND		0.80		ppb v/v			12/12/16 17:48	1
Chloroform	ND		0.30		ppb v/v			12/12/16 17:48	1
Chloromethane	ND		0.80		ppb v/v			12/12/16 17:48	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_112816**

**Lab Sample ID: 320-23875-3**

Date Collected: 11/28/16 07:47

Matrix: Air

Date Received: 11/30/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			12/12/16 17:48	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			12/12/16 17:48	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			12/12/16 17:48	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			12/12/16 17:48	1
<b>Dichlorodifluoromethane</b>	<b>0.48</b>		0.40		ppb v/v			12/12/16 17:48	1
1,1-Dichloroethane	ND		0.30		ppb v/v			12/12/16 17:48	1
1,2-Dichloroethane	ND		0.80		ppb v/v			12/12/16 17:48	1
1,1-Dichloroethene	ND		0.80		ppb v/v			12/12/16 17:48	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			12/12/16 17:48	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			12/12/16 17:48	1
1,2-Dichloropropane	ND		0.40		ppb v/v			12/12/16 17:48	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			12/12/16 17:48	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			12/12/16 17:48	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			12/12/16 17:48	1
Ethylbenzene	ND		0.40		ppb v/v			12/12/16 17:48	1
<b>4-Ethyltoluene</b>	<b>0.50</b>		0.40		ppb v/v			12/12/16 17:48	1
Hexachlorobutadiene	ND		2.0		ppb v/v			12/12/16 17:48	1
2-Hexanone	ND		0.40		ppb v/v			12/12/16 17:48	1
Methylene Chloride	ND		0.40		ppb v/v			12/12/16 17:48	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			12/12/16 17:48	1
Styrene	ND		0.40		ppb v/v			12/12/16 17:48	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			12/12/16 17:48	1
<b>Tetrachloroethene</b>	<b>0.41</b>		0.40		ppb v/v			12/12/16 17:48	1
<b>Toluene</b>	<b>1.0</b>		0.40		ppb v/v			12/12/16 17:48	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			12/12/16 17:48	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			12/12/16 17:48	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			12/12/16 17:48	1
Trichloroethene	ND		0.40		ppb v/v			12/12/16 17:48	1
Trichlorofluoromethane	ND		0.40		ppb v/v			12/12/16 17:48	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			12/12/16 17:48	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			12/12/16 17:48	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			12/12/16 17:48	1
Vinyl acetate	ND		0.80		ppb v/v			12/12/16 17:48	1
Vinyl chloride	ND		0.40		ppb v/v			12/12/16 17:48	1
<b>m,p-Xylene</b>	<b>1.4</b>		0.80		ppb v/v			12/12/16 17:48	1
<b>o-Xylene</b>	<b>0.55</b>		0.40		ppb v/v			12/12/16 17:48	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Acetone</b>	<b>29</b>		12		ug/m3 Air			12/12/16 17:48	1
Benzene	ND		1.3		ug/m3 Air			12/12/16 17:48	1
Benzyl chloride	ND		4.1		ug/m3 Air			12/12/16 17:48	1
Bromodichloromethane	ND		2.0		ug/m3 Air			12/12/16 17:48	1
Bromoform	ND		4.1		ug/m3 Air			12/12/16 17:48	1
Bromomethane	ND		3.1		ug/m3 Air			12/12/16 17:48	1
<b>2-Butanone (MEK)</b>	<b>2.4</b>		2.4		ug/m3 Air			12/12/16 17:48	1
Carbon disulfide	ND		2.5		ug/m3 Air			12/12/16 17:48	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			12/12/16 17:48	1
Chlorobenzene	ND		1.4		ug/m3 Air			12/12/16 17:48	1
Dibromochloromethane	ND		3.4		ug/m3 Air			12/12/16 17:48	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_112816**

**Lab Sample ID: 320-23875-3**

Date Collected: 11/28/16 07:47

Matrix: Air

Date Received: 11/30/16 09:30

Sample Container: Summa Canister 6L

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		2.1		ug/m3 Air			12/12/16 17:48	1
Chloroform	ND		1.5		ug/m3 Air			12/12/16 17:48	1
Chloromethane	ND		1.7		ug/m3 Air			12/12/16 17:48	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			12/12/16 17:48	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			12/12/16 17:48	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			12/12/16 17:48	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			12/12/16 17:48	1
<b>Dichlorodifluoromethane</b>	<b>2.4</b>		2.0		ug/m3 Air			12/12/16 17:48	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			12/12/16 17:48	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			12/12/16 17:48	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			12/12/16 17:48	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			12/12/16 17:48	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			12/12/16 17:48	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			12/12/16 17:48	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			12/12/16 17:48	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			12/12/16 17:48	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			12/12/16 17:48	1
Ethylbenzene	ND		1.7		ug/m3 Air			12/12/16 17:48	1
<b>4-Ethyltoluene</b>	<b>2.5</b>		2.0		ug/m3 Air			12/12/16 17:48	1
Hexachlorobutadiene	ND		21		ug/m3 Air			12/12/16 17:48	1
2-Hexanone	ND		1.6		ug/m3 Air			12/12/16 17:48	1
Methylene Chloride	ND		1.4		ug/m3 Air			12/12/16 17:48	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			12/12/16 17:48	1
Styrene	ND		1.7		ug/m3 Air			12/12/16 17:48	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			12/12/16 17:48	1
<b>Tetrachloroethene</b>	<b>2.8</b>		2.7		ug/m3 Air			12/12/16 17:48	1
<b>Toluene</b>	<b>3.9</b>		1.5		ug/m3 Air			12/12/16 17:48	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			12/12/16 17:48	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			12/12/16 17:48	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			12/12/16 17:48	1
Trichloroethene	ND		2.1		ug/m3 Air			12/12/16 17:48	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			12/12/16 17:48	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			12/12/16 17:48	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			12/12/16 17:48	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			12/12/16 17:48	1
Vinyl acetate	ND		2.8		ug/m3 Air			12/12/16 17:48	1
Vinyl chloride	ND		1.0		ug/m3 Air			12/12/16 17:48	1
<b>m,p-Xylene</b>	<b>6.1</b>		3.5		ug/m3 Air			12/12/16 17:48	1
<b>o-Xylene</b>	<b>2.4</b>		1.7		ug/m3 Air			12/12/16 17:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		70 - 130		12/12/16 17:48	1
1,2-Dichloroethane-d4 (Surr)	90		70 - 130		12/12/16 17:48	1
Toluene-d8 (Surr)	100		70 - 130		12/12/16 17:48	1

TestAmerica Sacramento

# Surrogate Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (70-130)	12DCE (70-130)	TOL (70-130)
320-23875-1	SVE_SOUTH_PRECARBON_1	76	106	91
320-23875-2	SVE_SOUTH_POSTCARBON_12816	71	108	94
320-23875-3	SVE_NORTH_EFFLUENT_11216	99	90	100
LCS 320-141172/4	Lab Control Sample	115	103	97
LCS 320-141637/3	Lab Control Sample	104	90	98
LCSD 320-141172/5	Lab Control Sample Dup	109	100	99
LCSD 320-141637/4	Lab Control Sample Dup	106	91	98
MB 320-141172/9	Method Blank	81	95	96
MB 320-141637/6	Method Blank	95	91	100

### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

**Lab Sample ID: MB 320-141172/9**

**Matrix: Air**

**Analysis Batch: 141172**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			12/08/16 18:26	1
Benzene	ND		0.40		ppb v/v			12/08/16 18:26	1
Benzyl chloride	ND		0.80		ppb v/v			12/08/16 18:26	1
Bromodichloromethane	ND		0.30		ppb v/v			12/08/16 18:26	1
Bromoform	ND		0.40		ppb v/v			12/08/16 18:26	1
Bromomethane	ND		0.80		ppb v/v			12/08/16 18:26	1
2-Butanone (MEK)	ND		0.80		ppb v/v			12/08/16 18:26	1
Carbon disulfide	ND		0.80		ppb v/v			12/08/16 18:26	1
Carbon tetrachloride	ND		0.80		ppb v/v			12/08/16 18:26	1
Chlorobenzene	ND		0.30		ppb v/v			12/08/16 18:26	1
Dibromochloromethane	ND		0.40		ppb v/v			12/08/16 18:26	1
Chloroethane	ND		0.80		ppb v/v			12/08/16 18:26	1
Chloroform	ND		0.30		ppb v/v			12/08/16 18:26	1
Chloromethane	ND		0.80		ppb v/v			12/08/16 18:26	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			12/08/16 18:26	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			12/08/16 18:26	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			12/08/16 18:26	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			12/08/16 18:26	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			12/08/16 18:26	1
1,1-Dichloroethane	ND		0.30		ppb v/v			12/08/16 18:26	1
1,2-Dichloroethane	ND		0.80		ppb v/v			12/08/16 18:26	1
1,1-Dichloroethene	ND		0.80		ppb v/v			12/08/16 18:26	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			12/08/16 18:26	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			12/08/16 18:26	1
1,2-Dichloropropane	ND		0.40		ppb v/v			12/08/16 18:26	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			12/08/16 18:26	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			12/08/16 18:26	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			12/08/16 18:26	1
Ethylbenzene	ND		0.40		ppb v/v			12/08/16 18:26	1
4-Ethyltoluene	ND		0.40		ppb v/v			12/08/16 18:26	1
Hexachlorobutadiene	ND		2.0		ppb v/v			12/08/16 18:26	1
2-Hexanone	ND		0.40		ppb v/v			12/08/16 18:26	1
Methylene Chloride	ND		0.40		ppb v/v			12/08/16 18:26	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			12/08/16 18:26	1
Styrene	ND		0.40		ppb v/v			12/08/16 18:26	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			12/08/16 18:26	1
Tetrachloroethene	ND		0.40		ppb v/v			12/08/16 18:26	1
Toluene	ND		0.40		ppb v/v			12/08/16 18:26	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			12/08/16 18:26	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			12/08/16 18:26	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			12/08/16 18:26	1
Trichloroethene	ND		0.40		ppb v/v			12/08/16 18:26	1
Trichlorofluoromethane	ND		0.40		ppb v/v			12/08/16 18:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			12/08/16 18:26	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			12/08/16 18:26	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			12/08/16 18:26	1
Vinyl acetate	ND		0.80		ppb v/v			12/08/16 18:26	1
Vinyl chloride	ND		0.40		ppb v/v			12/08/16 18:26	1

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-141172/9**

**Matrix: Air**

**Analysis Batch: 141172**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		0.80		ppb v/v			12/08/16 18:26	1
o-Xylene	ND		0.40		ppb v/v			12/08/16 18:26	1
Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			12/08/16 18:26	1
Benzene	ND		1.3		ug/m3 Air			12/08/16 18:26	1
Benzyl chloride	ND		4.1		ug/m3 Air			12/08/16 18:26	1
Bromodichloromethane	ND		2.0		ug/m3 Air			12/08/16 18:26	1
Bromoform	ND		4.1		ug/m3 Air			12/08/16 18:26	1
Bromomethane	ND		3.1		ug/m3 Air			12/08/16 18:26	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			12/08/16 18:26	1
Carbon disulfide	ND		2.5		ug/m3 Air			12/08/16 18:26	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			12/08/16 18:26	1
Chlorobenzene	ND		1.4		ug/m3 Air			12/08/16 18:26	1
Dibromochloromethane	ND		3.4		ug/m3 Air			12/08/16 18:26	1
Chloroethane	ND		2.1		ug/m3 Air			12/08/16 18:26	1
Chloroform	ND		1.5		ug/m3 Air			12/08/16 18:26	1
Chloromethane	ND		1.7		ug/m3 Air			12/08/16 18:26	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			12/08/16 18:26	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			12/08/16 18:26	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			12/08/16 18:26	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			12/08/16 18:26	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			12/08/16 18:26	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			12/08/16 18:26	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			12/08/16 18:26	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			12/08/16 18:26	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			12/08/16 18:26	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			12/08/16 18:26	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			12/08/16 18:26	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			12/08/16 18:26	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			12/08/16 18:26	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			12/08/16 18:26	1
Ethylbenzene	ND		1.7		ug/m3 Air			12/08/16 18:26	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			12/08/16 18:26	1
Hexachlorobutadiene	ND		21		ug/m3 Air			12/08/16 18:26	1
2-Hexanone	ND		1.6		ug/m3 Air			12/08/16 18:26	1
Methylene Chloride	ND		1.4		ug/m3 Air			12/08/16 18:26	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			12/08/16 18:26	1
Styrene	ND		1.7		ug/m3 Air			12/08/16 18:26	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			12/08/16 18:26	1
Tetrachloroethene	ND		2.7		ug/m3 Air			12/08/16 18:26	1
Toluene	ND		1.5		ug/m3 Air			12/08/16 18:26	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			12/08/16 18:26	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			12/08/16 18:26	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			12/08/16 18:26	1
Trichloroethene	ND		2.1		ug/m3 Air			12/08/16 18:26	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			12/08/16 18:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			12/08/16 18:26	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-141172/9**

**Matrix: Air**

**Analysis Batch: 141172**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			12/08/16 18:26	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			12/08/16 18:26	1
Vinyl acetate	ND		2.8		ug/m3 Air			12/08/16 18:26	1
Vinyl chloride	ND		1.0		ug/m3 Air			12/08/16 18:26	1
m,p-Xylene	ND		3.5		ug/m3 Air			12/08/16 18:26	1
o-Xylene	ND		1.7		ug/m3 Air			12/08/16 18:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	81		70 - 130		12/08/16 18:26	1
1,2-Dichloroethane-d4 (Surr)	95		70 - 130		12/08/16 18:26	1
Toluene-d8 (Surr)	96		70 - 130		12/08/16 18:26	1

**Lab Sample ID: LCS 320-141172/4**

**Matrix: Air**

**Analysis Batch: 141172**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	20.4		ppb v/v		102	71 - 131
Benzene	20.0	21.0		ppb v/v		105	68 - 128
Benzyl chloride	20.0	17.8		ppb v/v		89	58 - 120
Bromodichloromethane	20.0	21.9		ppb v/v		110	65 - 130
Bromoform	20.0	24.1		ppb v/v		120	64 - 144
Bromomethane	20.0	23.6		ppb v/v		118	70 - 131
2-Butanone (MEK)	20.0	20.6		ppb v/v		103	71 - 131
Carbon disulfide	20.0	19.4		ppb v/v		97	63 - 123
Carbon tetrachloride	20.0	22.3		ppb v/v		111	67 - 127
Chlorobenzene	20.0	23.8		ppb v/v		119	70 - 132
Dibromochloromethane	20.0	23.3		ppb v/v		116	68 - 128
Chloroethane	20.0	22.3		ppb v/v		111	70 - 131
Chloroform	20.0	20.8		ppb v/v		104	69 - 129
Chloromethane	20.0	20.4		ppb v/v		102	67 - 127
1,2-Dibromoethane (EDB)	20.0	23.6		ppb v/v		118	68 - 131
1,2-Dichlorobenzene	20.0	23.4		ppb v/v		117	73 - 143
1,3-Dichlorobenzene	20.0	23.8		ppb v/v		119	77 - 136
1,4-Dichlorobenzene	20.0	24.2		ppb v/v		121	73 - 143
Dichlorodifluoromethane	20.0	22.1		ppb v/v		110	69 - 129
1,1-Dichloroethane	20.0	20.2		ppb v/v		101	65 - 125
1,2-Dichloroethane	20.0	22.4		ppb v/v		112	71 - 131
1,1-Dichloroethene	20.0	19.8		ppb v/v		99	53 - 128
cis-1,2-Dichloroethene	20.0	21.0		ppb v/v		105	68 - 128
trans-1,2-Dichloroethene	20.0	21.5		ppb v/v		107	70 - 130
1,2-Dichloropropane	20.0	23.2		ppb v/v		116	74 - 128
cis-1,3-Dichloropropene	20.0	24.2		ppb v/v		121	78 - 132
trans-1,3-Dichloropropene	20.0	21.8		ppb v/v		109	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	22.2		ppb v/v		111	64 - 124
Ethylbenzene	20.0	24.2		ppb v/v		121	76 - 136
4-Ethyltoluene	20.0	22.3		ppb v/v		112	62 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-141172/4**

**Matrix: Air**

**Analysis Batch: 141172**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	23.9		ppb v/v		120	42 - 150
2-Hexanone	20.0	23.6		ppb v/v		118	70 - 128
Methylene Chloride	20.0	19.4		ppb v/v		97	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	22.4		ppb v/v		112	73 - 133
Styrene	20.0	24.1		ppb v/v		120	76 - 144
1,1,2,2-Tetrachloroethane	20.0	20.9		ppb v/v		105	75 - 135
Tetrachloroethene	20.0	22.5		ppb v/v		113	56 - 138
Toluene	20.0	22.3		ppb v/v		112	71 - 132
1,2,4-Trichlorobenzene	20.0	20.7		ppb v/v		103	59 - 150
1,1,1-Trichloroethane	20.0	21.2		ppb v/v		106	65 - 124
1,1,2-Trichloroethane	20.0	23.0		ppb v/v		115	71 - 131
Trichloroethene	20.0	23.5		ppb v/v		117	64 - 127
Trichlorofluoromethane	20.0	22.0		ppb v/v		110	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.8		ppb v/v		94	50 - 132
1,2,4-Trimethylbenzene	20.0	23.6		ppb v/v		118	61 - 145
1,3,5-Trimethylbenzene	20.0	23.0		ppb v/v		115	65 - 136
Vinyl acetate	20.0	24.4		ppb v/v		122	77 - 134
Vinyl chloride	20.0	21.1		ppb v/v		106	69 - 129
m,p-Xylene	40.0	48.6		ppb v/v		121	75 - 138
o-Xylene	20.0	24.9		ppb v/v		125	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	48.4		ug/m3 Air		102	71 - 131
Benzene	64	67.1		ug/m3 Air		105	68 - 128
Benzyl chloride	100	92.4		ug/m3 Air		89	58 - 120
Bromodichloromethane	130	147		ug/m3 Air		110	65 - 130
Bromoform	210	249		ug/m3 Air		120	64 - 144
Bromomethane	78	91.7		ug/m3 Air		118	70 - 131
2-Butanone (MEK)	59	60.7		ug/m3 Air		103	71 - 131
Carbon disulfide	62	60.4		ug/m3 Air		97	63 - 123
Carbon tetrachloride	130	140		ug/m3 Air		111	67 - 127
Chlorobenzene	92	109		ug/m3 Air		119	70 - 132
Dibromochloromethane	170	198		ug/m3 Air		116	68 - 128
Chloroethane	53	58.8		ug/m3 Air		111	70 - 131
Chloroform	98	102		ug/m3 Air		104	69 - 129
Chloromethane	41	42.0		ug/m3 Air		102	67 - 127
1,2-Dibromoethane (EDB)	150	181		ug/m3 Air		118	68 - 131
1,2-Dichlorobenzene	120	141		ug/m3 Air		117	73 - 143
1,3-Dichlorobenzene	120	143		ug/m3 Air		119	77 - 136
1,4-Dichlorobenzene	120	145		ug/m3 Air		121	73 - 143
Dichlorodifluoromethane	99	109		ug/m3 Air		110	69 - 129
1,1-Dichloroethane	81	81.9		ug/m3 Air		101	65 - 125
1,2-Dichloroethane	81	90.6		ug/m3 Air		112	71 - 131
1,1-Dichloroethene	79	78.5		ug/m3 Air		99	53 - 128
cis-1,2-Dichloroethene	79	83.2		ug/m3 Air		105	68 - 128
trans-1,2-Dichloroethene	79	85.1		ug/m3 Air		107	70 - 130
1,2-Dichloropropane	92	107		ug/m3 Air		116	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-141172/4**

**Matrix: Air**

**Analysis Batch: 141172**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	110		ug/m3 Air		121	78 - 132
trans-1,3-Dichloropropene	91	98.9		ug/m3 Air		109	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	155		ug/m3 Air		111	64 - 124
Ethylbenzene	87	105		ug/m3 Air		121	76 - 136
4-Ethyltoluene	98	110		ug/m3 Air		112	62 - 136
Hexachlorobutadiene	210	255		ug/m3 Air		120	42 - 150
2-Hexanone	82	96.7		ug/m3 Air		118	70 - 128
Methylene Chloride	69	67.4		ug/m3 Air		97	65 - 125
4-Methyl-2-pentanone (MIBK)	82	91.6		ug/m3 Air		112	73 - 133
Styrene	85	103		ug/m3 Air		120	76 - 144
1,1,2,2-Tetrachloroethane	140	144		ug/m3 Air		105	75 - 135
Tetrachloroethene	140	153		ug/m3 Air		113	56 - 138
Toluene	75	84.2		ug/m3 Air		112	71 - 132
1,2,4-Trichlorobenzene	150	153		ug/m3 Air		103	59 - 150
1,1,1-Trichloroethane	110	116		ug/m3 Air		106	65 - 124
1,1,2-Trichloroethane	110	126		ug/m3 Air		115	71 - 131
Trichloroethene	110	126		ug/m3 Air		117	64 - 127
Trichlorofluoromethane	110	124		ug/m3 Air		110	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	144		ug/m3 Air		94	50 - 132
1,2,4-Trimethylbenzene	98	116		ug/m3 Air		118	61 - 145
1,3,5-Trimethylbenzene	98	113		ug/m3 Air		115	65 - 136
Vinyl acetate	70	85.8		ug/m3 Air		122	77 - 134
Vinyl chloride	51	54.0		ug/m3 Air		106	69 - 129
m,p-Xylene	170	211		ug/m3 Air		121	75 - 138
o-Xylene	87	108		ug/m3 Air		125	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	115		70 - 130
1,2-Dichloroethane-d4 (Surr)	103		70 - 130
Toluene-d8 (Surr)	97		70 - 130

**Lab Sample ID: LCSD 320-141172/5**

**Matrix: Air**

**Analysis Batch: 141172**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	19.4		ppb v/v		97	71 - 131	5	25
Benzene	20.0	20.9		ppb v/v		105	68 - 128	0	25
Benzyl chloride	20.0	17.0		ppb v/v		85	58 - 120	5	25
Bromodichloromethane	20.0	21.3		ppb v/v		106	65 - 130	3	25
Bromoform	20.0	22.3		ppb v/v		111	64 - 144	8	25
Bromomethane	20.0	21.0		ppb v/v		105	70 - 131	12	25
2-Butanone (MEK)	20.0	20.6		ppb v/v		103	71 - 131	0	25
Carbon disulfide	20.0	19.5		ppb v/v		98	63 - 123	1	25
Carbon tetrachloride	20.0	20.9		ppb v/v		105	67 - 127	6	25
Chlorobenzene	20.0	22.7		ppb v/v		113	70 - 132	5	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-141172/5

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 141172

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibromochloromethane	20.0	21.8		ppb v/v		109	68 - 128	7	25
Chloroethane	20.0	22.7		ppb v/v		113	70 - 131	2	25
Chloroform	20.0	20.8		ppb v/v		104	69 - 129	0	25
Chloromethane	20.0	19.5		ppb v/v		98	67 - 127	4	25
1,2-Dibromoethane (EDB)	20.0	22.7		ppb v/v		114	68 - 131	4	25
1,2-Dichlorobenzene	20.0	21.6		ppb v/v		108	73 - 143	8	25
1,3-Dichlorobenzene	20.0	21.8		ppb v/v		109	77 - 136	9	25
1,4-Dichlorobenzene	20.0	22.0		ppb v/v		110	73 - 143	9	25
Dichlorodifluoromethane	20.0	21.0		ppb v/v		105	69 - 129	5	25
1,1-Dichloroethane	20.0	20.2		ppb v/v		101	65 - 125	0	25
1,2-Dichloroethane	20.0	21.1		ppb v/v		105	71 - 131	6	25
1,1-Dichloroethene	20.0	19.3		ppb v/v		97	53 - 128	2	25
cis-1,2-Dichloroethene	20.0	21.4		ppb v/v		107	68 - 128	2	25
trans-1,2-Dichloroethene	20.0	21.2		ppb v/v		106	70 - 130	1	25
1,2-Dichloropropane	20.0	22.0		ppb v/v		110	74 - 128	6	25
cis-1,3-Dichloropropene	20.0	23.5		ppb v/v		117	78 - 132	3	25
trans-1,3-Dichloropropene	20.0	20.8		ppb v/v		104	56 - 136	5	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	21.2		ppb v/v		106	64 - 124	5	25
Ethylbenzene	20.0	23.2		ppb v/v		116	76 - 136	4	25
4-Ethyltoluene	20.0	21.0		ppb v/v		105	62 - 136	6	25
Hexachlorobutadiene	20.0	22.3		ppb v/v		112	42 - 150	7	25
2-Hexanone	20.0	22.4		ppb v/v		112	70 - 128	5	25
Methylene Chloride	20.0	18.6		ppb v/v		93	65 - 125	4	25
4-Methyl-2-pentanone (MIBK)	20.0	20.6		ppb v/v		103	73 - 133	8	25
Styrene	20.0	22.9		ppb v/v		114	76 - 144	5	25
1,1,2,2-Tetrachloroethane	20.0	20.3		ppb v/v		101	75 - 135	3	25
Tetrachloroethene	20.0	21.2		ppb v/v		106	56 - 138	6	25
Toluene	20.0	22.0		ppb v/v		110	71 - 132	2	25
1,2,4-Trichlorobenzene	20.0	19.4		ppb v/v		97	59 - 150	6	25
1,1,1-Trichloroethane	20.0	20.7		ppb v/v		104	65 - 124	2	25
1,1,2-Trichloroethane	20.0	22.5		ppb v/v		112	71 - 131	2	25
Trichloroethene	20.0	22.6		ppb v/v		113	64 - 127	4	25
Trichlorofluoromethane	20.0	20.9		ppb v/v		105	68 - 128	5	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	18.6		ppb v/v		93	50 - 132	1	25
1,2,4-Trimethylbenzene	20.0	21.9		ppb v/v		109	61 - 145	8	25
1,3,5-Trimethylbenzene	20.0	21.3		ppb v/v		107	65 - 136	8	25
Vinyl acetate	20.0	23.6		ppb v/v		118	77 - 134	3	25
Vinyl chloride	20.0	20.9		ppb v/v		104	69 - 129	1	25
m,p-Xylene	40.0	46.2		ppb v/v		116	75 - 138	5	25
o-Xylene	20.0	23.8		ppb v/v		119	77 - 132	4	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	46.1		ug/m3 Air		97	71 - 131	5	25
Benzene	64	66.9		ug/m3 Air		105	68 - 128	0	25
Benzyl chloride	100	88.2		ug/m3 Air		85	58 - 120	5	25
Bromodichloromethane	130	143		ug/m3 Air		106	65 - 130	3	25
Bromoform	210	230		ug/m3 Air		111	64 - 144	8	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-141172/5

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 141172

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	78	81.4		ug/m3 Air		105	70 - 131	12	25
2-Butanone (MEK)	59	60.8		ug/m3 Air		103	71 - 131	0	25
Carbon disulfide	62	60.9		ug/m3 Air		98	63 - 123	1	25
Carbon tetrachloride	130	132		ug/m3 Air		105	67 - 127	6	25
Chlorobenzene	92	104		ug/m3 Air		113	70 - 132	5	25
Dibromochloromethane	170	185		ug/m3 Air		109	68 - 128	7	25
Chloroethane	53	59.9		ug/m3 Air		113	70 - 131	2	25
Chloroform	98	102		ug/m3 Air		104	69 - 129	0	25
Chloromethane	41	40.3		ug/m3 Air		98	67 - 127	4	25
1,2-Dibromoethane (EDB)	150	175		ug/m3 Air		114	68 - 131	4	25
1,2-Dichlorobenzene	120	130		ug/m3 Air		108	73 - 143	8	25
1,3-Dichlorobenzene	120	131		ug/m3 Air		109	77 - 136	9	25
1,4-Dichlorobenzene	120	133		ug/m3 Air		110	73 - 143	9	25
Dichlorodifluoromethane	99	104		ug/m3 Air		105	69 - 129	5	25
1,1-Dichloroethane	81	81.9		ug/m3 Air		101	65 - 125	0	25
1,2-Dichloroethane	81	85.2		ug/m3 Air		105	71 - 131	6	25
1,1-Dichloroethene	79	76.7		ug/m3 Air		97	53 - 128	2	25
cis-1,2-Dichloroethene	79	84.8		ug/m3 Air		107	68 - 128	2	25
trans-1,2-Dichloroethene	79	84.1		ug/m3 Air		106	70 - 130	1	25
1,2-Dichloropropane	92	102		ug/m3 Air		110	74 - 128	6	25
cis-1,3-Dichloropropene	91	106		ug/m3 Air		117	78 - 132	3	25
trans-1,3-Dichloropropene	91	94.3		ug/m3 Air		104	56 - 136	5	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	148		ug/m3 Air		106	64 - 124	5	25
Ethylbenzene	87	101		ug/m3 Air		116	76 - 136	4	25
4-Ethyltoluene	98	103		ug/m3 Air		105	62 - 136	6	25
Hexachlorobutadiene	210	238		ug/m3 Air		112	42 - 150	7	25
2-Hexanone	82	91.7		ug/m3 Air		112	70 - 128	5	25
Methylene Chloride	69	64.7		ug/m3 Air		93	65 - 125	4	25
4-Methyl-2-pentanone (MIBK)	82	84.4		ug/m3 Air		103	73 - 133	8	25
Styrene	85	97.4		ug/m3 Air		114	76 - 144	5	25
1,1,2,2-Tetrachloroethane	140	139		ug/m3 Air		101	75 - 135	3	25
Tetrachloroethene	140	144		ug/m3 Air		106	56 - 138	6	25
Toluene	75	82.9		ug/m3 Air		110	71 - 132	2	25
1,2,4-Trichlorobenzene	150	144		ug/m3 Air		97	59 - 150	6	25
1,1,1-Trichloroethane	110	113		ug/m3 Air		104	65 - 124	2	25
1,1,2-Trichloroethane	110	123		ug/m3 Air		112	71 - 131	2	25
Trichloroethene	110	121		ug/m3 Air		113	64 - 127	4	25
Trichlorofluoromethane	110	118		ug/m3 Air		105	68 - 128	5	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	143		ug/m3 Air		93	50 - 132	1	25
1,2,4-Trimethylbenzene	98	108		ug/m3 Air		109	61 - 145	8	25
1,3,5-Trimethylbenzene	98	105		ug/m3 Air		107	65 - 136	8	25
Vinyl acetate	70	83.2		ug/m3 Air		118	77 - 134	3	25
Vinyl chloride	51	53.3		ug/m3 Air		104	69 - 129	1	25
m,p-Xylene	170	201		ug/m3 Air		116	75 - 138	5	25
o-Xylene	87	104		ug/m3 Air		119	77 - 132	4	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCSD 320-141172/5**

**Matrix: Air**

**Analysis Batch: 141172**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	109		70 - 130
1,2-Dichloroethane-d4 (Surr)	100		70 - 130
Toluene-d8 (Surr)	99		70 - 130

**Lab Sample ID: MB 320-141637/6**

**Matrix: Air**

**Analysis Batch: 141637**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			12/12/16 14:18	1
Benzene	ND		0.40		ppb v/v			12/12/16 14:18	1
Benzyl chloride	ND		0.80		ppb v/v			12/12/16 14:18	1
Bromodichloromethane	ND		0.30		ppb v/v			12/12/16 14:18	1
Bromoform	ND		0.40		ppb v/v			12/12/16 14:18	1
Bromomethane	ND		0.80		ppb v/v			12/12/16 14:18	1
2-Butanone (MEK)	ND		0.80		ppb v/v			12/12/16 14:18	1
Carbon disulfide	ND		0.80		ppb v/v			12/12/16 14:18	1
Carbon tetrachloride	ND		0.80		ppb v/v			12/12/16 14:18	1
Chlorobenzene	ND		0.30		ppb v/v			12/12/16 14:18	1
Dibromochloromethane	ND		0.40		ppb v/v			12/12/16 14:18	1
Chloroethane	ND		0.80		ppb v/v			12/12/16 14:18	1
Chloroform	ND		0.30		ppb v/v			12/12/16 14:18	1
Chloromethane	ND		0.80		ppb v/v			12/12/16 14:18	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			12/12/16 14:18	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			12/12/16 14:18	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			12/12/16 14:18	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			12/12/16 14:18	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			12/12/16 14:18	1
1,1-Dichloroethane	ND		0.30		ppb v/v			12/12/16 14:18	1
1,2-Dichloroethane	ND		0.80		ppb v/v			12/12/16 14:18	1
1,1-Dichloroethene	ND		0.80		ppb v/v			12/12/16 14:18	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			12/12/16 14:18	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			12/12/16 14:18	1
1,2-Dichloropropane	ND		0.40		ppb v/v			12/12/16 14:18	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			12/12/16 14:18	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			12/12/16 14:18	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			12/12/16 14:18	1
Ethylbenzene	ND		0.40		ppb v/v			12/12/16 14:18	1
4-Ethyltoluene	ND		0.40		ppb v/v			12/12/16 14:18	1
Hexachlorobutadiene	ND		2.0		ppb v/v			12/12/16 14:18	1
2-Hexanone	ND		0.40		ppb v/v			12/12/16 14:18	1
Methylene Chloride	ND		0.40		ppb v/v			12/12/16 14:18	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			12/12/16 14:18	1
Styrene	ND		0.40		ppb v/v			12/12/16 14:18	1
1,1,1,2-Tetrachloroethane	ND		0.40		ppb v/v			12/12/16 14:18	1
Tetrachloroethene	ND		0.40		ppb v/v			12/12/16 14:18	1
Toluene	ND		0.40		ppb v/v			12/12/16 14:18	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			12/12/16 14:18	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-141637/6**  
**Matrix: Air**  
**Analysis Batch: 141637**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.30		ppb v/v			12/12/16 14:18	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			12/12/16 14:18	1
Trichloroethene	ND		0.40		ppb v/v			12/12/16 14:18	1
Trichlorofluoromethane	ND		0.40		ppb v/v			12/12/16 14:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			12/12/16 14:18	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			12/12/16 14:18	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			12/12/16 14:18	1
Vinyl acetate	ND		0.80		ppb v/v			12/12/16 14:18	1
Vinyl chloride	ND		0.40		ppb v/v			12/12/16 14:18	1
m,p-Xylene	ND		0.80		ppb v/v			12/12/16 14:18	1
o-Xylene	ND		0.40		ppb v/v			12/12/16 14:18	1

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			12/12/16 14:18	1
Benzene	ND		1.3		ug/m3 Air			12/12/16 14:18	1
Benzyl chloride	ND		4.1		ug/m3 Air			12/12/16 14:18	1
Bromodichloromethane	ND		2.0		ug/m3 Air			12/12/16 14:18	1
Bromoform	ND		4.1		ug/m3 Air			12/12/16 14:18	1
Bromomethane	ND		3.1		ug/m3 Air			12/12/16 14:18	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			12/12/16 14:18	1
Carbon disulfide	ND		2.5		ug/m3 Air			12/12/16 14:18	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			12/12/16 14:18	1
Chlorobenzene	ND		1.4		ug/m3 Air			12/12/16 14:18	1
Dibromochloromethane	ND		3.4		ug/m3 Air			12/12/16 14:18	1
Chloroethane	ND		2.1		ug/m3 Air			12/12/16 14:18	1
Chloroform	ND		1.5		ug/m3 Air			12/12/16 14:18	1
Chloromethane	ND		1.7		ug/m3 Air			12/12/16 14:18	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			12/12/16 14:18	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			12/12/16 14:18	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			12/12/16 14:18	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			12/12/16 14:18	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			12/12/16 14:18	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			12/12/16 14:18	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			12/12/16 14:18	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			12/12/16 14:18	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			12/12/16 14:18	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			12/12/16 14:18	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			12/12/16 14:18	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			12/12/16 14:18	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			12/12/16 14:18	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			12/12/16 14:18	1
Ethylbenzene	ND		1.7		ug/m3 Air			12/12/16 14:18	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			12/12/16 14:18	1
Hexachlorobutadiene	ND		21		ug/m3 Air			12/12/16 14:18	1
2-Hexanone	ND		1.6		ug/m3 Air			12/12/16 14:18	1
Methylene Chloride	ND		1.4		ug/m3 Air			12/12/16 14:18	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			12/12/16 14:18	1
Styrene	ND		1.7		ug/m3 Air			12/12/16 14:18	1

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-141637/6**  
**Matrix: Air**  
**Analysis Batch: 141637**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			12/12/16 14:18	1
Tetrachloroethene	ND		2.7		ug/m3 Air			12/12/16 14:18	1
Toluene	ND		1.5		ug/m3 Air			12/12/16 14:18	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			12/12/16 14:18	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			12/12/16 14:18	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			12/12/16 14:18	1
Trichloroethene	ND		2.1		ug/m3 Air			12/12/16 14:18	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			12/12/16 14:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			12/12/16 14:18	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			12/12/16 14:18	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			12/12/16 14:18	1
Vinyl acetate	ND		2.8		ug/m3 Air			12/12/16 14:18	1
Vinyl chloride	ND		1.0		ug/m3 Air			12/12/16 14:18	1
m,p-Xylene	ND		3.5		ug/m3 Air			12/12/16 14:18	1
o-Xylene	ND		1.7		ug/m3 Air			12/12/16 14:18	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		70 - 130		12/12/16 14:18	1
1,2-Dichloroethane-d4 (Surr)	91		70 - 130		12/12/16 14:18	1
Toluene-d8 (Surr)	100		70 - 130		12/12/16 14:18	1

**Lab Sample ID: LCS 320-141637/3**  
**Matrix: Air**  
**Analysis Batch: 141637**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	16.6		ppb v/v		83	71 - 131
Benzene	20.0	18.8		ppb v/v		94	68 - 128
Benzyl chloride	20.0	16.0		ppb v/v		80	58 - 120
Bromodichloromethane	20.0	18.4		ppb v/v		92	65 - 130
Bromoform	20.0	19.9		ppb v/v		99	64 - 144
Bromomethane	20.0	20.6		ppb v/v		103	70 - 131
2-Butanone (MEK)	20.0	18.9		ppb v/v		94	71 - 131
Carbon disulfide	20.0	18.0		ppb v/v		90	63 - 123
Carbon tetrachloride	20.0	18.8		ppb v/v		94	67 - 127
Chlorobenzene	20.0	19.4		ppb v/v		97	70 - 132
Dibromochloromethane	20.0	19.3		ppb v/v		96	68 - 128
Chloroethane	20.0	19.5		ppb v/v		98	70 - 131
Chloroform	20.0	18.4		ppb v/v		92	69 - 129
Chloromethane	20.0	17.6		ppb v/v		88	67 - 127
1,2-Dibromoethane (EDB)	20.0	20.1		ppb v/v		101	68 - 131
1,2-Dichlorobenzene	20.0	20.2		ppb v/v		101	73 - 143
1,3-Dichlorobenzene	20.0	20.5		ppb v/v		102	77 - 136
1,4-Dichlorobenzene	20.0	20.7		ppb v/v		103	73 - 143
Dichlorodifluoromethane	20.0	17.9		ppb v/v		89	69 - 129
1,1-Dichloroethane	20.0	17.7		ppb v/v		89	65 - 125
1,2-Dichloroethane	20.0	17.6		ppb v/v		88	71 - 131
1,1-Dichloroethene	20.0	16.3		ppb v/v		82	53 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-141637/3**

**Matrix: Air**

**Analysis Batch: 141637**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	19.2		ppb v/v		96	68 - 128
trans-1,2-Dichloroethene	20.0	17.7		ppb v/v		88	70 - 130
1,2-Dichloropropane	20.0	18.6		ppb v/v		93	74 - 128
cis-1,3-Dichloropropene	20.0	20.7		ppb v/v		103	78 - 132
trans-1,3-Dichloropropene	20.0	17.6		ppb v/v		88	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	20.2		ppb v/v		101	64 - 124
Ethylbenzene	20.0	19.6		ppb v/v		98	76 - 136
4-Ethyltoluene	20.0	18.8		ppb v/v		94	62 - 136
Hexachlorobutadiene	20.0	16.8		ppb v/v		84	42 - 150
2-Hexanone	20.0	21.1		ppb v/v		105	70 - 128
Methylene Chloride	20.0	15.8		ppb v/v		79	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	18.5		ppb v/v		92	73 - 133
Styrene	20.0	20.5		ppb v/v		102	76 - 144
1,1,2,2-Tetrachloroethane	20.0	20.3		ppb v/v		101	75 - 135
Tetrachloroethene	20.0	19.4		ppb v/v		97	56 - 138
Toluene	20.0	19.1		ppb v/v		95	71 - 132
1,2,4-Trichlorobenzene	20.0	18.6		ppb v/v		93	59 - 150
1,1,1-Trichloroethane	20.0	18.1		ppb v/v		90	65 - 124
1,1,2-Trichloroethane	20.0	20.3		ppb v/v		102	71 - 131
Trichloroethene	20.0	19.6		ppb v/v		98	64 - 127
Trichlorofluoromethane	20.0	18.5		ppb v/v		92	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.4		ppb v/v		87	50 - 132
1,2,4-Trimethylbenzene	20.0	21.1		ppb v/v		106	61 - 145
1,3,5-Trimethylbenzene	20.0	19.4		ppb v/v		97	65 - 136
Vinyl acetate	20.0	18.3		ppb v/v		91	77 - 134
Vinyl chloride	20.0	18.7		ppb v/v		94	69 - 129
m,p-Xylene	40.0	38.9		ppb v/v		97	75 - 138
o-Xylene	20.0	19.5		ppb v/v		98	77 - 132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	39.4		ug/m3 Air		83	71 - 131
Benzene	64	60.2		ug/m3 Air		94	68 - 128
Benzyl chloride	100	82.8		ug/m3 Air		80	58 - 120
Bromodichloromethane	130	123		ug/m3 Air		92	65 - 130
Bromoform	210	205		ug/m3 Air		99	64 - 144
Bromomethane	78	80.0		ug/m3 Air		103	70 - 131
2-Butanone (MEK)	59	55.6		ug/m3 Air		94	71 - 131
Carbon disulfide	62	55.9		ug/m3 Air		90	63 - 123
Carbon tetrachloride	130	118		ug/m3 Air		94	67 - 127
Chlorobenzene	92	89.4		ug/m3 Air		97	70 - 132
Dibromochloromethane	170	164		ug/m3 Air		96	68 - 128
Chloroethane	53	51.6		ug/m3 Air		98	70 - 131
Chloroform	98	89.9		ug/m3 Air		92	69 - 129
Chloromethane	41	36.3		ug/m3 Air		88	67 - 127
1,2-Dibromoethane (EDB)	150	155		ug/m3 Air		101	68 - 131
1,2-Dichlorobenzene	120	122		ug/m3 Air		101	73 - 143
1,3-Dichlorobenzene	120	123		ug/m3 Air		102	77 - 136

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-141637/3**  
**Matrix: Air**  
**Analysis Batch: 141637**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	120	124		ug/m3 Air		103	73 - 143
Dichlorodifluoromethane	99	88.5		ug/m3 Air		89	69 - 129
1,1-Dichloroethane	81	71.7		ug/m3 Air		89	65 - 125
1,2-Dichloroethane	81	71.4		ug/m3 Air		88	71 - 131
1,1-Dichloroethene	79	64.7		ug/m3 Air		82	53 - 128
cis-1,2-Dichloroethene	79	76.3		ug/m3 Air		96	68 - 128
trans-1,2-Dichloroethene	79	70.1		ug/m3 Air		88	70 - 130
1,2-Dichloropropane	92	86.1		ug/m3 Air		93	74 - 128
cis-1,3-Dichloropropene	91	93.9		ug/m3 Air		103	78 - 132
trans-1,3-Dichloropropene	91	79.9		ug/m3 Air		88	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	141		ug/m3 Air		101	64 - 124
Ethylbenzene	87	85.1		ug/m3 Air		98	76 - 136
4-Ethyltoluene	98	92.5		ug/m3 Air		94	62 - 136
Hexachlorobutadiene	210	179		ug/m3 Air		84	42 - 150
2-Hexanone	82	86.3		ug/m3 Air		105	70 - 128
Methylene Chloride	69	55.0		ug/m3 Air		79	65 - 125
4-Methyl-2-pentanone (MIBK)	82	75.7		ug/m3 Air		92	73 - 133
Styrene	85	87.3		ug/m3 Air		102	76 - 144
1,1,1,2-Tetrachloroethane	140	139		ug/m3 Air		101	75 - 135
Tetrachloroethene	140	132		ug/m3 Air		97	56 - 138
Toluene	75	71.9		ug/m3 Air		95	71 - 132
1,2,4-Trichlorobenzene	150	138		ug/m3 Air		93	59 - 150
1,1,1-Trichloroethane	110	98.7		ug/m3 Air		90	65 - 124
1,1,2-Trichloroethane	110	111		ug/m3 Air		102	71 - 131
Trichloroethene	110	105		ug/m3 Air		98	64 - 127
Trichlorofluoromethane	110	104		ug/m3 Air		92	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	133		ug/m3 Air		87	50 - 132
1,2,4-Trimethylbenzene	98	104		ug/m3 Air		106	61 - 145
1,3,5-Trimethylbenzene	98	95.2		ug/m3 Air		97	65 - 136
Vinyl acetate	70	64.3		ug/m3 Air		91	77 - 134
Vinyl chloride	51	47.9		ug/m3 Air		94	69 - 129
m,p-Xylene	170	169		ug/m3 Air		97	75 - 138
o-Xylene	87	84.7		ug/m3 Air		98	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		70 - 130
1,2-Dichloroethane-d4 (Surr)	90		70 - 130
Toluene-d8 (Surr)	98		70 - 130

**Lab Sample ID: LCSD 320-141637/4**  
**Matrix: Air**  
**Analysis Batch: 141637**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	16.5		ppb v/v		82	71 - 131	1	25
Benzene	20.0	19.0		ppb v/v		95	68 - 128	1	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-141637/4

Matrix: Air

Analysis Batch: 141637

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzyl chloride	20.0	16.3		ppb v/v		82	58 - 120	2	25
Bromodichloromethane	20.0	18.7		ppb v/v		93	65 - 130	1	25
Bromoform	20.0	20.3		ppb v/v		102	64 - 144	2	25
Bromomethane	20.0	21.0		ppb v/v		105	70 - 131	2	25
2-Butanone (MEK)	20.0	18.9		ppb v/v		95	71 - 131	0	25
Carbon disulfide	20.0	18.3		ppb v/v		92	63 - 123	2	25
Carbon tetrachloride	20.0	19.0		ppb v/v		95	67 - 127	1	25
Chlorobenzene	20.0	19.8		ppb v/v		99	70 - 132	2	25
Dibromochloromethane	20.0	19.6		ppb v/v		98	68 - 128	2	25
Chloroethane	20.0	19.9		ppb v/v		99	70 - 131	2	25
Chloroform	20.0	18.7		ppb v/v		94	69 - 129	2	25
Chloromethane	20.0	17.6		ppb v/v		88	67 - 127	0	25
1,2-Dibromoethane (EDB)	20.0	20.5		ppb v/v		102	68 - 131	2	25
1,2-Dichlorobenzene	20.0	20.7		ppb v/v		103	73 - 143	2	25
1,3-Dichlorobenzene	20.0	20.8		ppb v/v		104	77 - 136	2	25
1,4-Dichlorobenzene	20.0	20.9		ppb v/v		105	73 - 143	1	25
Dichlorodifluoromethane	20.0	18.1		ppb v/v		91	69 - 129	1	25
1,1-Dichloroethane	20.0	18.0		ppb v/v		90	65 - 125	1	25
1,2-Dichloroethane	20.0	17.8		ppb v/v		89	71 - 131	1	25
1,1-Dichloroethene	20.0	16.6		ppb v/v		83	53 - 128	2	25
cis-1,2-Dichloroethene	20.0	19.6		ppb v/v		98	68 - 128	2	25
trans-1,2-Dichloroethene	20.0	17.9		ppb v/v		90	70 - 130	1	25
1,2-Dichloropropane	20.0	18.6		ppb v/v		93	74 - 128	0	25
cis-1,3-Dichloropropene	20.0	21.0		ppb v/v		105	78 - 132	1	25
trans-1,3-Dichloropropene	20.0	17.9		ppb v/v		89	56 - 136	1	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	20.4		ppb v/v		102	64 - 124	1	25
Ethylbenzene	20.0	19.9		ppb v/v		100	76 - 136	2	25
4-Ethyltoluene	20.0	19.2		ppb v/v		96	62 - 136	2	25
Hexachlorobutadiene	20.0	17.2		ppb v/v		86	42 - 150	2	25
2-Hexanone	20.0	21.0		ppb v/v		105	70 - 128	0	25
Methylene Chloride	20.0	16.0		ppb v/v		80	65 - 125	1	25
4-Methyl-2-pentanone (MIBK)	20.0	18.7		ppb v/v		93	73 - 133	1	25
Styrene	20.0	20.8		ppb v/v		104	76 - 144	2	25
1,1,2,2-Tetrachloroethane	20.0	20.7		ppb v/v		103	75 - 135	2	25
Tetrachloroethene	20.0	19.8		ppb v/v		99	56 - 138	2	25
Toluene	20.0	19.4		ppb v/v		97	71 - 132	1	25
1,2,4-Trichlorobenzene	20.0	18.9		ppb v/v		94	59 - 150	1	25
1,1,1-Trichloroethane	20.0	18.4		ppb v/v		92	65 - 124	2	25
1,1,2-Trichloroethane	20.0	20.9		ppb v/v		104	71 - 131	2	25
Trichloroethene	20.0	19.9		ppb v/v		99	64 - 127	2	25
Trichlorofluoromethane	20.0	18.8		ppb v/v		94	68 - 128	2	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.7		ppb v/v		88	50 - 132	2	25
1,2,4-Trimethylbenzene	20.0	21.6		ppb v/v		108	61 - 145	2	25
1,3,5-Trimethylbenzene	20.0	19.7		ppb v/v		99	65 - 136	2	25
Vinyl acetate	20.0	18.4		ppb v/v		92	77 - 134	1	25
Vinyl chloride	20.0	18.8		ppb v/v		94	69 - 129	0	25
m,p-Xylene	40.0	39.7		ppb v/v		99	75 - 138	2	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-141637/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 141637

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
o-Xylene	20.0	20.0		ppb v/v		100	77 - 132	2	25
Acetone	48	39.2		ug/m3 Air		82	71 - 131	1	25
Benzene	64	60.6		ug/m3 Air		95	68 - 128	1	25
Benzyl chloride	100	84.6		ug/m3 Air		82	58 - 120	2	25
Bromodichloromethane	130	125		ug/m3 Air		93	65 - 130	1	25
Bromoform	210	210		ug/m3 Air		102	64 - 144	2	25
Bromomethane	78	81.5		ug/m3 Air		105	70 - 131	2	25
2-Butanone (MEK)	59	55.8		ug/m3 Air		95	71 - 131	0	25
Carbon disulfide	62	57.1		ug/m3 Air		92	63 - 123	2	25
Carbon tetrachloride	130	120		ug/m3 Air		95	67 - 127	1	25
Chlorobenzene	92	91.1		ug/m3 Air		99	70 - 132	2	25
Dibromochloromethane	170	167		ug/m3 Air		98	68 - 128	2	25
Chloroethane	53	52.5		ug/m3 Air		99	70 - 131	2	25
Chloroform	98	91.3		ug/m3 Air		94	69 - 129	2	25
Chloromethane	41	36.4		ug/m3 Air		88	67 - 127	0	25
1,2-Dibromoethane (EDB)	150	157		ug/m3 Air		102	68 - 131	2	25
1,2-Dichlorobenzene	120	124		ug/m3 Air		103	73 - 143	2	25
1,3-Dichlorobenzene	120	125		ug/m3 Air		104	77 - 136	2	25
1,4-Dichlorobenzene	120	126		ug/m3 Air		105	73 - 143	1	25
Dichlorodifluoromethane	99	89.5		ug/m3 Air		91	69 - 129	1	25
1,1-Dichloroethane	81	72.7		ug/m3 Air		90	65 - 125	1	25
1,2-Dichloroethane	81	72.1		ug/m3 Air		89	71 - 131	1	25
1,1-Dichloroethene	79	65.8		ug/m3 Air		83	53 - 128	2	25
cis-1,2-Dichloroethene	79	77.6		ug/m3 Air		98	68 - 128	2	25
trans-1,2-Dichloroethene	79	71.1		ug/m3 Air		90	70 - 130	1	25
1,2-Dichloropropane	92	85.9		ug/m3 Air		93	74 - 128	0	25
cis-1,3-Dichloropropene	91	95.2		ug/m3 Air		105	78 - 132	1	25
trans-1,3-Dichloropropene	91	81.0		ug/m3 Air		89	56 - 136	1	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	143		ug/m3 Air		102	64 - 124	1	25
Ethylbenzene	87	86.6		ug/m3 Air		100	76 - 136	2	25
4-Ethyltoluene	98	94.5		ug/m3 Air		96	62 - 136	2	25
Hexachlorobutadiene	210	183		ug/m3 Air		86	42 - 150	2	25
2-Hexanone	82	85.9		ug/m3 Air		105	70 - 128	0	25
Methylene Chloride	69	55.6		ug/m3 Air		80	65 - 125	1	25
4-Methyl-2-pentanone (MIBK)	82	76.6		ug/m3 Air		93	73 - 133	1	25
Styrene	85	88.8		ug/m3 Air		104	76 - 144	2	25
1,1,1,2-Tetrachloroethane	140	142		ug/m3 Air		103	75 - 135	2	25
Tetrachloroethene	140	135		ug/m3 Air		99	56 - 138	2	25
Toluene	75	72.9		ug/m3 Air		97	71 - 132	1	25
1,2,4-Trichlorobenzene	150	140		ug/m3 Air		94	59 - 150	1	25
1,1,1-Trichloroethane	110	101		ug/m3 Air		92	65 - 124	2	25
1,1,2-Trichloroethane	110	114		ug/m3 Air		104	71 - 131	2	25
Trichloroethene	110	107		ug/m3 Air		99	64 - 127	2	25
Trichlorofluoromethane	110	106		ug/m3 Air		94	68 - 128	2	25
1,1,2-Trichloro-1,2,2-trifluoroethane	150	136		ug/m3 Air		88	50 - 132	2	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-141637/4

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 141637

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,4-Trimethylbenzene	98	106		ug/m3 Air		108	61 - 145	2	25
1,3,5-Trimethylbenzene	98	97.1		ug/m3 Air		99	65 - 136	2	25
Vinyl acetate	70	64.7		ug/m3 Air		92	77 - 134	1	25
Vinyl chloride	51	48.1		ug/m3 Air		94	69 - 129	0	25
m,p-Xylene	170	172		ug/m3 Air		99	75 - 138	2	25
o-Xylene	87	86.7		ug/m3 Air		100	77 - 132	2	25

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
4-Bromofluorobenzene (Surr)	106		70 - 130
1,2-Dichloroethane-d4 (Surr)	91		70 - 130
Toluene-d8 (Surr)	98		70 - 130

# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Air - GC/MS VOA

### Analysis Batch: 141172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23875-1	SVE_SOUTH_PRECARBON_112816	Total/NA	Air	TO-15	
320-23875-2	SVE_SOUTH_POSTCARBON_112816	Total/NA	Air	TO-15	
MB 320-141172/9	Method Blank	Total/NA	Air	TO-15	
LCS 320-141172/4	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-141172/5	Lab Control Sample Dup	Total/NA	Air	TO-15	

### Analysis Batch: 141637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23875-3	SVE_NORTH_EFFLUENT_112816	Total/NA	Air	TO-15	
MB 320-141637/6	Method Blank	Total/NA	Air	TO-15	
LCS 320-141637/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-141637/4	Lab Control Sample Dup	Total/NA	Air	TO-15	

# Lab Chronicle

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

**Client Sample ID: SVE\_SOUTH\_PRECARBON\_112816**

**Lab Sample ID: 320-23875-1**

Date Collected: 11/28/16 08:11

Matrix: Air

Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		212	1.94 mL	250 mL	141172	12/09/16 06:54	AP1	TAL SAC

**Client Sample ID: SVE\_SOUTH\_POSTCARBON\_112816**

**Lab Sample ID: 320-23875-2**

Date Collected: 11/28/16 08:14

Matrix: Air

Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		65	6.49 mL	250 mL	141172	12/09/16 08:38	AP1	TAL SAC

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_112816**

**Lab Sample ID: 320-23875-3**

Date Collected: 11/28/16 07:47

Matrix: Air

Date Received: 11/30/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	426 mL	250 mL	141637	12/12/16 17:48	AP1	TAL SAC

## Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Certification Summary

Client: Apex Companies LLC  
 Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-17
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
USDA	Federal		P330-11-00092	04-17-17

# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

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Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vapor Testing

TestAmerica Job ID: 320-23875-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23875-1	SVE_SOUTH_PRECARBON_112816	Air	11/28/16 08:11	11/30/16 09:30
320-23875-2	SVE_SOUTH_POSTCARBON_112816	Air	11/28/16 08:14	11/30/16 09:30
320-23875-3	SVE_NORTH_EFFLUENT_112816	Air	11/28/16 07:47	11/30/16 09:30

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**TestAmerica Sacramento**  
880 Riverside Parkway

West Sacramento, CA 95605  
phone 916.374.4378 fax 916.372.1059

**Client Contact Information**

Company Name: *Apex Company's*  
Address: *3015 SW 1st Ave*  
City/State/Zip: *Portland OR 97201*  
Phone: *503-924-4704*  
FAX:  
Project Name: *Mushar Vancouver RBM*  
Site/Location: *Mushar Vancouver*  
PO# *1126-18*

Project Manager: *Stephen Salisbury*  
Phone: *503 924 4704 x 1925*  
Email: *Salisbury@ApexCos.com*  
Site Contact:  
TA Contact:  
Analysis Turnaround Time  
Standard (Specific):  
Rush (Specify):

Samples Collected By: *Kyle Kline*

COC No: \_\_\_\_\_ of \_\_\_\_\_ COCs

For Lab Use Only:  
Walk-in Client  
Lab Sampling:  
Job / SDG No.:  
(See below for Add'l Items)

Sample Specific Notes:

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

**Canister Samples Chain of Custody Record**

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, 'Hg (Start)	Canister Vacuum in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	TO-15 (Med / Std / Low / SIM)		MA-APH	EPA 3C	EPA 25C / 25.3	ASTM D-1946 / 1945 / 3688	EPA 15/16	TO-3	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)		
								X	X															
SVE-South-Pre carbon - 11/28/16	11/28/16	0810	0811	-30	-3	-	34002	X																
SVE-South-Post carbon - 11/28/16	11/28/16	0813	0814	-30	-3	-	8035	X																
SVE-North-BEELWEAT - 11/28/16	11/28/16	0746	0747	-30	-3	-	31000	X																



Special Instructions/QC Requirements & Comments:  
*Email Results to: Salisbury@ApexCos.com*

Samples Shipped by: <i>Kyle Kline</i>	Date / Time: <i>11/29 2pm</i>	Samples Received by: <i>Mushar DeLagana / M.E</i>
Samples Relinquished by: <i>Kyle Kline Apex</i>	Date / Time: <i>11/28/16 1300</i>	Received by:
Relinquished by: <i>Mushar DeLagana</i>	Date / Time: <i>11/29/16 3:20</i>	Received by: <i>[Signature]</i>
Lab Use Only:	Shipper Name:	Condition:

*Rec'd by: Lure 2 EK 11/30/16 0930*

Form No. CA-C-WI-003, Rev. 1, dated 05/10/2013



# Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-23875-1

**Login Number: 23875**  
**List Number: 1**  
**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





Certification Type TOIS SCAN  
 Date Cleaned/Batch ID 11/03/16, 320-23279  
 Date of QC 11/8/16  
 Data File Number MS9110819

**CANISTER ID NUMBERS**

<u>34000927*</u>	<u>34000355</u>	_____
<u>34000784</u>	<u>34000276</u>	_____
<u>8177</u>	<u>34000164</u>	_____
<u>8025</u>	<u>34002020</u>	_____
<u>34000219</u>	_____	_____
<u>3545</u>	_____	_____
<u>34000202</u>	_____	_____
<u>34000053</u>	_____	_____

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

AV for AP  
1<sup>st</sup> level Reviewed By:

11/9/16  
Date:

[Signature]  
2nd level Reviewed By:

11/9/16  
Date:



Certification Type TO-15 (SCAN)  
 Date Cleaned/Batch ID D11-22-16 320 23804  
 Date of QC 11/23/2016  
 Data File Number C:\msdchem\1\DATA\161123\



MS7112319.d

**CANISTER ID NUMBERS**

* 34001026	34000963	
34000230	34001244	
34000897	34000630	
34001093	34001788	
34000659	10605	
34000641	<sup>112316</sup> 34001115	
8505	10838	
34000668	10749	

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

[Signature]  
1<sup>st</sup> level Reviewed By:

11/28/16  
Date:

[Signature]  
2nd level Reviewed By:

12/2/16  
Date:

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23279-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000927 Lab Sample ID: 320-23279-1  
 Matrix: Air Lab File ID: MS9110819.D  
 Analysis Method: TO-15 Date Collected: 11/03/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 11/09/2016 03:19  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 136642 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.27
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23279-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000927 Lab Sample ID: 320-23279-1  
 Matrix: Air Lab File ID: MS9110819.D  
 Analysis Method: TO-15 Date Collected: 11/03/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 11/09/2016 03:19  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 136642 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.12
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	0.11	J	0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	0.26	J	0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.21
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23279-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34000927 Lab Sample ID: 320-23279-1  
 Matrix: Air Lab File ID: MS9110819.D  
 Analysis Method: TO-15 Date Collected: 11/03/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 11/09/2016 03:19  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 136642 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	91		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	100		70-130
2037-26-5	Toluene-d8 (Surr)	102		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20161108-36628.b\MS9110819.D  
 Lims ID: 320-23279-A-1  
 Client ID: 34000927  
 Sample Type: Client  
 Inject. Date: 09-Nov-2016 03:19:30 ALS Bottle#: 2 Worklist Smp#: 19  
 Purge Vol: 5.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-23279-A-1  
 Misc. Info.: 500  
 Operator ID: SV Instrument ID: ATMS9  
 Method: \\ChromNA\Sacramento\ChromData\ATMS9\20161108-36628.b\TO15\_ATMS9N.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 09-Nov-2016 19:11:45 Calib Date: 14-Oct-2016 22:01:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20161014-35678.b\MS9101412.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK029

First Level Reviewer: phanthasena

Date:

09-Nov-2016 19:11:45

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.412	12.412	0.000	94	60869	4.00	
* 2 1,4-Difluorobenzene	114	14.511	14.517	-0.006	96	256019	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.436	20.436	0.000	89	225969	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.586	13.592	-0.006	96	82487	3.99	
\$ 5 Toluene-d8 (Surr)	100	17.680	17.686	-0.006	98	156069	4.08	
\$ 6 4-Bromofluorobenzene (Surr	174	22.352	22.352	0.000	88	119495	3.65	
14 Propene	41	4.199	4.163	0.037	69	4218	0.2649	
15 Dichlorodifluoromethane	85	4.266	4.229	0.037	94	1330	0.0330	
18 Chloromethane	50	4.746	4.692	0.054	31	913	0.0604	
22 Butane	43	4.972	4.929	0.043	87	1172	0.0449	
31 Acetone	43	7.727	7.630	0.097	89	3878	0.1311	
47 Methylene Chloride	49	8.956	8.938	0.018	93	2498	0.1065	

**Reagents:**

VAMSIS20\_00002

Amount Added: 50.00

Units: mL

Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20161108-36628.b\MS9110819.D

Injection Date: 09-Nov-2016 03:19:30

Instrument ID: ATMS9

Operator ID: SV

Lims ID: 320-23279-A-1

Lab Sample ID: 320-23279-1

Worklist Smp#: 19

Client ID: 34000927

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

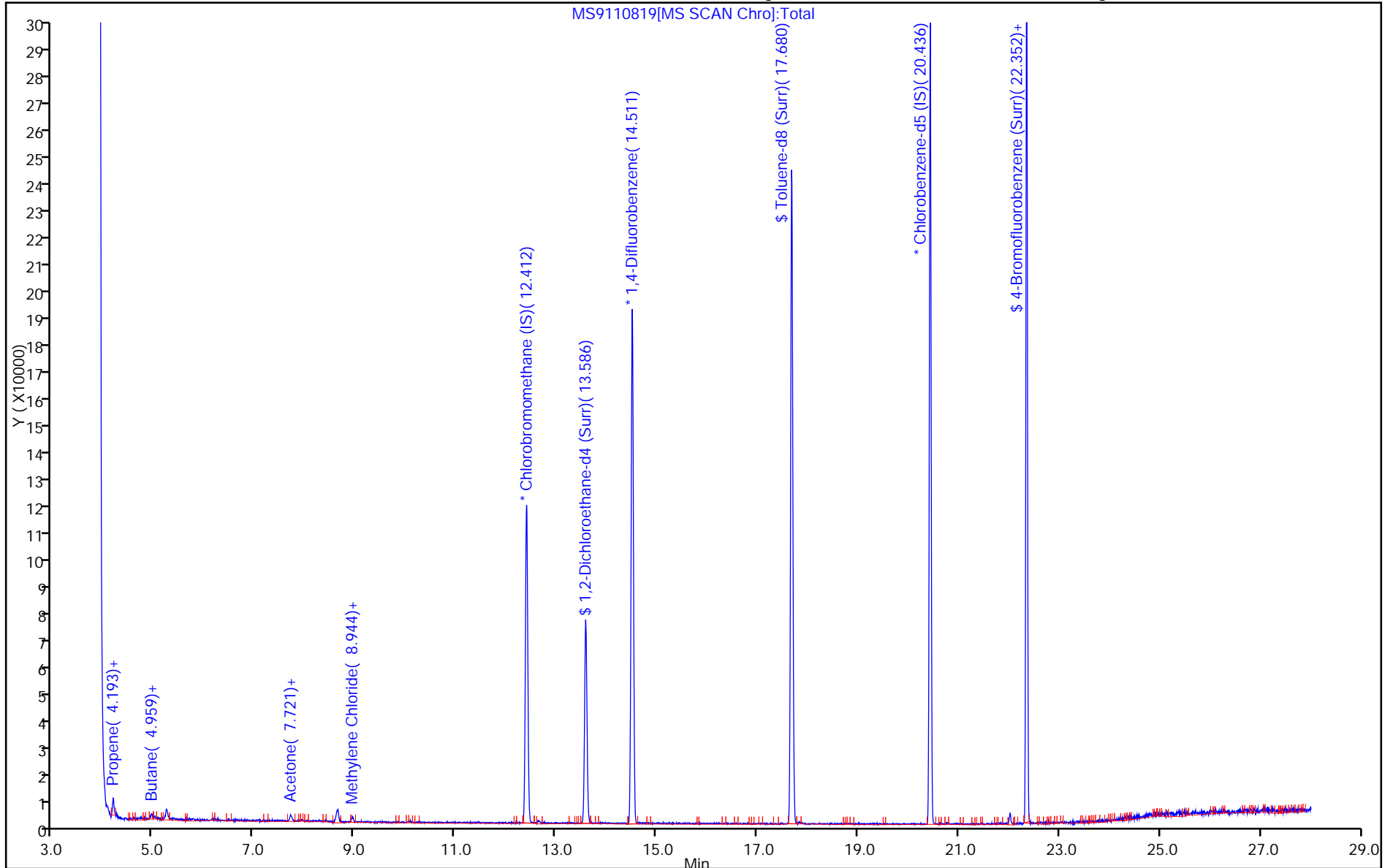
ALS Bottle#: 2

Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20161108-36628.b\MS9110819.D

Injection Date: 09-Nov-2016 03:19:30

Instrument ID: ATMS9

Lims ID: 320-23279-A-1

Lab Sample ID: 320-23279-1

Client ID: 34000927

Operator ID: SV

ALS Bottle#: 2 Worklist Smp#: 19

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

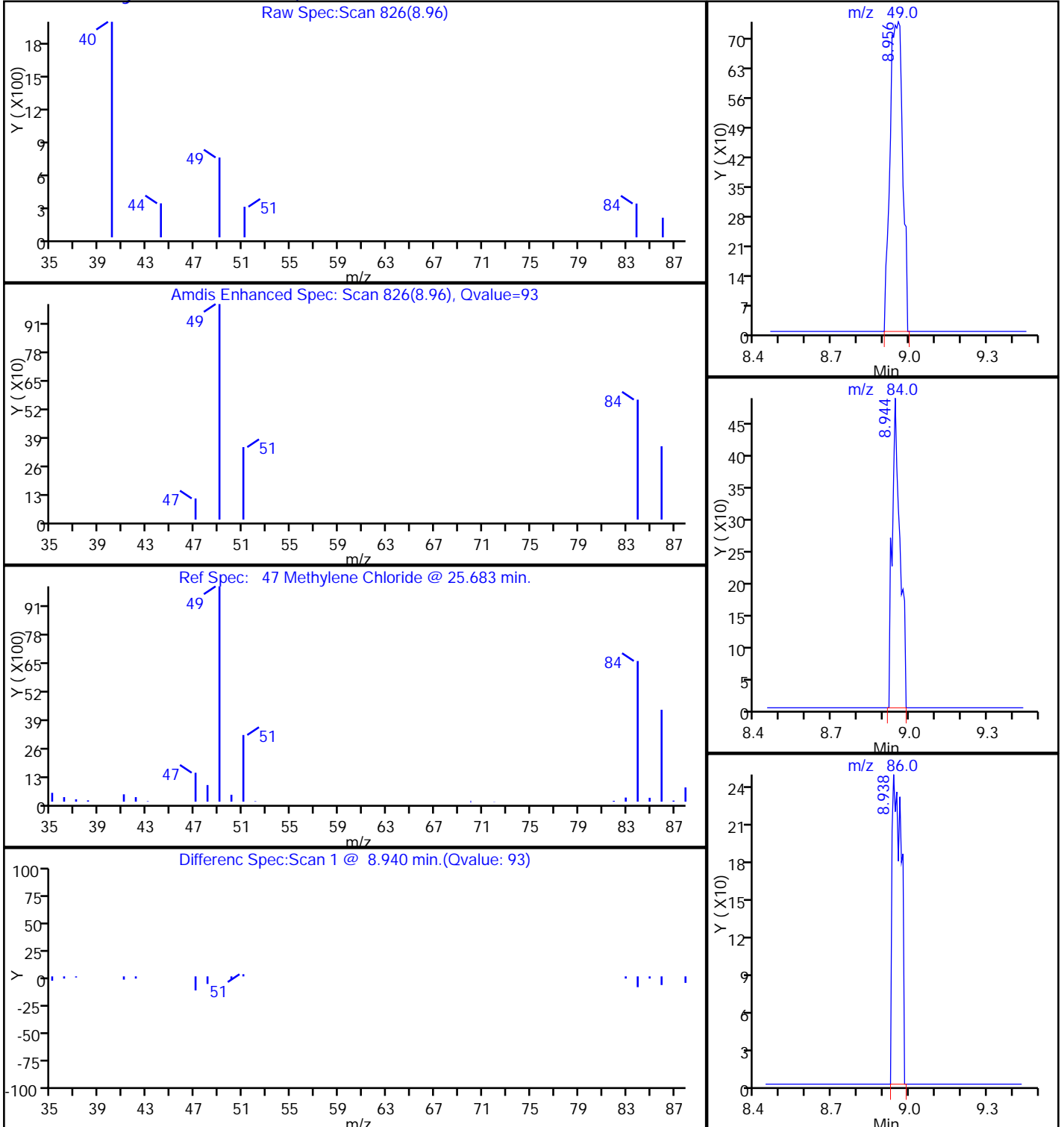
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

47 Methylene Chloride, CAS: 75-09-2



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20161108-36628.b\MS9110819.D

Injection Date: 09-Nov-2016 03:19:30

Instrument ID: ATMS9

Lims ID: 320-23279-A-1

Lab Sample ID: 320-23279-1

Client ID: 34000927

Operator ID: SV

ALS Bottle#: 2 Worklist Smp#: 19

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

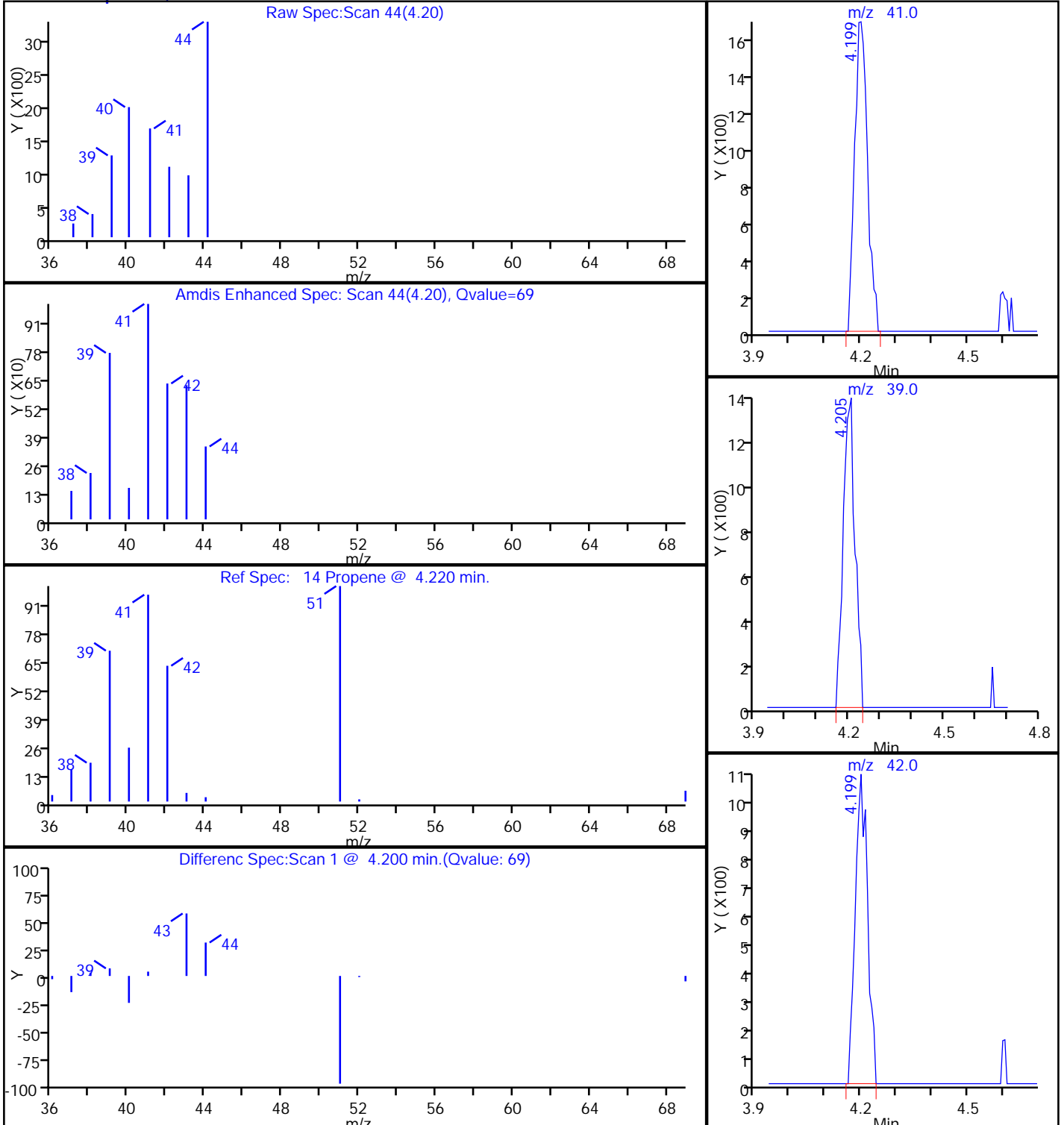
Method: TO15\_ATMS9N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

14 Propene, CAS: 115-07-1



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23804-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001026 Lab Sample ID: 320-23804-1  
 Matrix: Air Lab File ID: MS7112319.D  
 Analysis Method: TO-15 Date Collected: 11/22/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 11/24/2016 03:45  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 139339 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.52	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.27
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23804-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001026 Lab Sample ID: 320-23804-1  
 Matrix: Air Lab File ID: MS7112319.D  
 Analysis Method: TO-15 Date Collected: 11/22/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 11/24/2016 03:45  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 139339 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.12
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.21
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067



FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23804-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001026 Lab Sample ID: 320-23804-1  
 Matrix: Air Lab File ID: MS7112319.D  
 Analysis Method: TO-15 Date Collected: 11/22/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 11/24/2016 03:45  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 139339 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	85		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	118		70-130
2037-26-5	Toluene-d8 (Surr)	101		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20161123-37215.b\MS7112319.D  
 Lims ID: 320-23804-A-1  
 Client ID: 34001026  
 Sample Type: Client  
 Inject. Date: 24-Nov-2016 03:45:30 ALS Bottle#: 4 Worklist Smp#: 19  
 Purge Vol: 5.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-23804-A-1  
 Misc. Info.: 500 mL CAN CERT  
 Operator ID: LHS Instrument ID: ATMS7  
 Method: \\ChromNA\Sacramento\ChromData\ATMS7\20161123-37215.b\TO15\_ATMS7N.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 25-Nov-2016 12:04:11 Calib Date: 11-Nov-2016 18:11:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS7\20161111-36770.b\MS7111111.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK028

First Level Reviewer: phanthasena Date: 25-Nov-2016 12:04:11

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.245	12.233	0.012	89	46351	4.00	
* 2 1,4-Difluorobenzene	114	14.399	14.386	0.013	94	186134	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.078	21.072	0.006	88	175054	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	13.444	13.431	0.013	98	73717	4.72	
\$ 5 Toluene-d8 (Surr)	100	17.799	17.793	0.006	96	111950	4.04	
\$ 6 4-Bromofluorobenzene (Surr	95	23.627	23.621	0.006	91	74366	3.42	
11 Propene	41	3.838	3.813	0.025	41	314	0.0474	
32 Acetone	43	7.366	7.281	0.085	99	8937	0.5199	

Reagents:

VAMIS20\_00002 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20161123-37215.b\MS7112319.D

Injection Date: 24-Nov-2016 03:45:30

Instrument ID: ATMS7

Operator ID: LHS

Lims ID: 320-23804-A-1

Lab Sample ID: 320-23804-1

Worklist Smp#: 19

Client ID: 34001026

Purge Vol: 5.000 mL

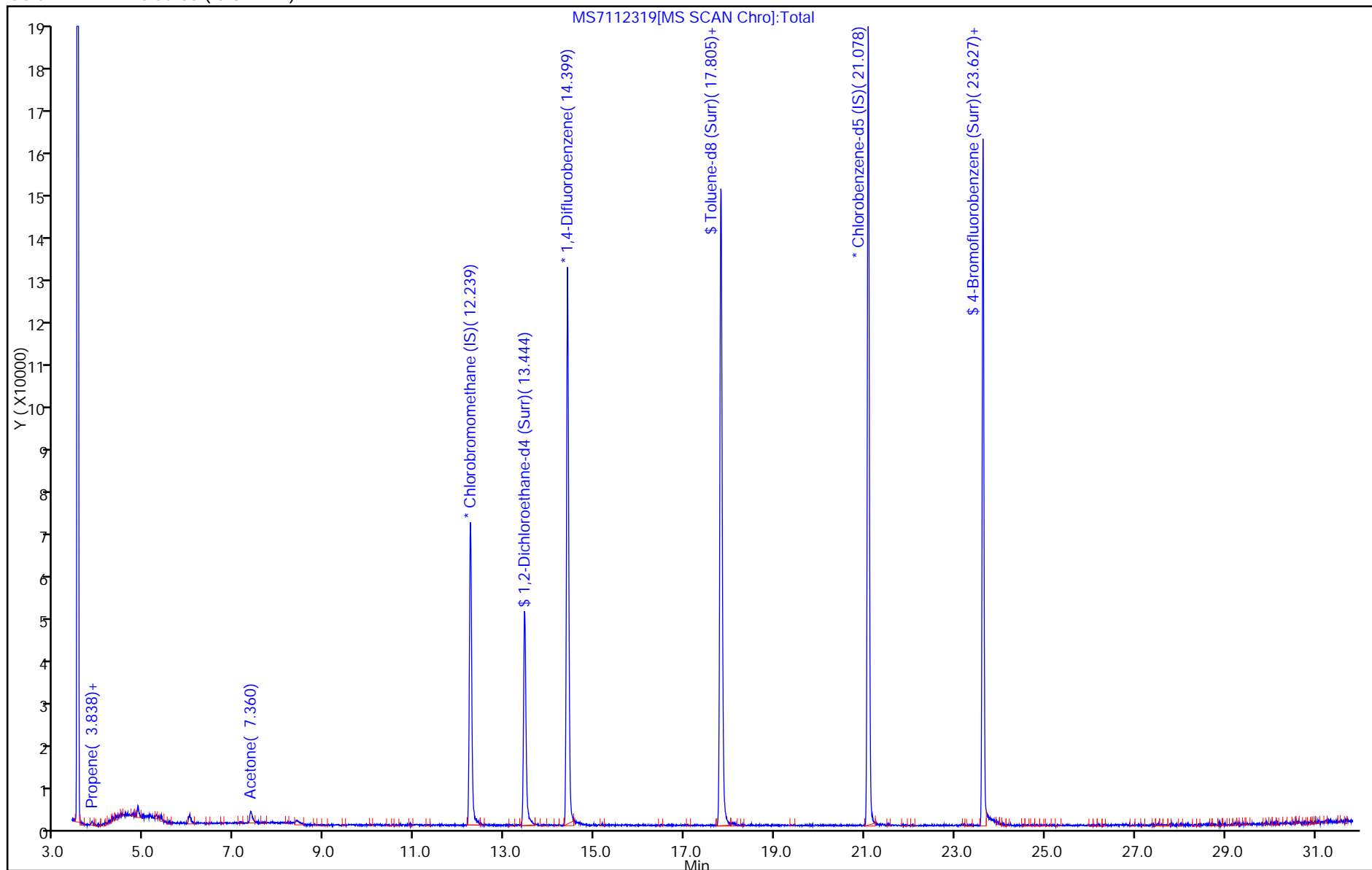
Dil. Factor: 1.0000

ALS Bottle#: 4

Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles (0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS7\20161123-37215.b\MS7112319.D

Injection Date: 24-Nov-2016 03:45:30

Instrument ID: ATMS7

Lims ID: 320-23804-A-1

Lab Sample ID: 320-23804-1

Client ID: 34001026

Operator ID: LHS

ALS Bottle#: 4 Worklist Smp#: 19

Purge Vol: 5.000 mL

Dil. Factor: 1.0000

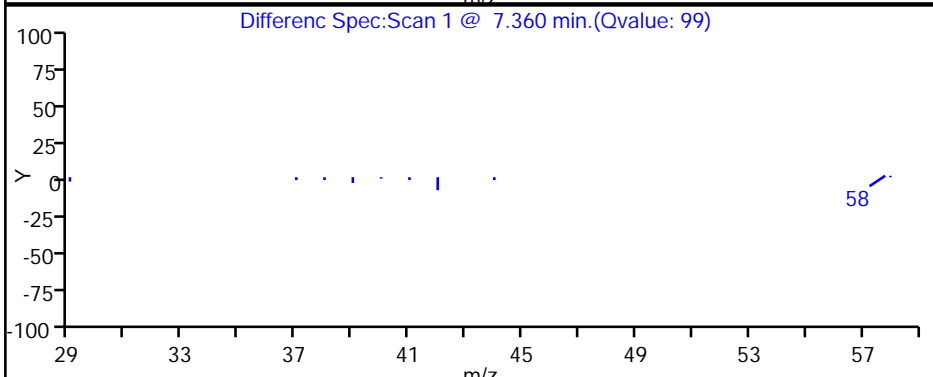
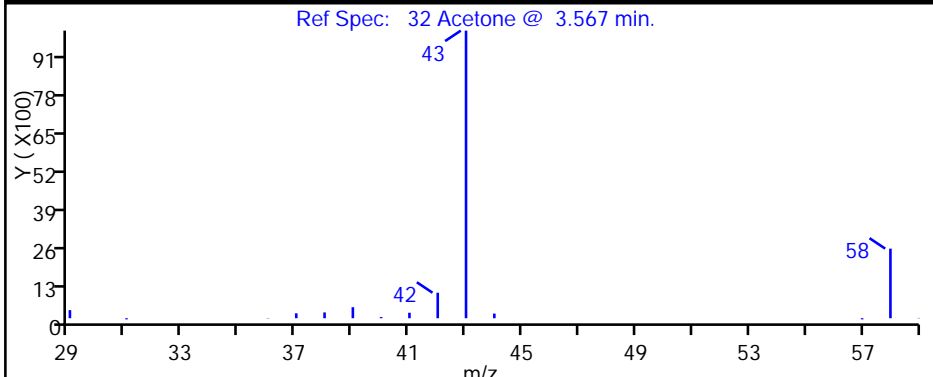
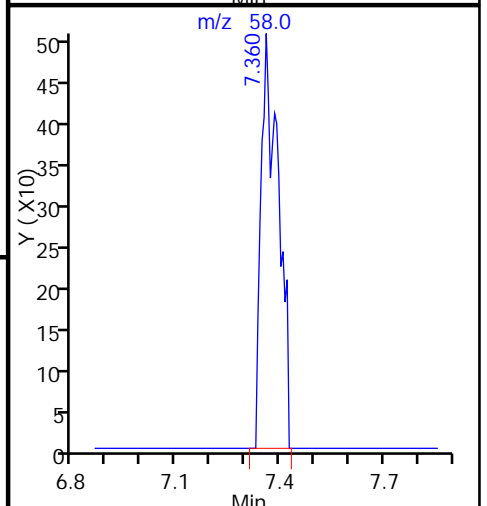
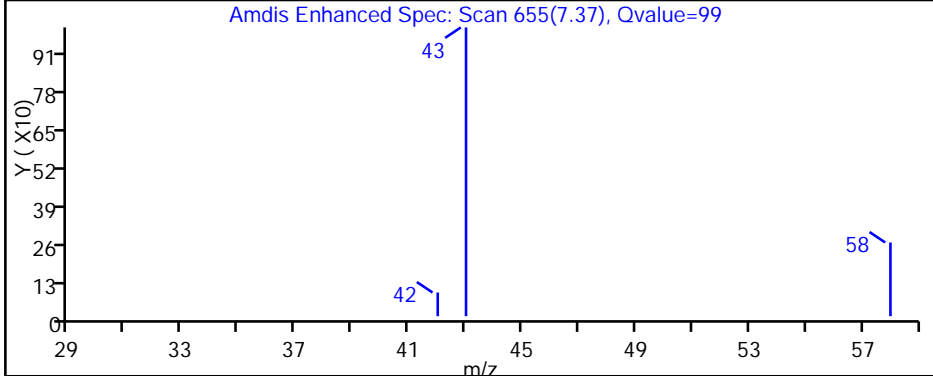
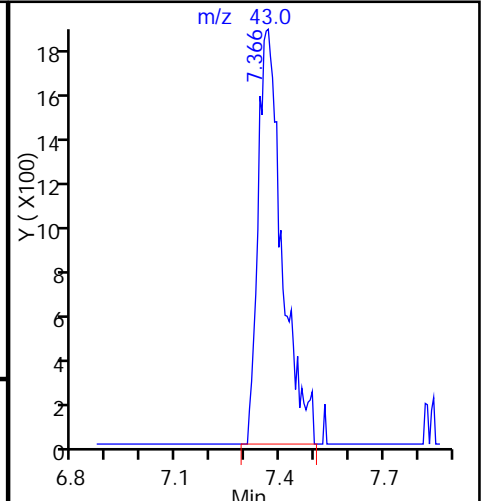
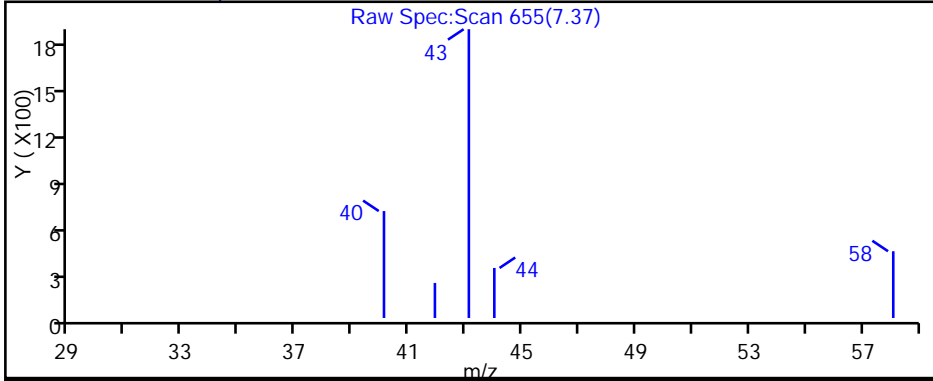
Method: TO15\_ATMS7N

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



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# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Sacramento  
880 Riverside Parkway  
West Sacramento, CA 95605  
Tel: (916)373-5600

TestAmerica Job ID: 320-24746-1  
Client Project/Site: NuStar Vancouver REM

For:  
Apex Companies LLC  
3015 SW 1st Avenue  
Portland, Oregon 97201

Attn: Stephanie Salisbury



Authorized for release by:  
1/12/2017 10:22:42 AM

Cathy Gamble, Project Manager I  
(253)922-2310  
[cathy.gamble@testamericainc.com](mailto:cathy.gamble@testamericainc.com)



### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Definitions/Glossary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Qualifiers

### Air - GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Case Narrative

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

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**Job ID: 320-24746-1**

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**Laboratory: TestAmerica Sacramento**

## Narrative

### Receipt

The sample was received on 1/3/2017 9:20 AM; the sample arrived in good condition, properly preserved and, where required, on ice.

### Air - GC/MS VOA

Method(s) TO-15: The laboratory control sample (LCS) for analytical batch 320-145554 recovered outside control limits for the following analytes: Carbon Tetrachloride. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method(s) TO-15: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 320-145554 recovered outside control limits for the following analytes: Vinyl acetate. This analyte was biased high in the LCS/LCSD and was not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.





# Detection Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_122816**

**Lab Sample ID: 320-24746-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	0.48		0.40		ppb v/v	1		TO-15	Total/NA
Toluene	0.46		0.40		ppb v/v	1		TO-15	Total/NA
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorodifluoromethane	2.4		2.0		ug/m3 Air	1		TO-15	Total/NA
Toluene	1.7		1.5		ug/m3 Air	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_122816**

**Lab Sample ID: 320-24746-1**

**Date Collected: 12/28/16 08:05**

**Matrix: Air**

**Date Received: 01/03/17 09:20**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			01/10/17 03:51	1
Benzene	ND		0.40		ppb v/v			01/10/17 03:51	1
Benzyl chloride	ND		0.80		ppb v/v			01/10/17 03:51	1
Bromodichloromethane	ND		0.30		ppb v/v			01/10/17 03:51	1
Bromoform	ND		0.40		ppb v/v			01/10/17 03:51	1
Bromomethane	ND		0.80		ppb v/v			01/10/17 03:51	1
2-Butanone (MEK)	ND		0.80		ppb v/v			01/10/17 03:51	1
Carbon disulfide	ND		0.80		ppb v/v			01/10/17 03:51	1
Carbon tetrachloride	ND	*	0.80		ppb v/v			01/10/17 03:51	1
Chlorobenzene	ND		0.30		ppb v/v			01/10/17 03:51	1
Dibromochloromethane	ND		0.40		ppb v/v			01/10/17 03:51	1
Chloroethane	ND		0.80		ppb v/v			01/10/17 03:51	1
Chloroform	ND		0.30		ppb v/v			01/10/17 03:51	1
Chloromethane	ND		0.80		ppb v/v			01/10/17 03:51	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			01/10/17 03:51	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			01/10/17 03:51	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			01/10/17 03:51	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			01/10/17 03:51	1
<b>Dichlorodifluoromethane</b>	<b>0.48</b>		0.40		ppb v/v			01/10/17 03:51	1
1,1-Dichloroethane	ND		0.30		ppb v/v			01/10/17 03:51	1
1,2-Dichloroethane	ND		0.80		ppb v/v			01/10/17 03:51	1
1,1-Dichloroethene	ND		0.80		ppb v/v			01/10/17 03:51	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			01/10/17 03:51	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			01/10/17 03:51	1
1,2-Dichloropropane	ND		0.40		ppb v/v			01/10/17 03:51	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			01/10/17 03:51	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			01/10/17 03:51	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			01/10/17 03:51	1
Ethylbenzene	ND		0.40		ppb v/v			01/10/17 03:51	1
4-Ethyltoluene	ND		0.40		ppb v/v			01/10/17 03:51	1
Hexachlorobutadiene	ND		2.0		ppb v/v			01/10/17 03:51	1
2-Hexanone	ND		0.40		ppb v/v			01/10/17 03:51	1
Methylene Chloride	ND		0.40		ppb v/v			01/10/17 03:51	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			01/10/17 03:51	1
Styrene	ND		0.40		ppb v/v			01/10/17 03:51	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			01/10/17 03:51	1
Tetrachloroethene	ND		0.40		ppb v/v			01/10/17 03:51	1
<b>Toluene</b>	<b>0.46</b>		0.40		ppb v/v			01/10/17 03:51	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			01/10/17 03:51	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			01/10/17 03:51	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			01/10/17 03:51	1
Trichloroethene	ND		0.40		ppb v/v			01/10/17 03:51	1
Trichlorofluoromethane	ND		0.40		ppb v/v			01/10/17 03:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			01/10/17 03:51	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			01/10/17 03:51	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			01/10/17 03:51	1
Vinyl acetate	ND	*	0.80		ppb v/v			01/10/17 03:51	1
Vinyl chloride	ND		0.40		ppb v/v			01/10/17 03:51	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_122816**

**Lab Sample ID: 320-24746-1**

**Date Collected: 12/28/16 08:05**

**Matrix: Air**

**Date Received: 01/03/17 09:20**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		0.80		ppb v/v			01/10/17 03:51	1
o-Xylene	ND		0.40		ppb v/v			01/10/17 03:51	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3 Air			01/10/17 03:51	1
Benzene	ND		1.3		ug/m3 Air			01/10/17 03:51	1
Benzyl chloride	ND		4.1		ug/m3 Air			01/10/17 03:51	1
Bromodichloromethane	ND		2.0		ug/m3 Air			01/10/17 03:51	1
Bromoform	ND		4.1		ug/m3 Air			01/10/17 03:51	1
Bromomethane	ND		3.1		ug/m3 Air			01/10/17 03:51	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			01/10/17 03:51	1
Carbon disulfide	ND		2.5		ug/m3 Air			01/10/17 03:51	1
Carbon tetrachloride	ND	*	5.0		ug/m3 Air			01/10/17 03:51	1
Chlorobenzene	ND		1.4		ug/m3 Air			01/10/17 03:51	1
Dibromochloromethane	ND		3.4		ug/m3 Air			01/10/17 03:51	1
Chloroethane	ND		2.1		ug/m3 Air			01/10/17 03:51	1
Chloroform	ND		1.5		ug/m3 Air			01/10/17 03:51	1
Chloromethane	ND		1.7		ug/m3 Air			01/10/17 03:51	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			01/10/17 03:51	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			01/10/17 03:51	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			01/10/17 03:51	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			01/10/17 03:51	1
<b>Dichlorodifluoromethane</b>	<b>2.4</b>		2.0		ug/m3 Air			01/10/17 03:51	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			01/10/17 03:51	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			01/10/17 03:51	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			01/10/17 03:51	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			01/10/17 03:51	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			01/10/17 03:51	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			01/10/17 03:51	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			01/10/17 03:51	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			01/10/17 03:51	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			01/10/17 03:51	1
Ethylbenzene	ND		1.7		ug/m3 Air			01/10/17 03:51	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			01/10/17 03:51	1
Hexachlorobutadiene	ND		21		ug/m3 Air			01/10/17 03:51	1
2-Hexanone	ND		1.6		ug/m3 Air			01/10/17 03:51	1
Methylene Chloride	ND		1.4		ug/m3 Air			01/10/17 03:51	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			01/10/17 03:51	1
Styrene	ND		1.7		ug/m3 Air			01/10/17 03:51	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			01/10/17 03:51	1
Tetrachloroethene	ND		2.7		ug/m3 Air			01/10/17 03:51	1
<b>Toluene</b>	<b>1.7</b>		1.5		ug/m3 Air			01/10/17 03:51	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			01/10/17 03:51	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			01/10/17 03:51	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			01/10/17 03:51	1
Trichloroethene	ND		2.1		ug/m3 Air			01/10/17 03:51	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			01/10/17 03:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			01/10/17 03:51	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			01/10/17 03:51	1

TestAmerica Sacramento

# Client Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_122816**

**Lab Sample ID: 320-24746-1**

**Date Collected: 12/28/16 08:05**

**Matrix: Air**

**Date Received: 01/03/17 09:20**

**Sample Container: Summa Canister 6L**

**Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			01/10/17 03:51	1
Vinyl acetate	ND	*	2.8		ug/m3 Air			01/10/17 03:51	1
Vinyl chloride	ND		1.0		ug/m3 Air			01/10/17 03:51	1
m,p-Xylene	ND		3.5		ug/m3 Air			01/10/17 03:51	1
o-Xylene	ND		1.7		ug/m3 Air			01/10/17 03:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		70 - 130		01/10/17 03:51	1
1,2-Dichloroethane-d4 (Surr)	103		70 - 130		01/10/17 03:51	1
Toluene-d8 (Surr)	101		70 - 130		01/10/17 03:51	1

# Surrogate Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (70-130)	12DCE (70-130)	TOL (70-130)
320-24746-1	SVE_NORTH_EFFLUENT_1228	106	103	101
LCS 320-145554/4	Lab Control Sample	110	107	106
LCS 320-145554/6	Lab Control Sample	105	95	100
LCSD 320-145554/5	Lab Control Sample Dup	113	103	105
LCSD 320-145554/7	Lab Control Sample Dup	106	94	100
MB 320-145554/9	Method Blank	100	99	101

#### Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 320-145554/9

Matrix: Air

Analysis Batch: 145554

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			01/09/17 17:23	1
Benzene	ND		0.40		ppb v/v			01/09/17 17:23	1
Benzyl chloride	ND		0.80		ppb v/v			01/09/17 17:23	1
Bromodichloromethane	ND		0.30		ppb v/v			01/09/17 17:23	1
Bromoform	ND		0.40		ppb v/v			01/09/17 17:23	1
Bromomethane	ND		0.80		ppb v/v			01/09/17 17:23	1
2-Butanone (MEK)	ND		0.80		ppb v/v			01/09/17 17:23	1
Carbon disulfide	ND		0.80		ppb v/v			01/09/17 17:23	1
Carbon tetrachloride	ND		0.80		ppb v/v			01/09/17 17:23	1
Chlorobenzene	ND		0.30		ppb v/v			01/09/17 17:23	1
Dibromochloromethane	ND		0.40		ppb v/v			01/09/17 17:23	1
Chloroethane	ND		0.80		ppb v/v			01/09/17 17:23	1
Chloroform	ND		0.30		ppb v/v			01/09/17 17:23	1
Chloromethane	ND		0.80		ppb v/v			01/09/17 17:23	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			01/09/17 17:23	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			01/09/17 17:23	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			01/09/17 17:23	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			01/09/17 17:23	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			01/09/17 17:23	1
1,1-Dichloroethane	ND		0.30		ppb v/v			01/09/17 17:23	1
1,2-Dichloroethane	ND		0.80		ppb v/v			01/09/17 17:23	1
1,1-Dichloroethene	ND		0.80		ppb v/v			01/09/17 17:23	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			01/09/17 17:23	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			01/09/17 17:23	1
1,2-Dichloropropane	ND		0.40		ppb v/v			01/09/17 17:23	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			01/09/17 17:23	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			01/09/17 17:23	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			01/09/17 17:23	1
Ethylbenzene	ND		0.40		ppb v/v			01/09/17 17:23	1
4-Ethyltoluene	ND		0.40		ppb v/v			01/09/17 17:23	1
Hexachlorobutadiene	ND		2.0		ppb v/v			01/09/17 17:23	1
2-Hexanone	ND		0.40		ppb v/v			01/09/17 17:23	1
Methylene Chloride	ND		0.40		ppb v/v			01/09/17 17:23	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			01/09/17 17:23	1
Styrene	ND		0.40		ppb v/v			01/09/17 17:23	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			01/09/17 17:23	1
Tetrachloroethene	ND		0.40		ppb v/v			01/09/17 17:23	1
Toluene	ND		0.40		ppb v/v			01/09/17 17:23	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			01/09/17 17:23	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			01/09/17 17:23	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			01/09/17 17:23	1
Trichloroethene	ND		0.40		ppb v/v			01/09/17 17:23	1
Trichlorofluoromethane	ND		0.40		ppb v/v			01/09/17 17:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			01/09/17 17:23	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			01/09/17 17:23	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			01/09/17 17:23	1
Vinyl acetate	ND		0.80		ppb v/v			01/09/17 17:23	1
Vinyl chloride	ND		0.40		ppb v/v			01/09/17 17:23	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-145554/9**  
**Matrix: Air**  
**Analysis Batch: 145554**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
m,p-Xylene	ND		0.80		ppb v/v			01/09/17 17:23	1
o-Xylene	ND		0.40		ppb v/v			01/09/17 17:23	1
Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	ND		12		ug/m3 Air			01/09/17 17:23	1
Benzene	ND		1.3		ug/m3 Air			01/09/17 17:23	1
Benzyl chloride	ND		4.1		ug/m3 Air			01/09/17 17:23	1
Bromodichloromethane	ND		2.0		ug/m3 Air			01/09/17 17:23	1
Bromoform	ND		4.1		ug/m3 Air			01/09/17 17:23	1
Bromomethane	ND		3.1		ug/m3 Air			01/09/17 17:23	1
2-Butanone (MEK)	ND		2.4		ug/m3 Air			01/09/17 17:23	1
Carbon disulfide	ND		2.5		ug/m3 Air			01/09/17 17:23	1
Carbon tetrachloride	ND		5.0		ug/m3 Air			01/09/17 17:23	1
Chlorobenzene	ND		1.4		ug/m3 Air			01/09/17 17:23	1
Dibromochloromethane	ND		3.4		ug/m3 Air			01/09/17 17:23	1
Chloroethane	ND		2.1		ug/m3 Air			01/09/17 17:23	1
Chloroform	ND		1.5		ug/m3 Air			01/09/17 17:23	1
Chloromethane	ND		1.7		ug/m3 Air			01/09/17 17:23	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3 Air			01/09/17 17:23	1
1,2-Dichlorobenzene	ND		2.4		ug/m3 Air			01/09/17 17:23	1
1,3-Dichlorobenzene	ND		2.4		ug/m3 Air			01/09/17 17:23	1
1,4-Dichlorobenzene	ND		2.4		ug/m3 Air			01/09/17 17:23	1
Dichlorodifluoromethane	ND		2.0		ug/m3 Air			01/09/17 17:23	1
1,1-Dichloroethane	ND		1.2		ug/m3 Air			01/09/17 17:23	1
1,2-Dichloroethane	ND		3.2		ug/m3 Air			01/09/17 17:23	1
1,1-Dichloroethene	ND		3.2		ug/m3 Air			01/09/17 17:23	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3 Air			01/09/17 17:23	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3 Air			01/09/17 17:23	1
1,2-Dichloropropane	ND		1.8		ug/m3 Air			01/09/17 17:23	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3 Air			01/09/17 17:23	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3 Air			01/09/17 17:23	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3 Air			01/09/17 17:23	1
Ethylbenzene	ND		1.7		ug/m3 Air			01/09/17 17:23	1
4-Ethyltoluene	ND		2.0		ug/m3 Air			01/09/17 17:23	1
Hexachlorobutadiene	ND		21		ug/m3 Air			01/09/17 17:23	1
2-Hexanone	ND		1.6		ug/m3 Air			01/09/17 17:23	1
Methylene Chloride	ND		1.4		ug/m3 Air			01/09/17 17:23	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3 Air			01/09/17 17:23	1
Styrene	ND		1.7		ug/m3 Air			01/09/17 17:23	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3 Air			01/09/17 17:23	1
Tetrachloroethene	ND		2.7		ug/m3 Air			01/09/17 17:23	1
Toluene	ND		1.5		ug/m3 Air			01/09/17 17:23	1
1,2,4-Trichlorobenzene	ND		15		ug/m3 Air			01/09/17 17:23	1
1,1,1-Trichloroethane	ND		1.6		ug/m3 Air			01/09/17 17:23	1
1,1,2-Trichloroethane	ND		2.2		ug/m3 Air			01/09/17 17:23	1
Trichloroethene	ND		2.1		ug/m3 Air			01/09/17 17:23	1
Trichlorofluoromethane	ND		2.2		ug/m3 Air			01/09/17 17:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3 Air			01/09/17 17:23	1

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: MB 320-145554/9**  
**Matrix: Air**  
**Analysis Batch: 145554**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		3.9		ug/m3 Air			01/09/17 17:23	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3 Air			01/09/17 17:23	1
Vinyl acetate	ND		2.8		ug/m3 Air			01/09/17 17:23	1
Vinyl chloride	ND		1.0		ug/m3 Air			01/09/17 17:23	1
m,p-Xylene	ND		3.5		ug/m3 Air			01/09/17 17:23	1
o-Xylene	ND		1.7		ug/m3 Air			01/09/17 17:23	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		70 - 130					01/09/17 17:23	1
1,2-Dichloroethane-d4 (Surr)	99		70 - 130					01/09/17 17:23	1
Toluene-d8 (Surr)	101		70 - 130					01/09/17 17:23	1

**Lab Sample ID: LCS 320-145554/4**  
**Matrix: Air**  
**Analysis Batch: 145554**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	17.7		ppb v/v		89	71 - 131
Benzene	20.0	18.8		ppb v/v		94	68 - 128
Benzyl chloride	20.0	18.9		ppb v/v		95	58 - 120
Bromodichloromethane	20.0	19.9		ppb v/v		99	65 - 130
Bromoform	20.0	22.1		ppb v/v		111	64 - 144
Bromomethane	20.0	20.9		ppb v/v		104	70 - 131
2-Butanone (MEK)	20.0	17.8		ppb v/v		89	71 - 131
Carbon disulfide	20.0	18.0		ppb v/v		90	63 - 123
Carbon tetrachloride	20.0	26.7	*	ppb v/v		134	67 - 127
Chlorobenzene	20.0	18.9		ppb v/v		95	70 - 132
Dibromochloromethane	20.0	20.2		ppb v/v		101	68 - 128
Chloroethane	20.0	21.4		ppb v/v		107	70 - 131
Chloroform	20.0	19.2		ppb v/v		96	69 - 129
Chloromethane	20.0	20.0		ppb v/v		100	67 - 127
1,2-Dibromoethane (EDB)	20.0	19.0		ppb v/v		95	68 - 131
1,2-Dichlorobenzene	20.0	20.8		ppb v/v		104	73 - 143
1,3-Dichlorobenzene	20.0	20.5		ppb v/v		103	77 - 136
1,4-Dichlorobenzene	20.0	20.6		ppb v/v		103	73 - 143
Dichlorodifluoromethane	20.0	20.6		ppb v/v		103	69 - 129
1,1-Dichloroethane	20.0	18.9		ppb v/v		95	65 - 125
1,2-Dichloroethane	20.0	20.0		ppb v/v		100	71 - 131
1,1-Dichloroethene	20.0	17.7		ppb v/v		88	53 - 128
cis-1,2-Dichloroethene	20.0	19.3		ppb v/v		96	68 - 128
trans-1,2-Dichloroethene	20.0	19.2		ppb v/v		96	70 - 130
1,2-Dichloropropane	20.0	20.5		ppb v/v		103	74 - 128
cis-1,3-Dichloropropene	20.0	22.0		ppb v/v		110	78 - 132
trans-1,3-Dichloropropene	20.0	18.2		ppb v/v		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	20.3		ppb v/v		101	64 - 124
Ethylbenzene	20.0	19.4		ppb v/v		97	76 - 136
4-Ethyltoluene	20.0	19.6		ppb v/v		98	62 - 136

TestAmerica Sacramento



# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-145554/4**  
**Matrix: Air**  
**Analysis Batch: 145554**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	20.0	21.0		ppb v/v		105	42 - 150
2-Hexanone	20.0	17.7		ppb v/v		88	70 - 128
Methylene Chloride	20.0	17.9		ppb v/v		90	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	18.1		ppb v/v		91	73 - 133
Styrene	20.0	20.1		ppb v/v		100	76 - 144
1,1,2,2-Tetrachloroethane	20.0	19.2		ppb v/v		96	75 - 135
Tetrachloroethene	20.0	18.7		ppb v/v		93	56 - 138
Toluene	20.0	19.7		ppb v/v		98	71 - 132
1,2,4-Trichlorobenzene	20.0	21.5		ppb v/v		108	59 - 150
1,1,1-Trichloroethane	20.0	19.8		ppb v/v		99	65 - 124
1,1,2-Trichloroethane	20.0	19.2		ppb v/v		96	71 - 131
Trichloroethene	20.0	19.6		ppb v/v		98	64 - 127
Trichlorofluoromethane	20.0	20.2		ppb v/v		101	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.7		ppb v/v		88	50 - 132
1,2,4-Trimethylbenzene	20.0	20.4		ppb v/v		102	61 - 145
1,3,5-Trimethylbenzene	20.0	19.8		ppb v/v		99	65 - 136
Vinyl acetate	20.0	28.2	*	ppb v/v		141	77 - 134
Vinyl chloride	20.0	20.8		ppb v/v		104	69 - 129
m,p-Xylene	40.0	39.1		ppb v/v		98	75 - 138
o-Xylene	20.0	20.2		ppb v/v		101	77 - 132
Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	42.1		ug/m3 Air		89	71 - 131
Benzene	64	59.9		ug/m3 Air		94	68 - 128
Benzyl chloride	100	98.0		ug/m3 Air		95	58 - 120
Bromodichloromethane	130	133		ug/m3 Air		99	65 - 130
Bromoform	210	229		ug/m3 Air		111	64 - 144
Bromomethane	78	81.0		ug/m3 Air		104	70 - 131
2-Butanone (MEK)	59	52.4		ug/m3 Air		89	71 - 131
Carbon disulfide	62	56.0		ug/m3 Air		90	63 - 123
Carbon tetrachloride	130	168	*	ug/m3 Air		134	67 - 127
Chlorobenzene	92	87.1		ug/m3 Air		95	70 - 132
Dibromochloromethane	170	172		ug/m3 Air		101	68 - 128
Chloroethane	53	56.5		ug/m3 Air		107	70 - 131
Chloroform	98	93.6		ug/m3 Air		96	69 - 129
Chloromethane	41	41.3		ug/m3 Air		100	67 - 127
1,2-Dibromoethane (EDB)	150	146		ug/m3 Air		95	68 - 131
1,2-Dichlorobenzene	120	125		ug/m3 Air		104	73 - 143
1,3-Dichlorobenzene	120	123		ug/m3 Air		103	77 - 136
1,4-Dichlorobenzene	120	124		ug/m3 Air		103	73 - 143
Dichlorodifluoromethane	99	102		ug/m3 Air		103	69 - 129
1,1-Dichloroethane	81	76.6		ug/m3 Air		95	65 - 125
1,2-Dichloroethane	81	80.8		ug/m3 Air		100	71 - 131
1,1-Dichloroethene	79	70.1		ug/m3 Air		88	53 - 128
cis-1,2-Dichloroethene	79	76.4		ug/m3 Air		96	68 - 128
trans-1,2-Dichloroethene	79	76.0		ug/m3 Air		96	70 - 130
1,2-Dichloropropane	92	94.9		ug/m3 Air		103	74 - 128

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

**Lab Sample ID: LCS 320-145554/4**  
**Matrix: Air**  
**Analysis Batch: 145554**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	91	100		ug/m3 Air		110	78 - 132
trans-1,3-Dichloropropene	91	82.5		ug/m3 Air		91	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	142		ug/m3 Air		101	64 - 124
Ethylbenzene	87	84.1		ug/m3 Air		97	76 - 136
4-Ethyltoluene	98	96.4		ug/m3 Air		98	62 - 136
Hexachlorobutadiene	210	224		ug/m3 Air		105	42 - 150
2-Hexanone	82	72.5		ug/m3 Air		88	70 - 128
Methylene Chloride	69	62.2		ug/m3 Air		90	65 - 125
4-Methyl-2-pentanone (MIBK)	82	74.3		ug/m3 Air		91	73 - 133
Styrene	85	85.6		ug/m3 Air		100	76 - 144
1,1,2,2-Tetrachloroethane	140	132		ug/m3 Air		96	75 - 135
Tetrachloroethene	140	127		ug/m3 Air		93	56 - 138
Toluene	75	74.1		ug/m3 Air		98	71 - 132
1,2,4-Trichlorobenzene	150	160		ug/m3 Air		108	59 - 150
1,1,1-Trichloroethane	110	108		ug/m3 Air		99	65 - 124
1,1,2-Trichloroethane	110	105		ug/m3 Air		96	71 - 131
Trichloroethene	110	105		ug/m3 Air		98	64 - 127
Trichlorofluoromethane	110	114		ug/m3 Air		101	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	135		ug/m3 Air		88	50 - 132
1,2,4-Trimethylbenzene	98	100		ug/m3 Air		102	61 - 145
1,3,5-Trimethylbenzene	98	97.1		ug/m3 Air		99	65 - 136
Vinyl acetate	70	99.3	*	ug/m3 Air		141	77 - 134
Vinyl chloride	51	53.3		ug/m3 Air		104	69 - 129
m,p-Xylene	170	170		ug/m3 Air		98	75 - 138
o-Xylene	87	87.8		ug/m3 Air		101	77 - 132

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	110		70 - 130
1,2-Dichloroethane-d4 (Surr)	107		70 - 130
Toluene-d8 (Surr)	106		70 - 130

**Lab Sample ID: LCS 320-145554/6**  
**Matrix: Air**  
**Analysis Batch: 145554**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		70 - 130
1,2-Dichloroethane-d4 (Surr)	95		70 - 130
Toluene-d8 (Surr)	100		70 - 130

**Lab Sample ID: LCSD 320-145554/5**  
**Matrix: Air**  
**Analysis Batch: 145554**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	17.3		ppb v/v		86	71 - 131	3	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-145554/5

Matrix: Air

Analysis Batch: 145554

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	18.5		ppb v/v		92	68 - 128	1	25
Benzyl chloride	20.0	18.3		ppb v/v		91	58 - 120	4	25
Bromodichloromethane	20.0	19.1		ppb v/v		96	65 - 130	4	25
Bromoform	20.0	21.4		ppb v/v		107	64 - 144	3	25
Bromomethane	20.0	20.5		ppb v/v		102	70 - 131	2	25
2-Butanone (MEK)	20.0	17.6		ppb v/v		88	71 - 131	1	25
Carbon disulfide	20.0	17.9		ppb v/v		89	63 - 123	1	25
Carbon tetrachloride	20.0	25.2		ppb v/v		126	67 - 127	6	25
Chlorobenzene	20.0	18.4		ppb v/v		92	70 - 132	3	25
Dibromochloromethane	20.0	19.6		ppb v/v		98	68 - 128	3	25
Chloroethane	20.0	21.2		ppb v/v		106	70 - 131	1	25
Chloroform	20.0	18.7		ppb v/v		94	69 - 129	2	25
Chloromethane	20.0	19.3		ppb v/v		97	67 - 127	3	25
1,2-Dibromoethane (EDB)	20.0	18.6		ppb v/v		93	68 - 131	2	25
1,2-Dichlorobenzene	20.0	19.9		ppb v/v		100	73 - 143	4	25
1,3-Dichlorobenzene	20.0	19.8		ppb v/v		99	77 - 136	4	25
1,4-Dichlorobenzene	20.0	19.9		ppb v/v		100	73 - 143	3	25
Dichlorodifluoromethane	20.0	19.6		ppb v/v		98	69 - 129	5	25
1,1-Dichloroethane	20.0	18.5		ppb v/v		93	65 - 125	2	25
1,2-Dichloroethane	20.0	19.1		ppb v/v		96	71 - 131	4	25
1,1-Dichloroethene	20.0	17.4		ppb v/v		87	53 - 128	2	25
cis-1,2-Dichloroethene	20.0	19.1		ppb v/v		95	68 - 128	1	25
trans-1,2-Dichloroethene	20.0	19.0		ppb v/v		95	70 - 130	1	25
1,2-Dichloropropane	20.0	19.6		ppb v/v		98	74 - 128	5	25
cis-1,3-Dichloropropene	20.0	21.7		ppb v/v		108	78 - 132	2	25
trans-1,3-Dichloropropene	20.0	17.8		ppb v/v		89	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	19.2		ppb v/v		96	64 - 124	5	25
Ethylbenzene	20.0	18.9		ppb v/v		94	76 - 136	3	25
4-Ethyltoluene	20.0	19.0		ppb v/v		95	62 - 136	3	25
Hexachlorobutadiene	20.0	20.5		ppb v/v		102	42 - 150	2	25
2-Hexanone	20.0	17.4		ppb v/v		87	70 - 128	2	25
Methylene Chloride	20.0	17.7		ppb v/v		88	65 - 125	2	25
4-Methyl-2-pentanone (MIBK)	20.0	17.6		ppb v/v		88	73 - 133	3	25
Styrene	20.0	19.5		ppb v/v		98	76 - 144	3	25
1,1,2,2-Tetrachloroethane	20.0	18.7		ppb v/v		94	75 - 135	3	25
Tetrachloroethene	20.0	18.2		ppb v/v		91	56 - 138	3	25
Toluene	20.0	19.2		ppb v/v		96	71 - 132	2	25
1,2,4-Trichlorobenzene	20.0	22.1		ppb v/v		110	59 - 150	2	25
1,1,1-Trichloroethane	20.0	19.1		ppb v/v		95	65 - 124	4	25
1,1,2-Trichloroethane	20.0	18.9		ppb v/v		94	71 - 131	2	25
Trichloroethene	20.0	19.0		ppb v/v		95	64 - 127	3	25
Trichlorofluoromethane	20.0	19.5		ppb v/v		97	68 - 128	4	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.3		ppb v/v		87	50 - 132	2	25
1,2,4-Trimethylbenzene	20.0	19.6		ppb v/v		98	61 - 145	4	25
1,3,5-Trimethylbenzene	20.0	19.1		ppb v/v		95	65 - 136	3	25
Vinyl acetate	20.0	28.4	*	ppb v/v		142	77 - 134	1	25
Vinyl chloride	20.0	20.5		ppb v/v		102	69 - 129	2	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-145554/5

Client Sample ID: Lab Control Sample Dup

Matrix: Air

Prep Type: Total/NA

Analysis Batch: 145554

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
m,p-Xylene	40.0	38.1		ppb v/v		95	75 - 138	2	25
o-Xylene	20.0	19.6		ppb v/v		98	77 - 132	3	25
Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	48	41.0		ug/m3 Air		86	71 - 131	3	25
Benzene	64	59.0		ug/m3 Air		92	68 - 128	1	25
Benzyl chloride	100	94.5		ug/m3 Air		91	58 - 120	4	25
Bromodichloromethane	130	128		ug/m3 Air		96	65 - 130	4	25
Bromoform	210	222		ug/m3 Air		107	64 - 144	3	25
Bromomethane	78	79.5		ug/m3 Air		102	70 - 131	2	25
2-Butanone (MEK)	59	52.0		ug/m3 Air		88	71 - 131	1	25
Carbon disulfide	62	55.7		ug/m3 Air		89	63 - 123	1	25
Carbon tetrachloride	130	159		ug/m3 Air		126	67 - 127	6	25
Chlorobenzene	92	84.9		ug/m3 Air		92	70 - 132	3	25
Dibromochloromethane	170	167		ug/m3 Air		98	68 - 128	3	25
Chloroethane	53	56.0		ug/m3 Air		106	70 - 131	1	25
Chloroform	98	91.4		ug/m3 Air		94	69 - 129	2	25
Chloromethane	41	39.9		ug/m3 Air		97	67 - 127	3	25
1,2-Dibromoethane (EDB)	150	143		ug/m3 Air		93	68 - 131	2	25
1,2-Dichlorobenzene	120	120		ug/m3 Air		100	73 - 143	4	25
1,3-Dichlorobenzene	120	119		ug/m3 Air		99	77 - 136	4	25
1,4-Dichlorobenzene	120	120		ug/m3 Air		100	73 - 143	3	25
Dichlorodifluoromethane	99	97.0		ug/m3 Air		98	69 - 129	5	25
1,1-Dichloroethane	81	75.0		ug/m3 Air		93	65 - 125	2	25
1,2-Dichloroethane	81	77.3		ug/m3 Air		96	71 - 131	4	25
1,1-Dichloroethene	79	68.9		ug/m3 Air		87	53 - 128	2	25
cis-1,2-Dichloroethene	79	75.6		ug/m3 Air		95	68 - 128	1	25
trans-1,2-Dichloroethene	79	75.5		ug/m3 Air		95	70 - 130	1	25
1,2-Dichloropropane	92	90.4		ug/m3 Air		98	74 - 128	5	25
cis-1,3-Dichloropropene	91	98.4		ug/m3 Air		108	78 - 132	2	25
trans-1,3-Dichloropropene	91	80.6		ug/m3 Air		89	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	134		ug/m3 Air		96	64 - 124	5	25
Ethylbenzene	87	81.9		ug/m3 Air		94	76 - 136	3	25
4-Ethyltoluene	98	93.5		ug/m3 Air		95	62 - 136	3	25
Hexachlorobutadiene	210	218		ug/m3 Air		102	42 - 150	2	25
2-Hexanone	82	71.1		ug/m3 Air		87	70 - 128	2	25
Methylene Chloride	69	61.3		ug/m3 Air		88	65 - 125	2	25
4-Methyl-2-pentanone (MIBK)	82	72.0		ug/m3 Air		88	73 - 133	3	25
Styrene	85	83.2		ug/m3 Air		98	76 - 144	3	25
1,1,2,2-Tetrachloroethane	140	129		ug/m3 Air		94	75 - 135	3	25
Tetrachloroethene	140	123		ug/m3 Air		91	56 - 138	3	25
Toluene	75	72.5		ug/m3 Air		96	71 - 132	2	25
1,2,4-Trichlorobenzene	150	164		ug/m3 Air		110	59 - 150	2	25
1,1,1-Trichloroethane	110	104		ug/m3 Air		95	65 - 124	4	25
1,1,2-Trichloroethane	110	103		ug/m3 Air		94	71 - 131	2	25
Trichloroethene	110	102		ug/m3 Air		95	64 - 127	3	25
Trichlorofluoromethane	110	109		ug/m3 Air		97	68 - 128	4	25

TestAmerica Sacramento

# QC Sample Results

Client: Apex Companies LLC  
 Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-145554/5

Matrix: Air

Analysis Batch: 145554

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,2-Trichloro-1,2,2-trifluoroethane	150	133		ug/m3 Air		87	50 - 132	2	25
1,2,4-Trimethylbenzene	98	96.5		ug/m3 Air		98	61 - 145	4	25
1,3,5-Trimethylbenzene	98	93.8		ug/m3 Air		95	65 - 136	3	25
Vinyl acetate	70	99.9	*	ug/m3 Air		142	77 - 134	1	25
Vinyl chloride	51	52.3		ug/m3 Air		102	69 - 129	2	25
m,p-Xylene	170	166		ug/m3 Air		95	75 - 138	2	25
o-Xylene	87	85.3		ug/m3 Air		98	77 - 132	3	25

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	113		70 - 130
1,2-Dichloroethane-d4 (Surr)	103		70 - 130
Toluene-d8 (Surr)	105		70 - 130

Lab Sample ID: LCSD 320-145554/7

Matrix: Air

Analysis Batch: 145554

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	106		70 - 130
1,2-Dichloroethane-d4 (Surr)	94		70 - 130
Toluene-d8 (Surr)	100		70 - 130

# QC Association Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Air - GC/MS VOA

### Analysis Batch: 145554

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24746-1	SVE_NORTH_EFFLUENT_122816	Total/NA	Air	TO-15	
MB 320-145554/9	Method Blank	Total/NA	Air	TO-15	
LCS 320-145554/4	Lab Control Sample	Total/NA	Air	TO-15	
LCS 320-145554/6	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-145554/5	Lab Control Sample Dup	Total/NA	Air	TO-15	
LCSD 320-145554/7	Lab Control Sample Dup	Total/NA	Air	TO-15	

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# Lab Chronicle

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

**Client Sample ID: SVE\_NORTH\_EFFLUENT\_122816**

**Lab Sample ID: 320-24746-1**

**Date Collected: 12/28/16 08:05**

**Matrix: Air**

**Date Received: 01/03/17 09:20**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	397 mL	250 mL	145554	01/10/17 03:51	SRS	TAL SAC

#### Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# Certification Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-17
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16 *
Wyoming	State Program	8	8TMS-L	01-29-17

## Laboratory: TestAmerica Portland

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
USDA	Federal		P330-11-00092	04-17-17

\* Certification renewal pending - certification considered valid.



# Method Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



# Sample Summary

Client: Apex Companies LLC  
Project/Site: NuStar Vancouver REM

TestAmerica Job ID: 320-24746-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-24746-1	SVE_NORTH_EFFLUENT_122816	Air	12/28/16 08:05	01/03/17 09:20

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TestAmerica Sacramento  
880 Riverside Parkway


West Sacramento, CA 95605  
phone 916.374.4378 fax 916.372.1059

### Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

TestAmerica  
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

<b>Client Contact Information</b> Company Name: Apex Companies Address: 3015 SW 1st Ave City/State/Zip: Portland OR 97201 Phone: 503-924-4704 FAX: 503-924-4704		<b>Project Manager:</b> Stephanie Salisbury Phone: 503 924 4704 x 1925 Email: SSalisbury@Apexcos.com		<b>Samples Collected By:</b> Kate Kline		COC No: _____ of _____ COCs	
<b>Site Contact:</b> TA Contact: _____ Standard (Specific): _____ Rush (Specify): _____		<b>Analysis Turnaround Time</b> Rush (Specify): _____		<b>For Lab Use Only:</b> Walk-in Client: _____ Lab Sampling: _____		Job / SDG No.: _____ (See below for Add'l Items)	
<b>Project Name:</b> Mustang Vancouver REM <b>Site/Location:</b> Vancouver, WA <b>PO #</b> 126-18		<b>Sample Identification</b> SVE_North Effluent_122816		<b>Sample Type</b> Other (Please specify in notes section)		<b>Sample Specific Notes:</b>	
<b>Sample Date(s)</b> 12/28/16 0804 0805		<b>Time Start/Stop</b> 0805 - 0805		<b>Canister Vacuum in Field, 'Hg (Start)'</b> -30 -4		<b>Canister ID</b> 8307 X	
<b>Temperature (Fahrenheit)</b> Start Interior Stop Ambient		<b>Temperature (Fahrenheit)</b> Start Interior Stop Ambient		 320-24746 Chain of Custody		Other (Please specify in notes section) Landfill Gas Soil Gas Ambient Air Indoor Air	
<b>Special Instructions/QC Requirements &amp; Comments:</b> Email Results TO: SSalisbury@apexcos.com South SVE system was down so did not sample, but shipped back two unused canisters.		<b>Samples Shipped by:</b> Date / Time: 12/30/16 1130 Received by: [Signature]		<b>Samples Relinquished by:</b> Date / Time: 12/30/16 0810 Relinquished by: [Signature]		<b>Lab Use Only:</b> Shipped Name: 12/30/16 1415 Opened by: [Signature]	
<b>Condition:</b> Rec'd in clean 920 13-17		<b>Form No. CA-C-WI-003, Rev. 1, dated 05/10/2013</b>		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16			

# Login Sample Receipt Checklist

Client: Apex Companies LLC

Job Number: 320-24746-1

**Login Number: 24746**

**List Source: TestAmerica Sacramento**

**List Number: 1**

**Creator: Nelson, Kym D**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Certification Type To 15 SCAN  
 Date Cleaned/Batch ID KL 12/14/16 12/13/16 24347  
 Date of QC 12/15/2016  
 Data File Number C:\MSDCHEM\1\DATA\161215\



320-24347 Chain of Custody

→ MS6121512.d  
**CANISTER ID NUMBERS**

<u>34002115</u>	<u>34001390 *</u>	
<u>34000533</u>	<u>8307</u>	
<u>34001574</u>	<u>7962</u>	
<u>34000245</u>	<u>8258</u>	
<u>34000563</u>		
<u>34000874</u>		
<u>7866</u>		
<u>34000426</u>		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "Certification Type" indicated above.

**"\*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.**

[Signature]  
 1<sup>st</sup> level Reviewed By:

12/19/16  
 Date:

[Signature]  
 2nd level Reviewed By:

12/19/16  
 Date:

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24347-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001390 Lab Sample ID: 320-24347-9  
 Matrix: Air Lab File ID: MS6121512.D  
 Analysis Method: TO-15 Date Collected: 12/13/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 12/16/2016 10:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 142293 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.40	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.27
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24347-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001390 Lab Sample ID: 320-24347-9  
 Matrix: Air Lab File ID: MS6121512.D  
 Analysis Method: TO-15 Date Collected: 12/13/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 12/16/2016 10:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 142293 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.12
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.21
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I  
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24347-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: 34001390 Lab Sample ID: 320-24347-9  
 Matrix: Air Lab File ID: MS6121512.D  
 Analysis Method: TO-15 Date Collected: 12/13/2016 00:00  
 Sample wt/vol: 500 (mL) Date Analyzed: 12/16/2016 10:37  
 Soil Aliquot Vol: \_\_\_\_\_ Dilution Factor: 1  
 Soil Extract Vol.: \_\_\_\_\_ GC Column: RTX-Volatiles ID: 0.32 (mm)  
 % Moisture: \_\_\_\_\_ Level: (low/med) Low  
 Analysis Batch No.: 142293 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	90		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	105		70-130
2037-26-5	Toluene-d8 (Surr)	95		70-130



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS6\20161215-37869.b\MS6121512.D  
 Lims ID: 320-24347-A-9  
 Client ID: 34001390  
 Sample Type: Client  
 Inject. Date: 16-Dec-2016 10:37:30 ALS Bottle#: 8 Worklist Smp#: 11  
 Purge Vol: 25.000 mL Dil. Factor: 1.0000  
 Sample Info: 320-24347-A-9  
 Misc. Info.: 500 mL CAN CERT  
 Operator ID: LHS Instrument ID: ATMS6  
 Method: \\ChromNA\Sacramento\ChromData\ATMS6\20161215-37869.b\TO15\_ATMS6.m  
 Limit Group: MSA - TO15 - ICAL  
 Last Update: 19-Dec-2016 08:31:34 Calib Date: 15-Dec-2016 13:03:30  
 Integrator: RTE ID Type: Deconvolution ID  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS6\20161215-37869.b\MS6121502.D  
 Column 1 : RTX Volatiles ( 0.32 mm) Det: MS SCAN  
 Process Host: XAWRK022

First Level Reviewer: leeh Date: 19-Dec-2016 08:30:34

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	13.105	13.098	0.007	98	33833	4.00	
* 2 1,4-Difluorobenzene	114	15.246	15.240	0.006	95	131836	4.00	
* 3 Chlorobenzene-d5 (IS)	117	21.987	21.986	0.001	90	108286	4.00	
\$ 4 1,2-Dichloroethane-d4 (Sur	65	14.303	14.303	0.000	97	51991	4.18	
\$ 5 Toluene-d8 (Surr)	100	18.701	18.695	0.006	98	75431	3.78	
\$ 6 4-Bromofluorobenzene (Surr	95	24.554	24.554	0.000	88	64462	3.61	
13 Dichlorodifluoromethane	85	4.460	4.551	-0.091	51	2701	0.1055	
32 Acetone	43	8.262	8.244	0.018	97	9288	0.3989	
69 1,4-Dioxane	88	16.882	16.870	0.012	65	639	0.0935	

Reagents:

VAMSIS20\_00002 Amount Added: 50.00 Units: mL Run Reagent

Data File: \\ChromNA\Sacramento\ChromData\ATMS6\20161215-37869.b\MS6121512.D

Injection Date: 16-Dec-2016 10:37:30

Instrument ID: ATMS6

Operator ID: LHS

Lims ID: 320-24347-A-9

Lab Sample ID: 320-24347-9

Worklist Smp#: 11

Client ID: 34001390

Purge Vol: 25.000 mL

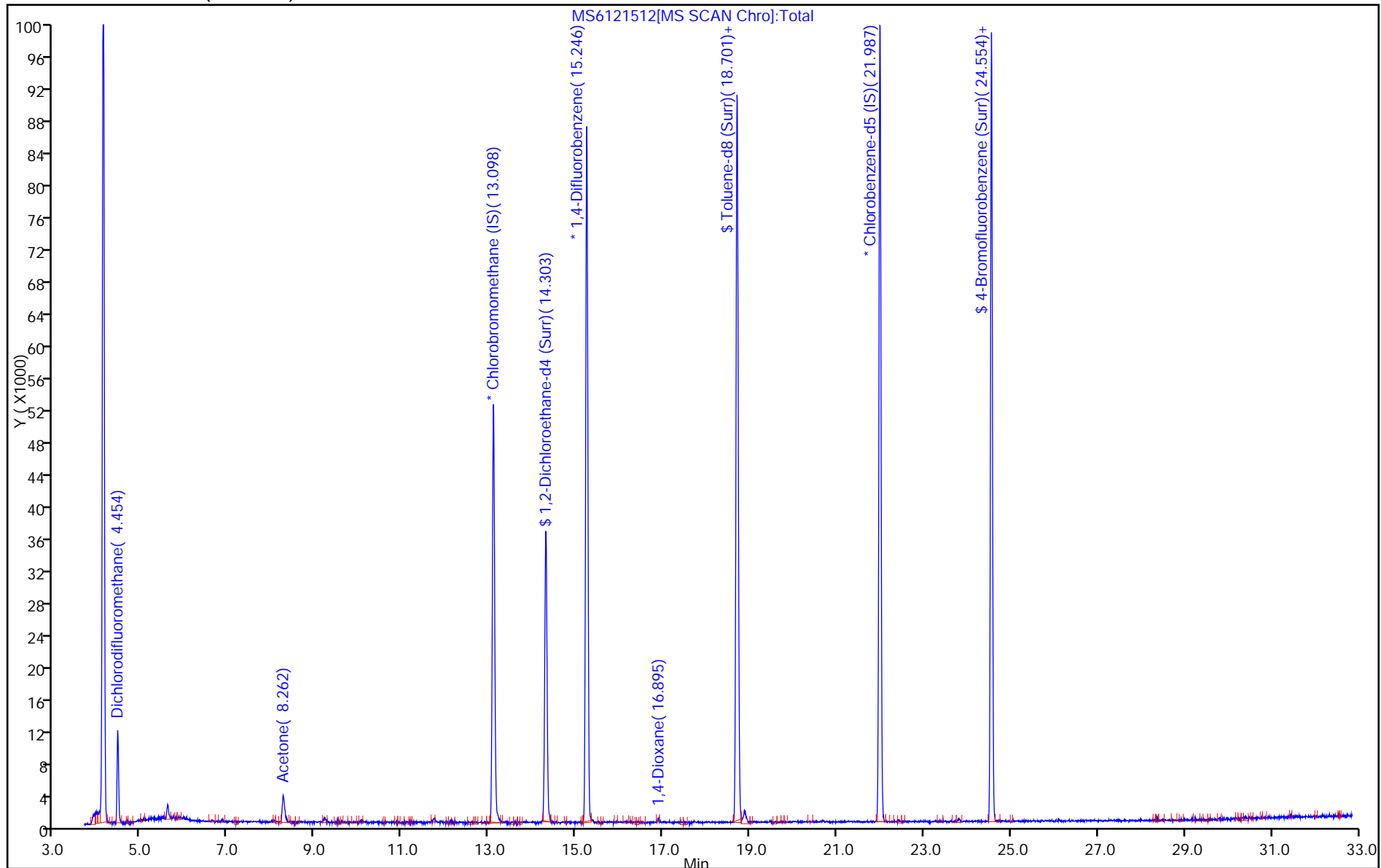
Dil. Factor: 1.0000

ALS Bottle#: 8

Method: TO15\_ATMS6

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS6\20161215-37869.b\MS6121512.D

Injection Date: 16-Dec-2016 10:37:30

Instrument ID: ATMS6

Lims ID: 320-24347-A-9

Lab Sample ID: 320-24347-9

Client ID: 34001390

Operator ID: LHS

ALS Bottle#: 8 Worklist Smp#: 11

Purge Vol: 25.000 mL

Dil. Factor: 1.0000

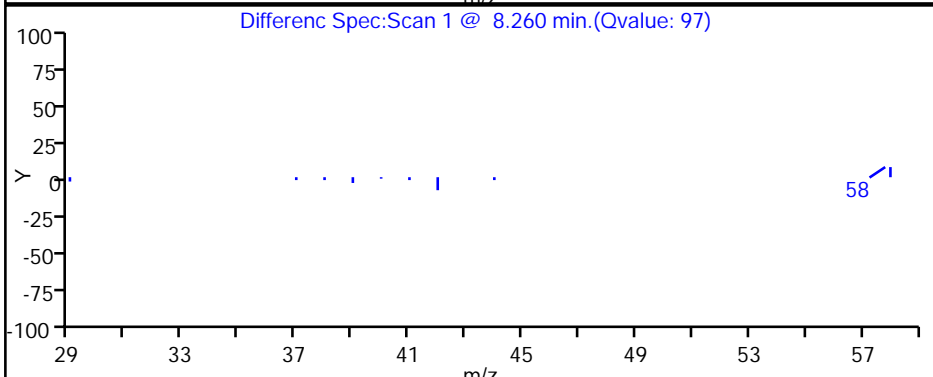
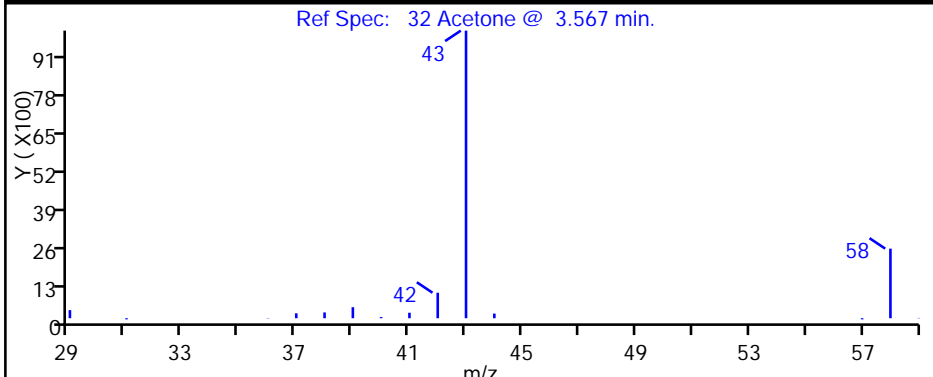
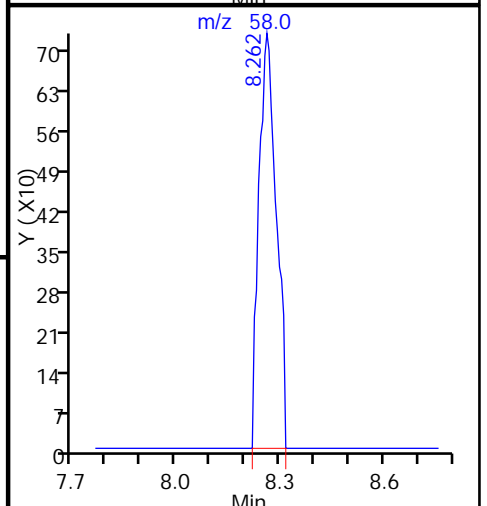
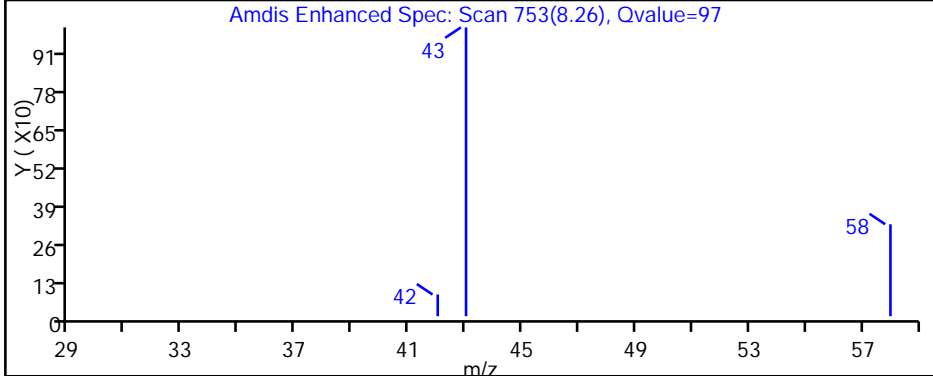
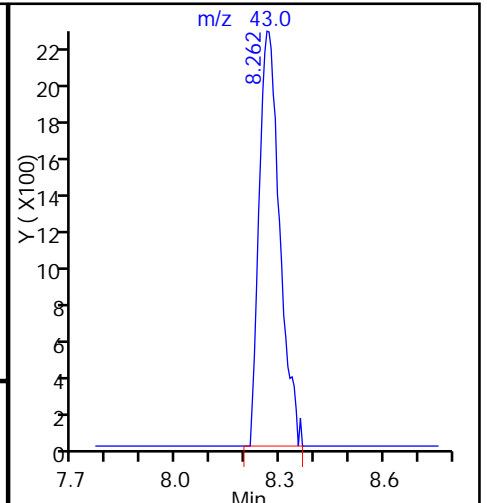
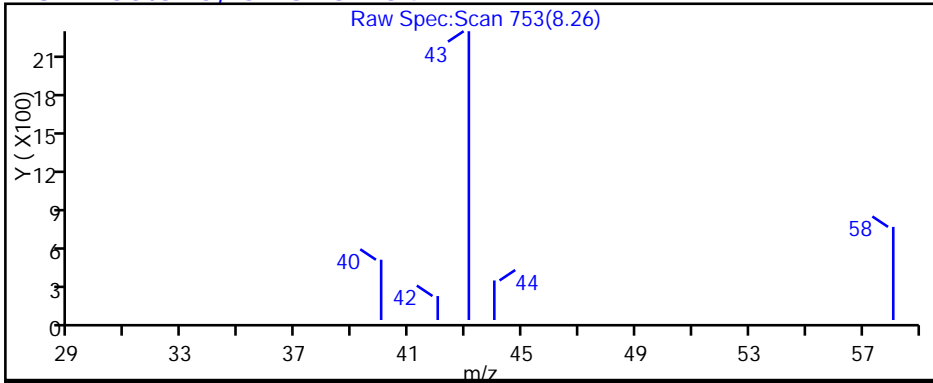
Method: TO15\_ATMS6

Limit Group: MSA - TO15 - ICAL

Column: RTX Volatiles ( 0.32 mm)

Detector: MS SCAN

32 Acetone, CAS: 67-64-1



October 12, 2016

Stephanie Bosze-Salisbury  
Apex Companies, LLC  
3015 SW First Avenue  
Portland, OR 97201

RE: Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Dear Stephanie Bosze-Salisbury:

Enclosed are the analytical results for sample(s) received by the laboratory on October 04, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott M Forbes  
scott.forbes@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

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### Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414  
Alaska Certification UST-107  
525 N 8th Street, Salina, KS 67401  
A2LA Certification #: 2926.01  
Alaska Certification #: UST-078  
Alaska Certification #MN00064  
Alabama Certification #40770  
Arizona Certification #: AZ-0014  
Arkansas Certification #: 88-0680  
California Certification #: 01155CA  
Colorado Certification #Pace  
Connecticut Certification #: PH-0256  
EPA Region 8 Certification #: 8TMS-L  
Florida/NELAP Certification #: E87605  
Guam Certification #:14-008r  
Georgia Certification #: 959  
Georgia EPD #: Pace  
Idaho Certification #: MN00064  
Hawaii Certification #MN00064  
Illinois Certification #: 200011  
Indiana Certification#C-MN-01  
Iowa Certification #: 368  
Kansas Certification #: E-10167  
Kentucky Dept of Envi. Protection - DW #90062  
Kentucky Dept of Envi. Protection - WW #:90062  
Louisiana DEQ Certification #: 3086  
Louisiana DHH #: LA140001  
Maine Certification #: 2013011  
Maryland Certification #: 322

Michigan DEPH Certification #: 9909  
Minnesota Certification #: 027-053-137  
Mississippi Certification #: Pace  
Montana Certification #: MT0092  
Nevada Certification #: MN\_00064  
Nebraska Certification #: Pace  
New Jersey Certification #: MN-002  
New York Certification #: 11647  
North Carolina Certification #: 530  
North Carolina State Public Health #: 27700  
North Dakota Certification #: R-036  
Ohio EPA #: 4150  
Ohio VAP Certification #: CL101  
Oklahoma Certification #: 9507  
Oregon Certification #: MN200001  
Oregon Certification #: MN300001  
Pennsylvania Certification #: 68-00563  
Puerto Rico Certification  
Saipan (CNMI) #:MP0003  
South Carolina #:74003001  
Texas Certification #: T104704192  
Tennessee Certification #: 02818  
Utah Certification #: MN000642013-4  
Virginia DGS Certification #: 251  
Virginia/VELAP Certification #: Pace  
Washington Certification #: C486  
West Virginia Certification #: 382  
West Virginia DHHR #:9952C  
Wisconsin Certification #: 999407970

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### Davis Certification IDs

2795 Second Street Suite 300 Davis, CA 95618  
North Dakota Certification #: R-214  
Oregon Certification #: CA300002  
Washington Certification #: C926-15a

California Certification #: 08263CA  
Minnesota Department of Health Certification #: 006-999-465

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### New Orleans Certification IDs

California Env. Lab Accreditation Program Branch:  
11277CA  
Florida Department of Health (NELAC): E87595  
Illinois Environmental Protection Agency: 0025721  
Kansas Department of Health and Environment (NELAC):  
E-10266  
Louisiana Dept. of Environmental Quality (NELAC/LELAP):  
02006

Pennsylvania Dept. of Env Protection (NELAC): 68-04202  
Texas Commission on Env. Quality (NELAC):  
T104704405-09-TX  
U.S. Dept. of Agriculture Foreign Soil Import: P330-10-00119  
Commonwealth of Virginia (TNI): 480246

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## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1276153001	S-2	Water	09/26/16 13:26	10/04/16 10:00
1276153002	MW-21i-105	Water	09/26/16 13:58	10/04/16 10:00
1276153003	MW-21i-40	Water	09/26/16 14:22	10/04/16 10:00
1276153004	MW-19	Water	09/26/16 15:23	10/04/16 10:00
1276153005	MW-14	Water	09/27/16 09:00	10/04/16 10:00
1276153006	MW-23i	Water	09/27/16 10:08	10/04/16 10:00
1276153007	MW-17	Water	09/27/16 10:50	10/04/16 10:00
1276153008	S-1	Water	09/27/16 11:50	10/04/16 10:00
1276153009	MW-26	Water	09/27/16 12:40	10/04/16 10:00
1276153010	MW-10	Water	09/27/16 13:30	10/04/16 10:00
1276153011	MW-1	Water	09/27/16 14:15	10/04/16 10:00
1276153012	MW-12	Water	09/27/16 15:00	10/04/16 10:00
1276153013	MW-12 DUP	Water	09/27/16 15:00	10/04/16 10:00
1276153014	MW-8	Water	09/27/16 16:25	10/04/16 10:00
1276153015	MW-13	Water	09/28/16 08:33	10/04/16 10:00
1276153016	MW-13 DUP	Water	09/28/16 08:33	10/04/16 10:00
1276153017	EX-1	Water	09/28/16 09:30	10/04/16 10:00
1276153018	MP-1	Water	09/28/16 10:30	10/04/16 10:00
1276153019	MW-24i	Water	09/28/16 11:15	10/04/16 10:00
1276153020	MW-22i	Water	09/28/16 12:10	10/04/16 10:00
1276153021	MW-16	Water	09/28/16 12:50	10/04/16 10:00
1276153022	MW-18i	Water	09/28/16 13:30	10/04/16 10:00
1276153023	MW-20i	Water	09/28/16 14:38	10/04/16 10:00
1276153024	MW-19i	Water	09/28/16 15:18	10/04/16 10:00
1276153025	MW-6	Water	09/28/16 16:08	10/04/16 10:00
1276153026	MW-25i	Water	09/29/16 08:00	10/04/16 10:00
1276153027	MW-2	Water	09/29/16 09:05	10/04/16 10:00
1276153028	EW-1	Water	09/29/16 09:55	10/04/16 10:00
1276153029	MW-5	Water	09/29/16 11:26	10/04/16 10:00
1276153030	MW-7	Water	09/29/16 12:10	10/04/16 10:00
1276153031	MW-7 DUP	Water	09/29/16 12:10	10/04/16 10:00
1276153032	MW-9	Water	09/29/16 12:58	10/04/16 10:00
1276153033	MGMS2-40	Water	09/29/16 15:25	10/04/16 10:00
1276153034	MGMS2-110	Water	09/29/16 16:07	10/04/16 10:00
1276153035	MGMS2-132	Water	09/29/16 16:25	10/04/16 10:00
1276153036	MW-3	Water	09/30/16 07:54	10/04/16 10:00
1276153037	MW-15	Water	09/30/16 08:33	10/04/16 10:00

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## SAMPLE SUMMARY

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1276153038	MW-24d	Water	09/30/16 10:15	10/04/16 10:00
1276153039	Field Blank 1	Water	09/26/16 15:00	10/04/16 10:00
1276153040	Field Blank 2	Water	09/27/16 16:00	10/04/16 10:00
1276153041	Field Blank 3	Water	09/28/16 16:20	10/04/16 10:00
1276153042	Field Blank 4	Water	09/29/16 16:30	10/04/16 10:00
1276153043	Field Blank 5	Water	09/30/16 15:00	10/04/16 10:00
1276153044	Equipment Blank	Water	09/30/16 15:00	10/04/16 10:00
1276153045	Trip Blank	Water	09/30/16 15:00	10/04/16 10:00
1276153046	MGMS2-60	Water	09/30/16 11:12	10/04/16 10:00
1276153047	MGMS1-40	Water	09/30/16 11:43	10/04/16 10:00
1276153048	MGMS1-60	Water	09/30/16 12:15	10/04/16 10:00
1276153049	MGMS1-132	Water	09/30/16 12:45	10/04/16 10:00
1276153050	MGMS3-40	Water	09/30/16 13:25	10/04/16 10:00
1276153051	MGMS3-40 DUP	Water	09/30/16 13:25	10/04/16 10:00
1276153052	MGMS3-60	Water	09/30/16 13:54	10/04/16 10:00
1276153053	MGMS3-110	Water	09/30/16 14:25	10/04/16 10:00
1276153054	MGMS3-132	Water	09/30/16 14:45	10/04/16 10:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1276153001	S-2	EPA 8260B	JCP	31	PASI-DAV
1276153002	MW-21i-105	EPA 8260B	JCP	31	PASI-DAV
1276153003	MW-21i-40	EPA 8260B	JCP	31	PASI-DAV
1276153004	MW-19	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	SMS2	1	PASI-N
1276153005	MW-14	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	SMS2	1	PASI-N
1276153006	MW-23i	EPA 8260B	JCP	31	PASI-DAV
1276153007	MW-17	EPA 8260B	JCP	31	PASI-DAV
1276153008	S-1	EPA 8260B	JCP	31	PASI-DAV
1276153009	MW-26	EPA 8260B	JCP	31	PASI-DAV
1276153010	MW-10	EPA 8260B	JCP	31	PASI-DAV
1276153011	MW-1	EPA 8260B	JCP	31	PASI-DAV
1276153012	MW-12	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	SMS2	1	PASI-N
1276153013	MW-12 DUP	EPA 8260B	JCP	31	PASI-DAV
1276153014	MW-8	EPA 8260B	JCP	31	PASI-DAV
1276153015	MW-13	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	TAE	1	PASI-N
1276153016	MW-13 DUP	EPA 8260B	JCP	31	PASI-DAV
1276153017	EX-1	EPA 8260B	JCP	31	PASI-DAV
1276153018	MP-1	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	SMS2	1	PASI-N
1276153019	MW-24i	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	SMS2	1	PASI-N
1276153020	MW-22i	EPA 8260B	JCP	31	PASI-DAV
1276153021	MW-16	EPA 8260B	JCP	31	PASI-DAV
1276153022	MW-18i	EPA 8260B	JCP	31	PASI-DAV
1276153023	MW-20i	EPA 8260B	JCP	31	PASI-DAV
1276153024	MW-19i	EPA 8260B	JCP	31	PASI-DAV
1276153025	MW-6	EPA 8260B	JCP	31	PASI-DAV

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1276153026	MW-25i	EPA 8260B	JCP	31	PASI-DAV
1276153027	MW-2	EPA 8260B	JCP	31	PASI-DAV
1276153028	EW-1	EPA 8260B	JCP	31	PASI-DAV
1276153029	MW-5	EPA 8260B	JCP	31	PASI-DAV
1276153030	MW-7	EPA 8260B	JCP	31	PASI-DAV
1276153031	MW-7 DUP	EPA 8260B	JCP	31	PASI-DAV
1276153032	MW-9	EPA 8260B	JCP	31	PASI-DAV
1276153033	MGMS2-40	EPA 8260B	JCP	31	PASI-DAV
1276153034	MGMS2-110	EPA 8260B	JCP	31	PASI-DAV
1276153035	MGMS2-132	EPA 8260B	JCP	31	PASI-DAV
1276153036	MW-3	EPA 8260B	JCP	31	PASI-DAV
1276153037	MW-15	EPA 8260B	JCP	31	PASI-DAV
1276153038	MW-24d	EPA 8260B	JCP	31	PASI-DAV
1276153039	Field Blank 1	EPA 8260B	JCP	31	PASI-DAV
1276153040	Field Blank 2	EPA 8260B	JCP	31	PASI-DAV
1276153041	Field Blank 3	EPA 8260B	JCP	31	PASI-DAV
1276153042	Field Blank 4	EPA 8260B	JCP	31	PASI-DAV
1276153043	Field Blank 5	EPA 8260B	JCP	31	PASI-DAV
1276153044	Equipment Blank	EPA 8260B	JCP	31	PASI-DAV
1276153045	Trip Blank	EPA 8260B	JCP	31	PASI-DAV
1276153046	MGMS2-60	EPA 8260B	JCP	31	PASI-DAV
1276153047	MGMS1-40	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	SMS2	1	PASI-N
1276153048	MGMS1-60	EPA 8260B	JCP	31	PASI-DAV
1276153049	MGMS1-132	EPA 8260B	JCP	31	PASI-DAV
1276153050	MGMS3-40	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	SMS2	1	PASI-N
1276153051	MGMS3-40 DUP	EPA 8260B	JCP	31	PASI-DAV
1276153052	MGMS3-60	EPA 8260B	JCP	31	PASI-DAV
1276153053	MGMS3-110	EPA 8260B	JCP	31	PASI-DAV
1276153054	MGMS3-132	EPA 8260B	JCP	31	PASI-DAV

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

<b>Sample: S-2</b>		<b>Lab ID: 1276153001</b>	Collected: 09/26/16 13:26	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 01:31	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 01:31	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 01:31	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 01:31	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 01:31	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 01:31	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 01:31	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 01:31	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 01:31	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 01:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 01:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 01:31	106-46-7	
1,1-Dichloroethane	<b>6.2</b>	ug/L	0.50	1		10/05/16 01:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 01:31	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 01:31	75-35-4	
cis-1,2-Dichloroethene	<b>11.0</b>	ug/L	0.50	1		10/05/16 01:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 01:31	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 01:31	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 01:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 01:31	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 01:31	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 01:31	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/05/16 01:31	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 01:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 01:31	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/05/16 01:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 01:31	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 01:31	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		10/05/16 01:31	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/05/16 01:31	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		10/05/16 01:31	460-00-4	

<b>Sample: MW-21i-105</b>		<b>Lab ID: 1276153002</b>	Collected: 09/26/16 13:58	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 01:51	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 01:51	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 01:51	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 01:51	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 01:51	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 01:51	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 01:51	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 01:51	74-87-3	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-21i-105		Lab ID: 1276153002	Collected: 09/26/16 13:58	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 01:51	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 01:51	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 01:51	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 01:51	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 01:51	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 01:51	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 01:51	75-35-4	
cis-1,2-Dichloroethene	11.7	ug/L	0.50	1		10/05/16 01:51	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 01:51	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 01:51	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 01:51	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 01:51	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 01:51	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 01:51	79-34-5	
Tetrachloroethene	5.8	ug/L	0.50	1		10/05/16 01:51	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 01:51	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 01:51	79-00-5	
Trichloroethene	5.1	ug/L	0.50	1		10/05/16 01:51	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 01:51	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 01:51	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		10/05/16 01:51	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/05/16 01:51	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		10/05/16 01:51	460-00-4	

Sample: MW-21i-40		Lab ID: 1276153003	Collected: 09/26/16 14:22	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 02:09	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 02:09	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 02:09	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 02:09	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 02:09	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 02:09	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 02:09	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 02:09	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 02:09	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 02:09	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 02:09	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 02:09	106-46-7	
1,1-Dichloroethane	2.6	ug/L	0.50	1		10/05/16 02:09	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 02:09	107-06-2	
1,1-Dichloroethene	0.87	ug/L	0.50	1		10/05/16 02:09	75-35-4	
cis-1,2-Dichloroethene	77.2	ug/L	0.50	1		10/05/16 02:09	156-59-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-21i-40		Lab ID: 1276153003	Collected: 09/26/16 14:22	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 02:09	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 02:09	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 02:09	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 02:09	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 02:09	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 02:09	79-34-5	
Tetrachloroethene	<b>20.1</b>	ug/L	0.50	1		10/05/16 02:09	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 02:09	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 02:09	79-00-5	
Trichloroethene	<b>19.8</b>	ug/L	0.50	1		10/05/16 02:09	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 02:09	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 02:09	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/05/16 02:09	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		10/05/16 02:09	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	1		10/05/16 02:09	460-00-4	

Sample: MW-19		Lab ID: 1276153004	Collected: 09/26/16 15:23	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		10/10/16 10:34	74-84-0	
Ethene	ND	ug/L	10.0	1		10/10/16 10:34	74-85-1	
Methane	<b>948</b>	ug/L	10.0	1		10/10/16 10:34	74-82-8	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	5.0	10		10/07/16 22:25	75-27-4	
Bromoform	ND	ug/L	5.0	10		10/07/16 22:25	75-25-2	
Bromomethane	ND	ug/L	200	10		10/07/16 22:25	74-83-9	
Carbon tetrachloride	ND	ug/L	5.0	10		10/07/16 22:25	56-23-5	
Chlorobenzene	ND	ug/L	5.0	10		10/07/16 22:25	108-90-7	
Chloroethane	ND	ug/L	20.0	10		10/07/16 22:25	75-00-3	
Chloroform	ND	ug/L	5.0	10		10/07/16 22:25	67-66-3	
Chloromethane	ND	ug/L	5.0	10		10/07/16 22:25	74-87-3	
Dibromochloromethane	ND	ug/L	5.0	10		10/07/16 22:25	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	5.0	10		10/07/16 22:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	10		10/07/16 22:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	10		10/07/16 22:25	106-46-7	
1,1-Dichloroethane	<b>10.4</b>	ug/L	5.0	10		10/07/16 22:25	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	10		10/07/16 22:25	107-06-2	
1,1-Dichloroethene	<b>11.0</b>	ug/L	5.0	10		10/07/16 22:25	75-35-4	
cis-1,2-Dichloroethene	<b>235</b>	ug/L	5.0	10		10/07/16 22:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	5.0	10		10/07/16 22:25	156-60-5	
1,2-Dichloropropane	ND	ug/L	5.0	10		10/07/16 22:25	78-87-5	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-19	Lab ID: 1276153004	Collected: 09/26/16 15:23	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
cis-1,3-Dichloropropene	ND	ug/L	5.0	10		10/07/16 22:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	10		10/07/16 22:25	10061-02-6	
Methylene Chloride	ND	ug/L	50.0	10		10/07/16 22:25	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	10		10/07/16 22:25	79-34-5	
Tetrachloroethene	<b>1520</b>	ug/L	5.0	10		10/07/16 22:25	127-18-4	
1,1,1-Trichloroethane	<b>14.5</b>	ug/L	5.0	10		10/07/16 22:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	10		10/07/16 22:25	79-00-5	
Trichloroethene	<b>592</b>	ug/L	5.0	10		10/07/16 22:25	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	10		10/07/16 22:25	75-69-4	
Vinyl chloride	<b>10.1</b>	ug/L	5.0	10		10/07/16 22:25	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	10		10/07/16 22:25	17060-07-0	
Toluene-d8 (S)	102	%	70-130	10		10/07/16 22:25	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	10		10/07/16 22:25	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>1.9</b>	mg/L	1.0	1		10/06/16 21:06	7440-44-0	

Sample: MW-14	Lab ID: 1276153005	Collected: 09/27/16 09:00	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		10/10/16 10:50	74-84-0	
Ethene	ND	ug/L	10.0	1		10/10/16 10:50	74-85-1	
Methane	ND	ug/L	10.0	1		10/10/16 10:50	74-82-8	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 22:58	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 22:58	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 22:58	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 22:58	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 22:58	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 22:58	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 22:58	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 22:58	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 22:58	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:58	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:58	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:58	106-46-7	
1,1-Dichloroethane	<b>7.2</b>	ug/L	0.50	1		10/05/16 22:58	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 22:58	107-06-2	
1,1-Dichloroethene	<b>2.1</b>	ug/L	0.50	1		10/05/16 22:58	75-35-4	
cis-1,2-Dichloroethene	<b>61.8</b>	ug/L	0.50	1		10/05/16 22:58	156-59-2	
trans-1,2-Dichloroethene	<b>0.94</b>	ug/L	0.50	1		10/05/16 22:58	156-60-5	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-14	Lab ID: 1276153005	Collected: 09/27/16 09:00	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 22:58	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 22:58	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 22:58	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 22:58	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 22:58	79-34-5	
Tetrachloroethene	<b>100</b>	ug/L	0.50	1		10/05/16 22:58	127-18-4	
1,1,1-Trichloroethane	<b>1.7</b>	ug/L	0.50	1		10/05/16 22:58	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 22:58	79-00-5	
Trichloroethene	<b>218</b>	ug/L	2.5	5		10/05/16 03:07	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 22:58	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 22:58	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		10/05/16 22:58	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/05/16 22:58	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		10/05/16 22:58	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>8.8</b>	mg/L	5.0	5		10/06/16 21:25	7440-44-0	

Sample: MW-23i	Lab ID: 1276153006	Collected: 09/27/16 10:08	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 02:29	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 02:29	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 02:29	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 02:29	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 02:29	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 02:29	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 02:29	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 02:29	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 02:29	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 02:29	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 02:29	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 02:29	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 02:29	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 02:29	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 02:29	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 02:29	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 02:29	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 02:29	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 02:29	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 02:29	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 02:29	75-09-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-23i		Lab ID: 1276153006	Collected: 09/27/16 10:08	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 02:29	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/05/16 02:29	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 02:29	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 02:29	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/05/16 02:29	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 02:29	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 02:29	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/05/16 02:29	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		10/05/16 02:29	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		10/05/16 02:29	460-00-4	

Sample: MW-17		Lab ID: 1276153007	Collected: 09/27/16 10:50	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 02:48	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 02:48	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 02:48	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 02:48	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 02:48	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 02:48	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 02:48	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 02:48	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 02:48	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 02:48	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 02:48	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 02:48	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 02:48	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 02:48	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 02:48	75-35-4	
cis-1,2-Dichloroethene	1.5	ug/L	0.50	1		10/05/16 02:48	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 02:48	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 02:48	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 02:48	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 02:48	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 02:48	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 02:48	79-34-5	
Tetrachloroethene	4.2	ug/L	0.50	1		10/05/16 02:48	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 02:48	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 02:48	79-00-5	
Trichloroethene	10.4	ug/L	0.50	1		10/05/16 02:48	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 02:48	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 02:48	75-01-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-17		Lab ID: 1276153007		Collected: 09/27/16 10:50	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%.	70-130	1		10/05/16 02:48	17060-07-0	
Toluene-d8 (S)	102	%.	70-130	1		10/05/16 02:48	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	70-130	1		10/05/16 02:48	460-00-4	

Sample: S-1		Lab ID: 1276153008		Collected: 09/27/16 11:50	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 15:31	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 15:31	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 15:31	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 15:31	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 15:31	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 15:31	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 15:31	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 15:31	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 15:31	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 15:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 15:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 15:31	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 15:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 15:31	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 15:31	75-35-4	
cis-1,2-Dichloroethene	1.1	ug/L	0.50	1		10/05/16 15:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 15:31	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 15:31	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 15:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 15:31	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 15:31	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 15:31	79-34-5	
Tetrachloroethene	0.73	ug/L	0.50	1		10/05/16 15:31	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 15:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 15:31	79-00-5	
Trichloroethene	3.0	ug/L	0.50	1		10/05/16 15:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 15:31	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 15:31	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%.	70-130	1		10/05/16 15:31	17060-07-0	
Toluene-d8 (S)	102	%.	70-130	1		10/05/16 15:31	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	70-130	1		10/05/16 15:31	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-26		Lab ID: 1276153009	Collected: 09/27/16 12:40	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/10/16 22:20	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/10/16 22:20	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/10/16 22:20	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/10/16 22:20	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/10/16 22:20	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/10/16 22:20	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/10/16 22:20	67-66-3	
Chloromethane	ND	ug/L	2.0	1		10/10/16 22:20	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/10/16 22:20	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/10/16 22:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/10/16 22:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/10/16 22:20	106-46-7	
1,1-Dichloroethane	<b>3.9</b>	ug/L	0.50	1		10/10/16 22:20	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/10/16 22:20	107-06-2	
1,1-Dichloroethene	<b>1.1</b>	ug/L	0.50	1		10/10/16 22:20	75-35-4	
cis-1,2-Dichloroethene	<b>61.1</b>	ug/L	0.50	1		10/10/16 22:20	156-59-2	
trans-1,2-Dichloroethene	<b>1.6</b>	ug/L	0.50	1		10/10/16 22:20	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/10/16 22:20	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/10/16 22:20	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/10/16 22:20	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/10/16 22:20	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/10/16 22:20	79-34-5	
Tetrachloroethene	<b>160</b>	ug/L	0.50	1		10/10/16 22:20	127-18-4	
1,1,1-Trichloroethane	<b>2.4</b>	ug/L	0.50	1		10/10/16 22:20	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/10/16 22:20	79-00-5	
Trichloroethene	<b>288</b>	ug/L	1.7	3.33		10/05/16 16:49	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/10/16 22:20	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/10/16 22:20	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/10/16 22:20	17060-07-0	
Toluene-d8 (S)	99	%	70-130	1		10/10/16 22:20	2037-26-5	
4-Bromofluorobenzene (S)	91	%	70-130	1		10/10/16 22:20	460-00-4	

Sample: MW-10		Lab ID: 1276153010	Collected: 09/27/16 13:30	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 15:51	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 15:51	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 15:51	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 15:51	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 15:51	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 15:51	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 15:51	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 15:51	74-87-3	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-10		Lab ID: 1276153010		Collected: 09/27/16 13:30		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 15:51	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 15:51	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 15:51	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 15:51	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 15:51	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 15:51	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 15:51	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 15:51	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 15:51	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 15:51	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 15:51	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 15:51	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 15:51	75-09-2		
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 15:51	79-34-5		
Tetrachloroethene	1.6	ug/L	0.50	1		10/05/16 15:51	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 15:51	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 15:51	79-00-5		
Trichloroethene	1.4	ug/L	0.50	1		10/05/16 15:51	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 15:51	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 15:51	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		10/05/16 15:51	17060-07-0		
Toluene-d8 (S)	102	%	70-130	1		10/05/16 15:51	2037-26-5		
4-Bromofluorobenzene (S)	97	%	70-130	1		10/05/16 15:51	460-00-4		

Sample: MW-1		Lab ID: 1276153011		Collected: 09/27/16 14:15		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 16:10	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/05/16 16:10	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/05/16 16:10	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 16:10	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 16:10	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/05/16 16:10	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/05/16 16:10	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/05/16 16:10	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 16:10	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 16:10	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 16:10	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 16:10	106-46-7		
1,1-Dichloroethane	8.6	ug/L	0.50	1		10/05/16 16:10	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 16:10	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 16:10	75-35-4		
cis-1,2-Dichloroethene	25.2	ug/L	0.50	1		10/05/16 16:10	156-59-2		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-1		Lab ID: 1276153011		Collected: 09/27/16 14:15		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 16:10	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 16:10	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 16:10	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 16:10	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 16:10	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 16:10	79-34-5		
Tetrachloroethene	2.3	ug/L	0.50	1		10/05/16 16:10	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 16:10	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 16:10	79-00-5		
Trichloroethene	3.1	ug/L	0.50	1		10/05/16 16:10	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 16:10	75-69-4		
Vinyl chloride	23.9	ug/L	0.50	1		10/05/16 16:10	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/05/16 16:10	17060-07-0		
Toluene-d8 (S)	102	%	70-130	1		10/05/16 16:10	2037-26-5		
4-Bromofluorobenzene (S)	99	%	70-130	1		10/05/16 16:10	460-00-4		

Sample: MW-12		Lab ID: 1276153012		Collected: 09/27/16 15:00		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175							
Ethane	31.8	ug/L	10.0	1		10/10/16 10:59	74-84-0		
Ethene	ND	ug/L	10.0	1		10/10/16 10:59	74-85-1		
Methane	898	ug/L	10.0	1		10/10/16 10:59	74-82-8		
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	10.0	20		10/05/16 11:00	75-27-4		
Bromoform	ND	ug/L	10.0	20		10/05/16 11:00	75-25-2		
Bromomethane	ND	ug/L	400	20		10/05/16 11:00	74-83-9		
Carbon tetrachloride	ND	ug/L	10.0	20		10/05/16 11:00	56-23-5		
Chlorobenzene	ND	ug/L	10.0	20		10/05/16 11:00	108-90-7		
Chloroethane	ND	ug/L	40.0	20		10/05/16 11:00	75-00-3		
Chloroform	ND	ug/L	10.0	20		10/05/16 11:00	67-66-3		
Chloromethane	ND	ug/L	10.0	20		10/05/16 11:00	74-87-3		
Dibromochloromethane	ND	ug/L	10.0	20		10/05/16 11:00	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	10.0	20		10/05/16 11:00	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	10.0	20		10/05/16 11:00	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	10.0	20		10/05/16 11:00	106-46-7		
1,1-Dichloroethane	26.0	ug/L	10.0	20		10/05/16 11:00	75-34-3		
1,2-Dichloroethane	ND	ug/L	10.0	20		10/05/16 11:00	107-06-2		
1,1-Dichloroethene	ND	ug/L	10.0	20		10/05/16 11:00	75-35-4		
cis-1,2-Dichloroethene	525	ug/L	10.0	20		10/05/16 11:00	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	10.0	20		10/05/16 11:00	156-60-5		
1,2-Dichloropropane	ND	ug/L	10.0	20		10/05/16 11:00	78-87-5		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-12		Lab ID: 1276153012		Collected: 09/27/16 15:00		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
cis-1,3-Dichloropropene	ND	ug/L	10.0	20		10/05/16 11:00	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	10.0	20		10/05/16 11:00	10061-02-6		
Methylene Chloride	ND	ug/L	100	20		10/05/16 11:00	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	10.0	20		10/05/16 11:00	79-34-5		
Tetrachloroethene	<b>67.6</b>	ug/L	10.0	20		10/05/16 11:00	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	10.0	20		10/05/16 11:00	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	10.0	20		10/05/16 11:00	79-00-5		
Trichloroethene	<b>45.4</b>	ug/L	10.0	20		10/05/16 11:00	79-01-6		
Trichlorofluoromethane	ND	ug/L	10.0	20		10/05/16 11:00	75-69-4		
Vinyl chloride	<b>14.8</b>	ug/L	10.0	20		10/05/16 11:00	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	70-130	20		10/05/16 11:00	17060-07-0		
Toluene-d8 (S)	101	%	70-130	20		10/05/16 11:00	2037-26-5		
4-Bromofluorobenzene (S)	97	%	70-130	20		10/05/16 11:00	460-00-4		
<b>5310B TOC</b>		Analytical Method: SM 5310B							
Total Organic Carbon	<b>5240</b>	mg/L	100	100		10/06/16 21:44	7440-44-0		

Sample: MW-12 DUP		Lab ID: 1276153013		Collected: 09/27/16 15:00		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	2.5	5		10/10/16 23:00	75-27-4		
Bromoform	ND	ug/L	2.5	5		10/10/16 23:00	75-25-2		
Bromomethane	ND	ug/L	100	5		10/10/16 23:00	74-83-9		
Carbon tetrachloride	ND	ug/L	2.5	5		10/10/16 23:00	56-23-5		
Chlorobenzene	ND	ug/L	2.5	5		10/10/16 23:00	108-90-7		
Chloroethane	ND	ug/L	10.0	5		10/10/16 23:00	75-00-3		
Chloroform	ND	ug/L	2.5	5		10/10/16 23:00	67-66-3		
Chloromethane	ND	ug/L	10.0	5		10/10/16 23:00	74-87-3		
Dibromochloromethane	ND	ug/L	2.5	5		10/10/16 23:00	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	2.5	5		10/10/16 23:00	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	2.5	5		10/10/16 23:00	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	2.5	5		10/10/16 23:00	106-46-7		
1,1-Dichloroethane	<b>44.4</b>	ug/L	2.5	5		10/10/16 23:00	75-34-3		
1,2-Dichloroethane	ND	ug/L	2.5	5		10/10/16 23:00	107-06-2		
1,1-Dichloroethene	<b>11.5</b>	ug/L	2.5	5		10/10/16 23:00	75-35-4		
cis-1,2-Dichloroethene	<b>867</b>	ug/L	2.5	5		10/10/16 23:00	156-59-2		
trans-1,2-Dichloroethene	<b>11.4</b>	ug/L	2.5	5		10/10/16 23:00	156-60-5		
1,2-Dichloropropane	ND	ug/L	2.5	5		10/10/16 23:00	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	2.5	5		10/10/16 23:00	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	2.5	5		10/10/16 23:00	10061-02-6		
Methylene Chloride	ND	ug/L	25.0	5		10/10/16 23:00	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	2.5	5		10/10/16 23:00	79-34-5		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-12 DUP		Lab ID: 1276153013	Collected: 09/27/16 15:00	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Tetrachloroethene	387	ug/L	2.5	5		10/10/16 23:00	127-18-4	
1,1,1-Trichloroethane	3.9	ug/L	2.5	5		10/10/16 23:00	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	2.5	5		10/10/16 23:00	79-00-5	
Trichloroethene	163	ug/L	2.5	5		10/10/16 23:00	79-01-6	
Trichlorofluoromethane	ND	ug/L	2.5	5		10/10/16 23:00	75-69-4	
Vinyl chloride	22.6	ug/L	2.5	5		10/10/16 23:00	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	5		10/10/16 23:00	17060-07-0	
Toluene-d8 (S)	93	%	70-130	5		10/10/16 23:00	2037-26-5	
4-Bromofluorobenzene (S)	83	%	70-130	5		10/10/16 23:00	460-00-4	

Sample: MW-8		Lab ID: 1276153014	Collected: 09/27/16 16:25	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 16:29	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 16:29	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 16:29	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 16:29	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 16:29	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 16:29	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 16:29	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 16:29	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 16:29	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 16:29	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 16:29	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 16:29	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 16:29	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 16:29	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 16:29	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 16:29	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 16:29	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 16:29	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 16:29	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 16:29	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 16:29	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 16:29	79-34-5	
Tetrachloroethene	5.3	ug/L	0.50	1		10/05/16 16:29	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 16:29	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 16:29	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/05/16 16:29	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 16:29	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 16:29	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/05/16 16:29	17060-07-0	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-8		Lab ID: 1276153014	Collected: 09/27/16 16:25	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
<b>Surrogates</b>								
Toluene-d8 (S)	101	%.	70-130	1		10/05/16 16:29	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	70-130	1		10/05/16 16:29	460-00-4	

Sample: MW-13		Lab ID: 1276153015	Collected: 09/28/16 08:33	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		10/10/16 11:07	74-84-0	
Ethene	ND	ug/L	10.0	1		10/10/16 11:07	74-85-1	
Methane	ND	ug/L	10.0	1		10/10/16 11:07	74-82-8	

<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	25.0	50		10/11/16 00:39	75-27-4	
Bromoform	ND	ug/L	25.0	50		10/11/16 00:39	75-25-2	
Bromomethane	ND	ug/L	1000	50		10/11/16 00:39	74-83-9	
Carbon tetrachloride	ND	ug/L	25.0	50		10/11/16 00:39	56-23-5	
Chlorobenzene	ND	ug/L	25.0	50		10/11/16 00:39	108-90-7	
Chloroethane	ND	ug/L	100	50		10/11/16 00:39	75-00-3	
Chloroform	ND	ug/L	25.0	50		10/11/16 00:39	67-66-3	
Chloromethane	ND	ug/L	100	50		10/11/16 00:39	74-87-3	
Dibromochloromethane	ND	ug/L	25.0	50		10/11/16 00:39	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	25.0	50		10/11/16 00:39	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	25.0	50		10/11/16 00:39	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	25.0	50		10/11/16 00:39	106-46-7	
1,1-Dichloroethane	ND	ug/L	25.0	50		10/11/16 00:39	75-34-3	
1,2-Dichloroethane	ND	ug/L	25.0	50		10/11/16 00:39	107-06-2	
1,1-Dichloroethene	ND	ug/L	25.0	50		10/11/16 00:39	75-35-4	
cis-1,2-Dichloroethene	<b>148</b>	ug/L	25.0	50		10/11/16 00:39	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	25.0	50		10/11/16 00:39	156-60-5	
1,2-Dichloropropane	ND	ug/L	25.0	50		10/11/16 00:39	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	25.0	50		10/11/16 00:39	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	25.0	50		10/11/16 00:39	10061-02-6	
Methylene Chloride	ND	ug/L	250	50		10/11/16 00:39	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	25.0	50		10/11/16 00:39	79-34-5	
Tetrachloroethene	<b>4840</b>	ug/L	25.0	50		10/11/16 00:39	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	25.0	50		10/11/16 00:39	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	25.0	50		10/11/16 00:39	79-00-5	
Trichloroethene	<b>895</b>	ug/L	25.0	50		10/11/16 00:39	79-01-6	
Trichlorofluoromethane	ND	ug/L	25.0	50		10/11/16 00:39	75-69-4	
Vinyl chloride	ND	ug/L	25.0	50		10/11/16 00:39	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%.	70-130	50		10/11/16 00:39	17060-07-0	
Toluene-d8 (S)	94	%.	70-130	50		10/11/16 00:39	2037-26-5	
4-Bromofluorobenzene (S)	83	%.	70-130	50		10/11/16 00:39	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-13	Lab ID: 1276153015	Collected: 09/28/16 08:33	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

5310B TOC	Analytical Method: SM 5310B							
Total Organic Carbon	33600	mg/L	1000	1000		10/11/16 10:07	7440-44-0	M6

Sample: MW-13 DUP	Lab ID: 1276153016	Collected: 09/28/16 08:33	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

8260 MSV Med Water	Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	25.0	50		10/11/16 00:19	75-27-4	
Bromoform	ND	ug/L	25.0	50		10/11/16 00:19	75-25-2	
Bromomethane	ND	ug/L	1000	50		10/11/16 00:19	74-83-9	
Carbon tetrachloride	ND	ug/L	25.0	50		10/11/16 00:19	56-23-5	
Chlorobenzene	ND	ug/L	25.0	50		10/11/16 00:19	108-90-7	
Chloroethane	ND	ug/L	100	50		10/11/16 00:19	75-00-3	
Chloroform	ND	ug/L	25.0	50		10/11/16 00:19	67-66-3	
Chloromethane	ND	ug/L	100	50		10/11/16 00:19	74-87-3	
Dibromochloromethane	ND	ug/L	25.0	50		10/11/16 00:19	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	25.0	50		10/11/16 00:19	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	25.0	50		10/11/16 00:19	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	25.0	50		10/11/16 00:19	106-46-7	
1,1-Dichloroethane	ND	ug/L	25.0	50		10/11/16 00:19	75-34-3	
1,2-Dichloroethane	ND	ug/L	25.0	50		10/11/16 00:19	107-06-2	
1,1-Dichloroethene	ND	ug/L	25.0	50		10/11/16 00:19	75-35-4	
cis-1,2-Dichloroethene	145	ug/L	25.0	50		10/11/16 00:19	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	25.0	50		10/11/16 00:19	156-60-5	
1,2-Dichloropropane	ND	ug/L	25.0	50		10/11/16 00:19	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	25.0	50		10/11/16 00:19	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	25.0	50		10/11/16 00:19	10061-02-6	
Methylene Chloride	ND	ug/L	250	50		10/11/16 00:19	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	25.0	50		10/11/16 00:19	79-34-5	
Tetrachloroethene	5090	ug/L	25.0	50		10/11/16 00:19	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	25.0	50		10/11/16 00:19	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	25.0	50		10/11/16 00:19	79-00-5	
Trichloroethene	951	ug/L	25.0	50		10/11/16 00:19	79-01-6	
Trichlorofluoromethane	ND	ug/L	25.0	50		10/11/16 00:19	75-69-4	
Vinyl chloride	ND	ug/L	25.0	50		10/11/16 00:19	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	50		10/11/16 00:19	17060-07-0	
Toluene-d8 (S)	95	%	70-130	50		10/11/16 00:19	2037-26-5	
4-Bromofluorobenzene (S)	85	%	70-130	50		10/11/16 00:19	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: EX-1	Lab ID: 1276153017	Collected: 09/28/16 09:30	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	1.7	3.33		10/05/16 17:08	75-27-4	
Bromoform	ND	ug/L	1.7	3.33		10/05/16 17:08	75-25-2	
Bromomethane	ND	ug/L	66.6	3.33		10/05/16 17:08	74-83-9	
Carbon tetrachloride	ND	ug/L	1.7	3.33		10/05/16 17:08	56-23-5	
Chlorobenzene	ND	ug/L	1.7	3.33		10/05/16 17:08	108-90-7	
Chloroethane	ND	ug/L	6.7	3.33		10/05/16 17:08	75-00-3	
Chloroform	ND	ug/L	1.7	3.33		10/05/16 17:08	67-66-3	
Chloromethane	ND	ug/L	1.7	3.33		10/05/16 17:08	74-87-3	
Dibromochloromethane	ND	ug/L	1.7	3.33		10/05/16 17:08	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	1.7	3.33		10/05/16 17:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.7	3.33		10/05/16 17:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.7	3.33		10/05/16 17:08	106-46-7	
1,1-Dichloroethane	4.6	ug/L	1.7	3.33		10/05/16 17:08	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.7	3.33		10/05/16 17:08	107-06-2	
1,1-Dichloroethene	3.5	ug/L	1.7	3.33		10/05/16 17:08	75-35-4	
cis-1,2-Dichloroethene	2230	ug/L	12.5	25		10/11/16 00:00	156-59-2	
trans-1,2-Dichloroethene	3.8	ug/L	1.7	3.33		10/05/16 17:08	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.7	3.33		10/05/16 17:08	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	1.7	3.33		10/05/16 17:08	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.7	3.33		10/05/16 17:08	10061-02-6	
Methylene Chloride	ND	ug/L	16.6	3.33		10/05/16 17:08	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.7	3.33		10/05/16 17:08	79-34-5	
Tetrachloroethene	39.4	ug/L	1.7	3.33		10/05/16 17:08	127-18-4	
1,1,1-Trichloroethane	2.5	ug/L	1.7	3.33		10/05/16 17:08	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.7	3.33		10/05/16 17:08	79-00-5	
Trichloroethene	549	ug/L	1.7	3.33		10/05/16 17:08	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.7	3.33		10/05/16 17:08	75-69-4	
Vinyl chloride	128	ug/L	1.7	3.33		10/05/16 17:08	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	3.33		10/05/16 17:08	17060-07-0	
Toluene-d8 (S)	102	%	70-130	3.33		10/05/16 17:08	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130	3.33		10/05/16 17:08	460-00-4	

Sample: MP-1	Lab ID: 1276153018	Collected: 09/28/16 10:30	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		10/10/16 11:15	74-84-0	
Ethene	ND	ug/L	10.0	1		10/10/16 11:15	74-85-1	
Methane	4000	ug/L	10.0	1		10/10/16 11:15	74-82-8	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/11/16 13:54	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/11/16 13:54	75-25-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

<b>Sample: MP-1</b>		<b>Lab ID: 1276153018</b>		Collected: 09/28/16 10:30	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromomethane	ND	ug/L	20.0	1		10/11/16 13:54	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/11/16 13:54	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/11/16 13:54	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/11/16 13:54	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/11/16 13:54	67-66-3	
Chloromethane	ND	ug/L	2.0	1		10/11/16 13:54	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/11/16 13:54	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/11/16 13:54	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/11/16 13:54	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/11/16 13:54	106-46-7	
1,1-Dichloroethane	<b>1.3</b>	ug/L	0.50	1		10/11/16 13:54	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/11/16 13:54	107-06-2	
1,1-Dichloroethene	<b>3.1</b>	ug/L	0.50	1		10/11/16 13:54	75-35-4	
cis-1,2-Dichloroethene	<b>40.5</b>	ug/L	0.50	1		10/11/16 13:54	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/11/16 13:54	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/11/16 13:54	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/11/16 13:54	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/11/16 13:54	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/11/16 13:54	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/11/16 13:54	79-34-5	
Tetrachloroethene	<b>99.4</b>	ug/L	0.50	1		10/11/16 13:54	127-18-4	M1
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/11/16 13:54	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/11/16 13:54	79-00-5	
Trichloroethene	<b>35.5</b>	ug/L	0.50	1		10/11/16 13:54	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/11/16 13:54	75-69-4	
Vinyl chloride	<b>3.3</b>	ug/L	0.50	1		10/11/16 13:54	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		10/11/16 13:54	17060-07-0	
Toluene-d8 (S)	98	%	70-130	1		10/11/16 13:54	2037-26-5	
4-Bromofluorobenzene (S)	90	%	70-130	1		10/11/16 13:54	460-00-4	

<b>5310B TOC</b>		Analytical Method: SM 5310B						
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Total Organic Carbon	<b>2620</b>	mg/L	250	250		10/07/16 19:26	7440-44-0	

<b>Sample: MW-24i</b>		<b>Lab ID: 1276153019</b>		Collected: 09/28/16 11:15	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		10/10/16 11:23	74-84-0	
Ethene	ND	ug/L	10.0	1		10/10/16 11:23	74-85-1	
Methane	ND	ug/L	10.0	1		10/10/16 11:23	74-82-8	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 19:08	75-27-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-24i	Lab ID: 1276153019	Collected: 09/28/16 11:15	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromoform	ND	ug/L	0.50	1		10/05/16 19:08	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 19:08	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 19:08	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 19:08	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 19:08	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 19:08	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 19:08	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 19:08	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 19:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 19:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 19:08	106-46-7	
1,1-Dichloroethane	<b>0.53</b>	ug/L	0.50	1		10/05/16 19:08	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 19:08	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 19:08	75-35-4	
cis-1,2-Dichloroethene	<b>5.4</b>	ug/L	0.50	1		10/05/16 19:08	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 19:08	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 19:08	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 19:08	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 19:08	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 19:08	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 19:08	79-34-5	
Tetrachloroethene	<b>5.8</b>	ug/L	0.50	1		10/05/16 19:08	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 19:08	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 19:08	79-00-5	
Trichloroethene	<b>3.1</b>	ug/L	0.50	1		10/05/16 19:08	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 19:08	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 19:08	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/05/16 19:08	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/05/16 19:08	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		10/05/16 19:08	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>5.3</b>	mg/L	1.0	1		10/06/16 22:41	7440-44-0	

Sample: MW-22i	Lab ID: 1276153020	Collected: 09/28/16 12:10	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 20:44	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 20:44	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 20:44	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 20:44	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 20:44	108-90-7	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-22i		Lab ID: 1276153020		Collected: 09/28/16 12:10		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Chloroethane	ND	ug/L	2.0	1		10/05/16 20:44	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/05/16 20:44	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/05/16 20:44	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 20:44	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 20:44	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 20:44	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 20:44	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 20:44	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 20:44	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 20:44	75-35-4		
cis-1,2-Dichloroethene	8.1	ug/L	0.50	1		10/05/16 20:44	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 20:44	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 20:44	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 20:44	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 20:44	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 20:44	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 20:44	79-34-5		
Tetrachloroethene	1.3	ug/L	0.50	1		10/05/16 20:44	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 20:44	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 20:44	79-00-5		
Trichloroethene	9.0	ug/L	0.50	1		10/05/16 20:44	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 20:44	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 20:44	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	101	%.	70-130	1		10/05/16 20:44	17060-07-0		
Toluene-d8 (S)	102	%.	70-130	1		10/05/16 20:44	2037-26-5		
4-Bromofluorobenzene (S)	99	%.	70-130	1		10/05/16 20:44	460-00-4		

Sample: MW-16		Lab ID: 1276153021		Collected: 09/28/16 12:50		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 21:03	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/05/16 21:03	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/05/16 21:03	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 21:03	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 21:03	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/05/16 21:03	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/05/16 21:03	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/05/16 21:03	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 21:03	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 21:03	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 21:03	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 21:03	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 21:03	75-34-3		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-16		Lab ID: 1276153021	Collected: 09/28/16 12:50	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 21:03	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 21:03	75-35-4	
cis-1,2-Dichloroethene	<b>9.5</b>	ug/L	0.50	1		10/05/16 21:03	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 21:03	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 21:03	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 21:03	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 21:03	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 21:03	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 21:03	79-34-5	
Tetrachloroethene	<b>144</b>	ug/L	0.50	1		10/05/16 21:03	127-18-4	
1,1,1-Trichloroethane	<b>0.66</b>	ug/L	0.50	1		10/05/16 21:03	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 21:03	79-00-5	
Trichloroethene	<b>35.6</b>	ug/L	0.50	1		10/05/16 21:03	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 21:03	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 21:03	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		10/05/16 21:03	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		10/05/16 21:03	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		10/05/16 21:03	460-00-4	

Sample: MW-18i		Lab ID: 1276153022	Collected: 09/28/16 13:30	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 21:22	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 21:22	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 21:22	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 21:22	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 21:22	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 21:22	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 21:22	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 21:22	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 21:22	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 21:22	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 21:22	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 21:22	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 21:22	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 21:22	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 21:22	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 21:22	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 21:22	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 21:22	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 21:22	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 21:22	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 21:22	75-09-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-18i		Lab ID: 1276153022	Collected: 09/28/16 13:30	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 21:22	79-34-5	
Tetrachloroethene	1.4	ug/L	0.50	1		10/05/16 21:22	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 21:22	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 21:22	79-00-5	
Trichloroethene	0.85	ug/L	0.50	1		10/05/16 21:22	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 21:22	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 21:22	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		10/05/16 21:22	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/05/16 21:22	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	1		10/05/16 21:22	460-00-4	

Sample: MW-20i		Lab ID: 1276153023	Collected: 09/28/16 14:38	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 21:41	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 21:41	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 21:41	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 21:41	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 21:41	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 21:41	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 21:41	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 21:41	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 21:41	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 21:41	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 21:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 21:41	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 21:41	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 21:41	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 21:41	75-35-4	
cis-1,2-Dichloroethene	8.7	ug/L	0.50	1		10/05/16 21:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 21:41	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 21:41	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 21:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 21:41	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 21:41	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 21:41	79-34-5	
Tetrachloroethene	4.0	ug/L	0.50	1		10/05/16 21:41	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 21:41	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 21:41	79-00-5	
Trichloroethene	2.2	ug/L	0.50	1		10/05/16 21:41	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 21:41	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 21:41	75-01-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-20i	Lab ID: 1276153023	Collected: 09/28/16 14:38	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

**8260 MSV Med Water** Analytical Method: EPA 8260B

**Surrogates**

1,2-Dichloroethane-d4 (S)	103	%	70-130	1		10/05/16 21:41	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/05/16 21:41	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		10/05/16 21:41	460-00-4	

Sample: MW-19i	Lab ID: 1276153024	Collected: 09/28/16 15:18	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual

**8260 MSV Med Water** Analytical Method: EPA 8260B

Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 22:01	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 22:01	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 22:01	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 22:01	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 22:01	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 22:01	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 22:01	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 22:01	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 22:01	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:01	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:01	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:01	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 22:01	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 22:01	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 22:01	75-35-4	
cis-1,2-Dichloroethene	<b>5.9</b>	ug/L	0.50	1		10/05/16 22:01	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 22:01	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 22:01	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 22:01	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 22:01	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 22:01	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 22:01	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/05/16 22:01	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 22:01	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 22:01	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/05/16 22:01	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 22:01	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 22:01	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/05/16 22:01	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/05/16 22:01	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		10/05/16 22:01	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-6		Lab ID: 1276153025		Collected: 09/28/16 16:08		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 22:20	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/05/16 22:20	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/05/16 22:20	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 22:20	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 22:20	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/05/16 22:20	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/05/16 22:20	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/05/16 22:20	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 22:20	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:20	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:20	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:20	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 22:20	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 22:20	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 22:20	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 22:20	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 22:20	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 22:20	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 22:20	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 22:20	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 22:20	75-09-2		
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 22:20	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		10/05/16 22:20	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 22:20	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 22:20	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		10/05/16 22:20	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 22:20	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 22:20	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/05/16 22:20	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		10/05/16 22:20	2037-26-5		
4-Bromofluorobenzene (S)	98	%	70-130	1		10/05/16 22:20	460-00-4		

Sample: MW-25i		Lab ID: 1276153026		Collected: 09/29/16 08:00		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 22:39	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/05/16 22:39	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/05/16 22:39	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 22:39	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 22:39	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/05/16 22:39	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/05/16 22:39	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/05/16 22:39	74-87-3		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-25i		Lab ID: 1276153026		Collected: 09/29/16 08:00		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 22:39	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:39	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:39	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 22:39	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 22:39	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 22:39	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 22:39	75-35-4		
cis-1,2-Dichloroethene	<b>0.81</b>	ug/L	0.50	1		10/05/16 22:39	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 22:39	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 22:39	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 22:39	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 22:39	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 22:39	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 22:39	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		10/05/16 22:39	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 22:39	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 22:39	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		10/05/16 22:39	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 22:39	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 22:39	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		10/05/16 22:39	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		10/05/16 22:39	2037-26-5		
4-Bromofluorobenzene (S)	98	%	70-130	1		10/05/16 22:39	460-00-4		

Sample: MW-2		Lab ID: 1276153027		Collected: 09/29/16 09:05		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 10:35	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/06/16 10:35	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/06/16 10:35	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 10:35	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 10:35	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/06/16 10:35	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/06/16 10:35	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/06/16 10:35	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 10:35	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 10:35	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 10:35	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 10:35	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		10/06/16 10:35	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 10:35	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 10:35	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 10:35	156-59-2		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-2		Lab ID: 1276153027	Collected: 09/29/16 09:05	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 10:35	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 10:35	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 10:35	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 10:35	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 10:35	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 10:35	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/06/16 10:35	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 10:35	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 10:35	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/06/16 10:35	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 10:35	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/06/16 10:35	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/06/16 10:35	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		10/06/16 10:35	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		10/06/16 10:35	460-00-4	

Sample: EW-1		Lab ID: 1276153028	Collected: 09/29/16 09:55	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 14:07	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/06/16 14:07	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/06/16 14:07	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 14:07	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 14:07	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/06/16 14:07	75-00-3	
Chloroform	1.1	ug/L	0.50	1		10/06/16 14:07	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/06/16 14:07	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 14:07	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 14:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 14:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 14:07	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/06/16 14:07	75-34-3	
1,2-Dichloroethane	1.5	ug/L	0.50	1		10/06/16 14:07	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 14:07	75-35-4	
cis-1,2-Dichloroethene	5.4	ug/L	0.50	1		10/06/16 14:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 14:07	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 14:07	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 14:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 14:07	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 14:07	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 14:07	79-34-5	
Tetrachloroethene	38.6	ug/L	0.50	1		10/06/16 14:07	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 14:07	71-55-6	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: EW-1		Lab ID: 1276153028	Collected: 09/29/16 09:55	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 14:07	79-00-5	
Trichloroethene	10.5	ug/L	0.50	1		10/06/16 14:07	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 14:07	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/06/16 14:07	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		10/06/16 14:07	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/06/16 14:07	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		10/06/16 14:07	460-00-4	

Sample: MW-5		Lab ID: 1276153029	Collected: 09/29/16 11:26	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	5.0	10		10/06/16 16:22	75-27-4	
Bromoform	ND	ug/L	5.0	10		10/06/16 16:22	75-25-2	
Bromomethane	ND	ug/L	200	10		10/06/16 16:22	74-83-9	
Carbon tetrachloride	ND	ug/L	5.0	10		10/06/16 16:22	56-23-5	
Chlorobenzene	ND	ug/L	5.0	10		10/06/16 16:22	108-90-7	
Chloroethane	ND	ug/L	20.0	10		10/06/16 16:22	75-00-3	
Chloroform	ND	ug/L	5.0	10		10/06/16 16:22	67-66-3	
Chloromethane	ND	ug/L	5.0	10		10/06/16 16:22	74-87-3	
Dibromochloromethane	ND	ug/L	5.0	10		10/06/16 16:22	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	5.0	10		10/06/16 16:22	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	10		10/06/16 16:22	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	10		10/06/16 16:22	106-46-7	
1,1-Dichloroethane	ND	ug/L	5.0	10		10/06/16 16:22	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	10		10/06/16 16:22	107-06-2	
1,1-Dichloroethene	ND	ug/L	5.0	10		10/06/16 16:22	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	5.0	10		10/06/16 16:22	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	5.0	10		10/06/16 16:22	156-60-5	
1,2-Dichloropropane	ND	ug/L	5.0	10		10/06/16 16:22	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	5.0	10		10/06/16 16:22	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	10		10/06/16 16:22	10061-02-6	
Methylene Chloride	ND	ug/L	50.0	10		10/06/16 16:22	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	10		10/06/16 16:22	79-34-5	
Tetrachloroethene	ND	ug/L	5.0	10		10/06/16 16:22	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	5.0	10		10/06/16 16:22	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	10		10/06/16 16:22	79-00-5	
Trichloroethene	ND	ug/L	5.0	10		10/06/16 16:22	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	10		10/06/16 16:22	75-69-4	
Vinyl chloride	ND	ug/L	5.0	10		10/06/16 16:22	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	10		10/06/16 16:22	17060-07-0	
Toluene-d8 (S)	102	%	70-130	10		10/06/16 16:22	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	10		10/06/16 16:22	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-7		Lab ID: 1276153030		Collected: 09/29/16 12:10		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 14:26	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/06/16 14:26	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/06/16 14:26	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 14:26	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 14:26	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/06/16 14:26	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/06/16 14:26	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/06/16 14:26	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 14:26	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 14:26	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 14:26	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 14:26	106-46-7		
1,1-Dichloroethane	1.1	ug/L	0.50	1		10/06/16 14:26	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 14:26	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 14:26	75-35-4		
cis-1,2-Dichloroethene	10.9	ug/L	0.50	1		10/06/16 14:26	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 14:26	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 14:26	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 14:26	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 14:26	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 14:26	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 14:26	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		10/06/16 14:26	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 14:26	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 14:26	79-00-5		
Trichloroethene	5.5	ug/L	0.50	1		10/06/16 14:26	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 14:26	75-69-4		
Vinyl chloride	5.5	ug/L	0.50	1		10/06/16 14:26	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/06/16 14:26	17060-07-0		
Toluene-d8 (S)	102	%	70-130	1		10/06/16 14:26	2037-26-5		
4-Bromofluorobenzene (S)	98	%	70-130	1		10/06/16 14:26	460-00-4		

Sample: MW-7 DUP		Lab ID: 1276153031		Collected: 09/29/16 12:10		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 14:46	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/06/16 14:46	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/06/16 14:46	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 14:46	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 14:46	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/06/16 14:46	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/06/16 14:46	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/06/16 14:46	74-87-3		

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-7 DUP		Lab ID: 1276153031	Collected: 09/29/16 12:10	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 14:46	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 14:46	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 14:46	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 14:46	106-46-7	
1,1-Dichloroethane	<b>1.1</b>	ug/L	0.50	1		10/06/16 14:46	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 14:46	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 14:46	75-35-4	
cis-1,2-Dichloroethene	<b>10.9</b>	ug/L	0.50	1		10/06/16 14:46	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 14:46	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 14:46	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 14:46	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 14:46	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 14:46	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 14:46	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/06/16 14:46	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 14:46	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 14:46	79-00-5	
Trichloroethene	<b>6.0</b>	ug/L	0.50	1		10/06/16 14:46	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 14:46	75-69-4	
Vinyl chloride	<b>5.5</b>	ug/L	0.50	1		10/06/16 14:46	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/06/16 14:46	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/06/16 14:46	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		10/06/16 14:46	460-00-4	

Sample: MW-9		Lab ID: 1276153032	Collected: 09/29/16 12:58	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 15:05	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/06/16 15:05	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/06/16 15:05	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 15:05	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 15:05	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/06/16 15:05	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/06/16 15:05	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/06/16 15:05	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 15:05	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 15:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 15:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 15:05	106-46-7	
1,1-Dichloroethane	<b>1.2</b>	ug/L	0.50	1		10/06/16 15:05	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 15:05	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 15:05	75-35-4	
cis-1,2-Dichloroethene	<b>39.3</b>	ug/L	0.50	1		10/06/16 15:05	156-59-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-9		Lab ID: 1276153032	Collected: 09/29/16 12:58	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	1.8	ug/L	0.50	1		10/06/16 15:05	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 15:05	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 15:05	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 15:05	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 15:05	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 15:05	79-34-5	
Tetrachloroethene	192	ug/L	0.50	1		10/06/16 15:05	127-18-4	
1,1,1-Trichloroethane	2.5	ug/L	0.50	1		10/06/16 15:05	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 15:05	79-00-5	
Trichloroethene	91.9	ug/L	0.50	1		10/06/16 15:05	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 15:05	75-69-4	
Vinyl chloride	0.76	ug/L	0.50	1		10/06/16 15:05	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		10/06/16 15:05	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		10/06/16 15:05	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	1		10/06/16 15:05	460-00-4	

Sample: MGMS2-40		Lab ID: 1276153033	Collected: 09/29/16 15:25	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	5.0	10		10/06/16 16:41	75-27-4	
Bromoform	ND	ug/L	5.0	10		10/06/16 16:41	75-25-2	
Bromomethane	ND	ug/L	200	10		10/06/16 16:41	74-83-9	
Carbon tetrachloride	ND	ug/L	5.0	10		10/06/16 16:41	56-23-5	
Chlorobenzene	ND	ug/L	5.0	10		10/06/16 16:41	108-90-7	
Chloroethane	ND	ug/L	20.0	10		10/06/16 16:41	75-00-3	
Chloroform	ND	ug/L	5.0	10		10/06/16 16:41	67-66-3	
Chloromethane	ND	ug/L	5.0	10		10/06/16 16:41	74-87-3	
Dibromochloromethane	ND	ug/L	5.0	10		10/06/16 16:41	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	5.0	10		10/06/16 16:41	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	10		10/06/16 16:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	10		10/06/16 16:41	106-46-7	
1,1-Dichloroethane	12.1	ug/L	5.0	10		10/06/16 16:41	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	10		10/06/16 16:41	107-06-2	
1,1-Dichloroethene	ND	ug/L	5.0	10		10/06/16 16:41	75-35-4	
cis-1,2-Dichloroethene	115	ug/L	5.0	10		10/06/16 16:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	5.0	10		10/06/16 16:41	156-60-5	
1,2-Dichloropropane	ND	ug/L	5.0	10		10/06/16 16:41	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	5.0	10		10/06/16 16:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	10		10/06/16 16:41	10061-02-6	
Methylene Chloride	ND	ug/L	50.0	10		10/06/16 16:41	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	10		10/06/16 16:41	79-34-5	
Tetrachloroethene	33.3	ug/L	5.0	10		10/06/16 16:41	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	5.0	10		10/06/16 16:41	71-55-6	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: <b>MGMS2-40</b>		Lab ID: <b>1276153033</b>	Collected: 09/29/16 15:25	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	5.0	10		10/06/16 16:41	79-00-5	
Trichloroethene	<b>24.8</b>	ug/L	5.0	10		10/06/16 16:41	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	10		10/06/16 16:41	75-69-4	
Vinyl chloride	<b>142</b>	ug/L	5.0	10		10/06/16 16:41	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	105	%	70-130	10		10/06/16 16:41	17060-07-0	
Toluene-d8 (S)	103	%	70-130	10		10/06/16 16:41	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130	10		10/06/16 16:41	460-00-4	

Sample: <b>MGMS2-110</b>		Lab ID: <b>1276153034</b>	Collected: 09/29/16 16:07	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 15:24	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/06/16 15:24	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/06/16 15:24	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 15:24	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 15:24	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/06/16 15:24	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/06/16 15:24	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/06/16 15:24	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 15:24	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 15:24	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 15:24	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 15:24	106-46-7	
1,1-Dichloroethane	<b>0.62</b>	ug/L	0.50	1		10/06/16 15:24	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 15:24	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 15:24	75-35-4	
cis-1,2-Dichloroethene	<b>16.8</b>	ug/L	0.50	1		10/06/16 15:24	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 15:24	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 15:24	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 15:24	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 15:24	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 15:24	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 15:24	79-34-5	
Tetrachloroethene	<b>6.5</b>	ug/L	0.50	1		10/06/16 15:24	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 15:24	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 15:24	79-00-5	
Trichloroethene	<b>6.3</b>	ug/L	0.50	1		10/06/16 15:24	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 15:24	75-69-4	
Vinyl chloride	<b>5.8</b>	ug/L	0.50	1		10/06/16 15:24	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		10/06/16 15:24	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		10/06/16 15:24	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		10/06/16 15:24	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MGMS2-132		Lab ID: 1276153035		Collected: 09/29/16 16:25		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 15:43	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/06/16 15:43	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/06/16 15:43	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 15:43	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 15:43	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/06/16 15:43	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/06/16 15:43	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/06/16 15:43	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 15:43	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 15:43	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 15:43	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 15:43	106-46-7		
1,1-Dichloroethane	<b>0.70</b>	ug/L	0.50	1		10/06/16 15:43	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 15:43	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 15:43	75-35-4		
cis-1,2-Dichloroethene	<b>31.4</b>	ug/L	0.50	1		10/06/16 15:43	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 15:43	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 15:43	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 15:43	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 15:43	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 15:43	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 15:43	79-34-5		
Tetrachloroethene	<b>6.4</b>	ug/L	0.50	1		10/06/16 15:43	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 15:43	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 15:43	79-00-5		
Trichloroethene	<b>7.9</b>	ug/L	0.50	1		10/06/16 15:43	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 15:43	75-69-4		
Vinyl chloride	<b>8.2</b>	ug/L	0.50	1		10/06/16 15:43	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/06/16 15:43	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		10/06/16 15:43	2037-26-5		
4-Bromofluorobenzene (S)	98	%	70-130	1		10/06/16 15:43	460-00-4		

Sample: MW-3		Lab ID: 1276153036		Collected: 09/30/16 07:54		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 16:02	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/06/16 16:02	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/06/16 16:02	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 16:02	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 16:02	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/06/16 16:02	75-00-3		
Chloroform	<b>0.67</b>	ug/L	0.50	1		10/06/16 16:02	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/06/16 16:02	74-87-3		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MW-3		Lab ID: 1276153036		Collected: 09/30/16 07:54		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 16:02	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 16:02	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 16:02	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 16:02	106-46-7		
1,1-Dichloroethane	<b>8.2</b>	ug/L	0.50	1		10/06/16 16:02	75-34-3		
1,2-Dichloroethane	<b>0.73</b>	ug/L	0.50	1		10/06/16 16:02	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 16:02	75-35-4		
cis-1,2-Dichloroethene	<b>95.3</b>	ug/L	0.50	1		10/06/16 16:02	156-59-2		
trans-1,2-Dichloroethene	<b>1.5</b>	ug/L	0.50	1		10/06/16 16:02	156-60-5		
1,2-Dichloropropane	<b>1.6</b>	ug/L	0.50	1		10/06/16 16:02	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 16:02	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 16:02	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 16:02	75-09-2		
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 16:02	79-34-5		
Tetrachloroethene	<b>145</b>	ug/L	0.50	1		10/06/16 16:02	127-18-4		
1,1,1-Trichloroethane	<b>2.0</b>	ug/L	0.50	1		10/06/16 16:02	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 16:02	79-00-5		
Trichloroethene	<b>40.1</b>	ug/L	0.50	1		10/06/16 16:02	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 16:02	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		10/06/16 16:02	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		10/06/16 16:02	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		10/06/16 16:02	2037-26-5		
4-Bromofluorobenzene (S)	99	%	70-130	1		10/06/16 16:02	460-00-4		

Sample: MW-15		Lab ID: 1276153037		Collected: 09/30/16 08:33		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/07/16 13:34	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/07/16 13:34	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/07/16 13:34	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/07/16 13:34	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/07/16 13:34	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/07/16 13:34	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/07/16 13:34	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/07/16 13:34	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		10/07/16 13:34	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 13:34	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 13:34	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 13:34	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		10/07/16 13:34	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/07/16 13:34	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/07/16 13:34	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/07/16 13:34	156-59-2		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-15		Lab ID: 1276153037		Collected: 09/30/16 08:33	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/07/16 13:34	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/07/16 13:34	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 13:34	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 13:34	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/07/16 13:34	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/07/16 13:34	79-34-5	
Tetrachloroethene	<b>0.51</b>	ug/L	0.50	1		10/07/16 13:34	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/07/16 13:34	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/07/16 13:34	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/07/16 13:34	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/07/16 13:34	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/07/16 13:34	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/07/16 13:34	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/07/16 13:34	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		10/07/16 13:34	460-00-4	

Sample: MW-24d		Lab ID: 1276153038		Collected: 09/30/16 10:15	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/07/16 10:40	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/07/16 10:40	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/07/16 10:40	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/07/16 10:40	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/07/16 10:40	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/07/16 10:40	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/07/16 10:40	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/07/16 10:40	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/07/16 10:40	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 10:40	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 10:40	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 10:40	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/07/16 10:40	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/07/16 10:40	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/07/16 10:40	75-35-4	
cis-1,2-Dichloroethene	<b>0.62</b>	ug/L	0.50	1		10/07/16 10:40	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/07/16 10:40	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/07/16 10:40	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 10:40	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 10:40	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/07/16 10:40	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/07/16 10:40	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/07/16 10:40	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/07/16 10:40	71-55-6	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: MW-24d		Lab ID: 1276153038	Collected: 09/30/16 10:15	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/07/16 10:40	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/07/16 10:40	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/07/16 10:40	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/07/16 10:40	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%.	70-130	1		10/07/16 10:40	17060-07-0	
Toluene-d8 (S)	102	%.	70-130	1		10/07/16 10:40	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	70-130	1		10/07/16 10:40	460-00-4	

Sample: Field Blank 1		Lab ID: 1276153039	Collected: 09/26/16 15:00	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/05/16 12:19	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/05/16 12:19	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/05/16 12:19	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/05/16 12:19	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/05/16 12:19	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/05/16 12:19	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/05/16 12:19	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/05/16 12:19	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/05/16 12:19	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 12:19	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 12:19	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/05/16 12:19	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/05/16 12:19	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/05/16 12:19	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/05/16 12:19	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 12:19	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/05/16 12:19	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/05/16 12:19	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 12:19	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/05/16 12:19	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/05/16 12:19	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		10/05/16 12:19	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/05/16 12:19	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/05/16 12:19	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/05/16 12:19	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/05/16 12:19	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/05/16 12:19	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/05/16 12:19	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	104	%.	70-130	1		10/05/16 12:19	17060-07-0	
Toluene-d8 (S)	102	%.	70-130	1		10/05/16 12:19	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	70-130	1		10/05/16 12:19	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: Field Blank 2		Lab ID: 1276153040	Collected: 09/27/16 16:00	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 12:12	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/06/16 12:12	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/06/16 12:12	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 12:12	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 12:12	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/06/16 12:12	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/06/16 12:12	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/06/16 12:12	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 12:12	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 12:12	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 12:12	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 12:12	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/06/16 12:12	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 12:12	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 12:12	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 12:12	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 12:12	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 12:12	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 12:12	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 12:12	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 12:12	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 12:12	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/06/16 12:12	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 12:12	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 12:12	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/06/16 12:12	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 12:12	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/06/16 12:12	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/06/16 12:12	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/06/16 12:12	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		10/06/16 12:12	460-00-4	

Sample: Field Blank 3		Lab ID: 1276153041	Collected: 09/28/16 16:20	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 12:31	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/06/16 12:31	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/06/16 12:31	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 12:31	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 12:31	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/06/16 12:31	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/06/16 12:31	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/06/16 12:31	74-87-3	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: Field Blank 3	Lab ID: 1276153041	Collected: 09/28/16 16:20	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 12:31	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 12:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 12:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 12:31	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/06/16 12:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 12:31	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 12:31	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 12:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 12:31	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 12:31	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 12:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 12:31	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 12:31	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 12:31	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/06/16 12:31	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 12:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 12:31	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/06/16 12:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 12:31	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/06/16 12:31	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		10/06/16 12:31	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/06/16 12:31	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		10/06/16 12:31	460-00-4	

Sample: Field Blank 4	Lab ID: 1276153042	Collected: 09/29/16 16:30	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 12:50	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/06/16 12:50	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/06/16 12:50	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 12:50	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 12:50	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/06/16 12:50	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/06/16 12:50	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/06/16 12:50	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 12:50	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 12:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 12:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 12:50	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/06/16 12:50	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 12:50	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 12:50	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 12:50	156-59-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

<b>Sample: Field Blank 4</b>		<b>Lab ID: 1276153042</b>		Collected: 09/29/16 16:30	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 12:50	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 12:50	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 12:50	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 12:50	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 12:50	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 12:50	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/06/16 12:50	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 12:50	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 12:50	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/06/16 12:50	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 12:50	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/06/16 12:50	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		10/06/16 12:50	17060-07-0	
Toluene-d8 (S)	103	%	70-130	1		10/06/16 12:50	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		10/06/16 12:50	460-00-4	

<b>Sample: Field Blank 5</b>		<b>Lab ID: 1276153043</b>		Collected: 09/30/16 15:00	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 13:10	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/06/16 13:10	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/06/16 13:10	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 13:10	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 13:10	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/06/16 13:10	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/06/16 13:10	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/06/16 13:10	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 13:10	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 13:10	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 13:10	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 13:10	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/06/16 13:10	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 13:10	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 13:10	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 13:10	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 13:10	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 13:10	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 13:10	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 13:10	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 13:10	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 13:10	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/06/16 13:10	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 13:10	71-55-6	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: Field Blank 5		Lab ID: 1276153043	Collected: 09/30/16 15:00	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 13:10	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/06/16 13:10	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 13:10	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/06/16 13:10	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%.	70-130	1		10/06/16 13:10	17060-07-0	
Toluene-d8 (S)	102	%.	70-130	1		10/06/16 13:10	2037-26-5	
4-Bromofluorobenzene (S)	96	%.	70-130	1		10/06/16 13:10	460-00-4	

Sample: Equipment Blank		Lab ID: 1276153044	Collected: 09/30/16 15:00	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 13:29	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/06/16 13:29	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/06/16 13:29	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 13:29	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 13:29	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/06/16 13:29	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/06/16 13:29	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/06/16 13:29	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 13:29	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 13:29	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 13:29	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 13:29	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/06/16 13:29	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 13:29	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 13:29	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 13:29	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 13:29	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 13:29	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 13:29	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 13:29	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 13:29	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 13:29	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/06/16 13:29	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 13:29	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 13:29	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/06/16 13:29	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 13:29	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/06/16 13:29	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%.	70-130	1		10/06/16 13:29	17060-07-0	
Toluene-d8 (S)	102	%.	70-130	1		10/06/16 13:29	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	70-130	1		10/06/16 13:29	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Sample: Trip Blank		Lab ID: 1276153045	Collected: 09/30/16 15:00	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/06/16 13:48	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/06/16 13:48	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/06/16 13:48	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/06/16 13:48	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/06/16 13:48	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/06/16 13:48	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/06/16 13:48	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/06/16 13:48	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/06/16 13:48	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 13:48	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 13:48	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/06/16 13:48	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/06/16 13:48	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/06/16 13:48	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/06/16 13:48	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 13:48	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/06/16 13:48	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/06/16 13:48	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 13:48	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/06/16 13:48	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/06/16 13:48	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/06/16 13:48	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		10/06/16 13:48	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/06/16 13:48	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/06/16 13:48	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		10/06/16 13:48	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/06/16 13:48	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/06/16 13:48	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/06/16 13:48	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		10/06/16 13:48	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		10/06/16 13:48	460-00-4	

Sample: MGMS2-60		Lab ID: 1276153046	Collected: 09/30/16 11:12	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/07/16 11:58	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/07/16 11:58	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/07/16 11:58	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/07/16 11:58	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/07/16 11:58	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/07/16 11:58	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/07/16 11:58	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/07/16 11:58	74-87-3	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: <b>MGMS2-60</b>		Lab ID: <b>1276153046</b>		Collected: 09/30/16 11:12		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	0.50	1		10/07/16 11:58	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 11:58	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 11:58	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 11:58	106-46-7		
1,1-Dichloroethane	<b>2.0</b>	ug/L	0.50	1		10/07/16 11:58	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/07/16 11:58	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/07/16 11:58	75-35-4		
cis-1,2-Dichloroethene	<b>40.0</b>	ug/L	0.50	1		10/07/16 11:58	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/07/16 11:58	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		10/07/16 11:58	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 11:58	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 11:58	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		10/07/16 11:58	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/07/16 11:58	79-34-5		
Tetrachloroethene	<b>9.6</b>	ug/L	0.50	1		10/07/16 11:58	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/07/16 11:58	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/07/16 11:58	79-00-5		
Trichloroethene	<b>11.5</b>	ug/L	0.50	1		10/07/16 11:58	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		10/07/16 11:58	75-69-4		
Vinyl chloride	<b>9.6</b>	ug/L	0.50	1		10/07/16 11:58	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/07/16 11:58	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		10/07/16 11:58	2037-26-5		
4-Bromofluorobenzene (S)	97	%	70-130	1		10/07/16 11:58	460-00-4		

Sample: <b>MGMS1-40</b>		Lab ID: <b>1276153047</b>		Collected: 09/30/16 11:43		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175							
Ethane	<b>16.4</b>	ug/L	10.0	1		10/10/16 11:31	74-84-0		
Ethene	ND	ug/L	10.0	1		10/10/16 11:31	74-85-1		
Methane	<b>1670</b>	ug/L	10.0	1		10/10/16 11:31	74-82-8		
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	8.3	16.67		10/07/16 15:11	75-27-4		
Bromoform	ND	ug/L	8.3	16.67		10/07/16 15:11	75-25-2		
Bromomethane	ND	ug/L	333	16.67		10/07/16 15:11	74-83-9		
Carbon tetrachloride	ND	ug/L	8.3	16.67		10/07/16 15:11	56-23-5		
Chlorobenzene	ND	ug/L	8.3	16.67		10/07/16 15:11	108-90-7		
Chloroethane	ND	ug/L	33.3	16.67		10/07/16 15:11	75-00-3		
Chloroform	ND	ug/L	8.3	16.67		10/07/16 15:11	67-66-3		
Chloromethane	ND	ug/L	8.3	16.67		10/07/16 15:11	74-87-3		
Dibromochloromethane	ND	ug/L	8.3	16.67		10/07/16 15:11	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	8.3	16.67		10/07/16 15:11	95-50-1		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

<b>Sample: MGMS1-40</b>		<b>Lab ID: 1276153047</b>		Collected: 09/30/16 11:43	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,3-Dichlorobenzene	ND	ug/L	8.3	16.67		10/07/16 15:11	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	8.3	16.67		10/07/16 15:11	106-46-7	
1,1-Dichloroethane	<b>81.9</b>	ug/L	8.3	16.67		10/07/16 15:11	75-34-3	
1,2-Dichloroethane	ND	ug/L	8.3	16.67		10/07/16 15:11	107-06-2	
1,1-Dichloroethene	<b>13.5</b>	ug/L	8.3	16.67		10/07/16 15:11	75-35-4	
cis-1,2-Dichloroethene	<b>1980</b>	ug/L	8.3	16.67		10/07/16 15:11	156-59-2	
trans-1,2-Dichloroethene	<b>24.2</b>	ug/L	8.3	16.67		10/07/16 15:11	156-60-5	
1,2-Dichloropropane	ND	ug/L	8.3	16.67		10/07/16 15:11	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	8.3	16.67		10/07/16 15:11	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	8.3	16.67		10/07/16 15:11	10061-02-6	
Methylene Chloride	ND	ug/L	83.4	16.67		10/07/16 15:11	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	8.3	16.67		10/07/16 15:11	79-34-5	
Tetrachloroethene	<b>230</b>	ug/L	8.3	16.67		10/07/16 15:11	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	8.3	16.67		10/07/16 15:11	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	8.3	16.67		10/07/16 15:11	79-00-5	
Trichloroethene	<b>336</b>	ug/L	8.3	16.67		10/07/16 15:11	79-01-6	
Trichlorofluoromethane	ND	ug/L	8.3	16.67		10/07/16 15:11	75-69-4	
Vinyl chloride	<b>52.0</b>	ug/L	8.3	16.67		10/07/16 15:11	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	16.67		10/07/16 15:11	17060-07-0	
Toluene-d8 (S)	100	%	70-130	16.67		10/07/16 15:11	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	16.67		10/07/16 15:11	460-00-4	

<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>9.0</b>	mg/L	1.0	1		10/06/16 23:01	7440-44-0	

<b>Sample: MGMS1-60</b>		<b>Lab ID: 1276153048</b>		Collected: 09/30/16 12:15	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/07/16 13:15	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/07/16 13:15	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/07/16 13:15	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/07/16 13:15	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/07/16 13:15	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/07/16 13:15	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/07/16 13:15	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/07/16 13:15	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/07/16 13:15	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 13:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 13:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 13:15	106-46-7	
1,1-Dichloroethane	<b>0.89</b>	ug/L	0.50	1		10/07/16 13:15	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/07/16 13:15	107-06-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Sample Project No.: 1276153

<b>Sample: MGMS1-60</b>		<b>Lab ID: 1276153048</b>	Collected: 09/30/16 12:15	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1-Dichloroethene	ND	ug/L	0.50	1		10/07/16 13:15	75-35-4	
cis-1,2-Dichloroethene	<b>17.7</b>	ug/L	0.50	1		10/07/16 13:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/07/16 13:15	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/07/16 13:15	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 13:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 13:15	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/07/16 13:15	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/07/16 13:15	79-34-5	
Tetrachloroethene	<b>22.5</b>	ug/L	0.50	1		10/07/16 13:15	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/07/16 13:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/07/16 13:15	79-00-5	
Trichloroethene	<b>17.6</b>	ug/L	0.50	1		10/07/16 13:15	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/07/16 13:15	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/07/16 13:15	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/07/16 13:15	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		10/07/16 13:15	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		10/07/16 13:15	460-00-4	

<b>Sample: MGMS1-132</b>		<b>Lab ID: 1276153049</b>	Collected: 09/30/16 12:45	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/07/16 12:17	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/07/16 12:17	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/07/16 12:17	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/07/16 12:17	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/07/16 12:17	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/07/16 12:17	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/07/16 12:17	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/07/16 12:17	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/07/16 12:17	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 12:17	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 12:17	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 12:17	106-46-7	
1,1-Dichloroethane	<b>1.2</b>	ug/L	0.50	1		10/07/16 12:17	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/07/16 12:17	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/07/16 12:17	75-35-4	
cis-1,2-Dichloroethene	<b>56.7</b>	ug/L	0.50	1		10/07/16 12:17	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/07/16 12:17	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/07/16 12:17	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 12:17	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 12:17	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/07/16 12:17	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/07/16 12:17	79-34-5	

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## ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: <b>MGMS1-132</b>		Lab ID: <b>1276153049</b>		Collected: 09/30/16 12:45	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Tetrachloroethene	<b>18.4</b>	ug/L	0.50	1		10/07/16 12:17	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/07/16 12:17	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/07/16 12:17	79-00-5	
Trichloroethene	<b>28.7</b>	ug/L	0.50	1		10/07/16 12:17	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/07/16 12:17	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/07/16 12:17	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		10/07/16 12:17	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		10/07/16 12:17	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	1		10/07/16 12:17	460-00-4	

Sample: <b>MGMS3-40</b>		Lab ID: <b>1276153050</b>		Collected: 09/30/16 13:25	Received: 10/04/16 10:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	<b>35.6</b>	ug/L	10.0	1		10/10/16 11:40	74-84-0	
Ethene	ND	ug/L	10.0	1		10/10/16 11:40	74-85-1	
Methane	<b>2020</b>	ug/L	10.0	1		10/10/16 11:40	74-82-8	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/11/16 13:31	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/11/16 13:31	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/11/16 13:31	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/11/16 13:31	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/11/16 13:31	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/11/16 13:31	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/11/16 13:31	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/11/16 13:31	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/11/16 13:31	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/11/16 13:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/11/16 13:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/11/16 13:31	106-46-7	
1,1-Dichloroethane	<b>4.1</b>	ug/L	0.50	1		10/11/16 13:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/11/16 13:31	107-06-2	
1,1-Dichloroethene	<b>0.54</b>	ug/L	0.50	1		10/11/16 13:31	75-35-4	
cis-1,2-Dichloroethene	<b>226</b>	ug/L	2.5	5		10/07/16 14:32	156-59-2	
trans-1,2-Dichloroethene	<b>1.8</b>	ug/L	0.50	1		10/11/16 13:31	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/11/16 13:31	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/11/16 13:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/11/16 13:31	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/11/16 13:31	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/11/16 13:31	79-34-5	
Tetrachloroethene	<b>1.7</b>	ug/L	0.50	1		10/11/16 13:31	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/11/16 13:31	71-55-6	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: <b>MGMS3-40</b>		Lab ID: <b>1276153050</b>	Collected: 09/30/16 13:25	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/11/16 13:31	79-00-5	
Trichloroethene	<b>1.3</b>	ug/L	0.50	1		10/11/16 13:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/11/16 13:31	75-69-4	
Vinyl chloride	<b>45.8</b>	ug/L	0.50	1		10/11/16 13:31	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		10/11/16 13:31	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		10/11/16 13:31	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130	1		10/11/16 13:31	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>36.2</b>	mg/L	1.0	1		10/06/16 23:25	7440-44-0	

Sample: <b>MGMS3-40 DUP</b>		Lab ID: <b>1276153051</b>	Collected: 09/30/16 13:25	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/11/16 13:50	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/11/16 13:50	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/11/16 13:50	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/11/16 13:50	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/11/16 13:50	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/11/16 13:50	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/11/16 13:50	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/11/16 13:50	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/11/16 13:50	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/11/16 13:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/11/16 13:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/11/16 13:50	106-46-7	
1,1-Dichloroethane	<b>4.5</b>	ug/L	0.50	1		10/11/16 13:50	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/11/16 13:50	107-06-2	
1,1-Dichloroethene	<b>0.60</b>	ug/L	0.50	1		10/11/16 13:50	75-35-4	
cis-1,2-Dichloroethene	<b>219</b>	ug/L	2.5	5		10/07/16 14:52	156-59-2	
trans-1,2-Dichloroethene	<b>2.0</b>	ug/L	0.50	1		10/11/16 13:50	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/11/16 13:50	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/11/16 13:50	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/11/16 13:50	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/11/16 13:50	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/11/16 13:50	79-34-5	
Tetrachloroethene	<b>1.5</b>	ug/L	0.50	1		10/11/16 13:50	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/11/16 13:50	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/11/16 13:50	79-00-5	
Trichloroethene	<b>1.4</b>	ug/L	0.50	1		10/11/16 13:50	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/11/16 13:50	75-69-4	
Vinyl chloride	<b>52.1</b>	ug/L	0.50	1		10/11/16 13:50	75-01-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: <b>MGMS3-40 DUP</b>		Lab ID: <b>1276153051</b>	Collected: 09/30/16 13:25	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		10/11/16 13:50	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		10/11/16 13:50	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	1		10/11/16 13:50	460-00-4	

Sample: <b>MGMS3-60</b>		Lab ID: <b>1276153052</b>	Collected: 09/30/16 13:54	Received: 10/04/16 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		10/07/16 12:36	75-27-4	
Bromoform	ND	ug/L	0.50	1		10/07/16 12:36	75-25-2	
Bromomethane	ND	ug/L	20.0	1		10/07/16 12:36	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		10/07/16 12:36	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		10/07/16 12:36	108-90-7	
Chloroethane	ND	ug/L	2.0	1		10/07/16 12:36	75-00-3	
Chloroform	ND	ug/L	0.50	1		10/07/16 12:36	67-66-3	
Chloromethane	ND	ug/L	0.50	1		10/07/16 12:36	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		10/07/16 12:36	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 12:36	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 12:36	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 12:36	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		10/07/16 12:36	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/07/16 12:36	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		10/07/16 12:36	75-35-4	
cis-1,2-Dichloroethene	<b>7.7</b>	ug/L	0.50	1		10/07/16 12:36	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/07/16 12:36	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/07/16 12:36	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 12:36	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 12:36	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/07/16 12:36	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/07/16 12:36	79-34-5	
Tetrachloroethene	<b>3.7</b>	ug/L	0.50	1		10/07/16 12:36	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/07/16 12:36	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/07/16 12:36	79-00-5	
Trichloroethene	<b>1.9</b>	ug/L	0.50	1		10/07/16 12:36	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/07/16 12:36	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/07/16 12:36	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		10/07/16 12:36	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		10/07/16 12:36	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		10/07/16 12:36	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: MGMS3-110		Lab ID: 1276153053		Collected: 09/30/16 14:25		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/07/16 12:56	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/07/16 12:56	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/07/16 12:56	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/07/16 12:56	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/07/16 12:56	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/07/16 12:56	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/07/16 12:56	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/07/16 12:56	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		10/07/16 12:56	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 12:56	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 12:56	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 12:56	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		10/07/16 12:56	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		10/07/16 12:56	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		10/07/16 12:56	75-35-4		
cis-1,2-Dichloroethene	<b>6.5</b>	ug/L	0.50	1		10/07/16 12:56	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/07/16 12:56	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		10/07/16 12:56	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 12:56	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 12:56	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		10/07/16 12:56	75-09-2		
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		10/07/16 12:56	79-34-5		
Tetrachloroethene	<b>4.4</b>	ug/L	0.50	1		10/07/16 12:56	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/07/16 12:56	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/07/16 12:56	79-00-5		
Trichloroethene	<b>3.0</b>	ug/L	0.50	1		10/07/16 12:56	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		10/07/16 12:56	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		10/07/16 12:56	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		10/07/16 12:56	17060-07-0		
Toluene-d8 (S)	102	%	70-130	1		10/07/16 12:56	2037-26-5		
4-Bromofluorobenzene (S)	97	%	70-130	1		10/07/16 12:56	460-00-4		

Sample: MGMS3-132		Lab ID: 1276153054		Collected: 09/30/16 14:45		Received: 10/04/16 10:00		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		10/07/16 08:25	75-27-4		
Bromoform	ND	ug/L	0.50	1		10/07/16 08:25	75-25-2		
Bromomethane	ND	ug/L	20.0	1		10/07/16 08:25	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		10/07/16 08:25	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		10/07/16 08:25	108-90-7		
Chloroethane	ND	ug/L	2.0	1		10/07/16 08:25	75-00-3		
Chloroform	ND	ug/L	0.50	1		10/07/16 08:25	67-66-3		
Chloromethane	ND	ug/L	0.50	1		10/07/16 08:25	74-87-3		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Sample: <b>MGMS3-132</b>	Lab ID: <b>1276153054</b>	Collected: 09/30/16 14:45	Received: 10/04/16 10:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		10/07/16 08:25	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 08:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 08:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		10/07/16 08:25	106-46-7	
1,1-Dichloroethane	<b>0.84</b>	ug/L	0.50	1		10/07/16 08:25	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		10/07/16 08:25	107-06-2	
1,1-Dichloroethene	<b>0.54</b>	ug/L	0.50	1		10/07/16 08:25	75-35-4	
cis-1,2-Dichloroethene	<b>12.9</b>	ug/L	0.50	1		10/07/16 08:25	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		10/07/16 08:25	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		10/07/16 08:25	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 08:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		10/07/16 08:25	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		10/07/16 08:25	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		10/07/16 08:25	79-34-5	
Tetrachloroethene	<b>13.8</b>	ug/L	0.50	1		10/07/16 08:25	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		10/07/16 08:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		10/07/16 08:25	79-00-5	
Trichloroethene	<b>11.9</b>	ug/L	0.50	1		10/07/16 08:25	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		10/07/16 08:25	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		10/07/16 08:25	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%.	70-130	1		10/07/16 08:25	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		10/07/16 08:25	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	70-130	1		10/07/16 08:25	460-00-4	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

QC Batch: 440104 Analysis Method: RSK 175  
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE  
Associated Lab Samples: 1276153004, 1276153005, 1276153012, 1276153015, 1276153018, 1276153019, 1276153047, 1276153050

METHOD BLANK: 2393168 Matrix: Water  
Associated Lab Samples: 1276153004, 1276153005, 1276153012, 1276153015, 1276153018, 1276153019, 1276153047, 1276153050

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	10/10/16 09:11	
Ethene	ug/L	ND	10.0	10/10/16 09:11	
Methane	ug/L	ND	10.0	10/10/16 09:11	

LABORATORY CONTROL SAMPLE & LCSD: 2393169

Parameter	Units	2393170								
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	110	113	97	99	85-115	3	20	
Ethene	ug/L	106	102	104	96	98	85-115	2	20	
Methane	ug/L	60.7	58.5	59.2	96	98	85-115	1	20	

SAMPLE DUPLICATE: 2394283

Parameter	Units	1276153004		RPD	Max RPD	Qualifiers
		Result	Dup Result			
Ethane	ug/L	ND	5.5J		20	
Ethene	ug/L	ND	4J		20	
Methane	ug/L	948	1560	49	20 R1	

SAMPLE DUPLICATE: 2394286

Parameter	Units	35268563006		RPD	Max RPD	Qualifiers
		Result	Dup Result			
Ethane	ug/L	0.87U	ND		20	
Ethene	ug/L	0.77U	ND		20	
Methane	ug/L	1560	1360	14	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

QC Batch: 96238 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1276153001, 1276153002, 1276153003, 1276153005, 1276153006, 1276153007

METHOD BLANK: 379530 Matrix: Water  
Associated Lab Samples: 1276153001, 1276153002, 1276153003, 1276153005, 1276153006, 1276153007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	10/04/16 19:54	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	10/04/16 19:54	
1,1,2-Trichloroethane	ug/L	ND	0.50	10/04/16 19:54	
1,1-Dichloroethane	ug/L	ND	0.50	10/04/16 19:54	
1,1-Dichloroethene	ug/L	ND	0.50	10/04/16 19:54	
1,2-Dichlorobenzene	ug/L	ND	0.50	10/04/16 19:54	
1,2-Dichloroethane	ug/L	ND	0.50	10/04/16 19:54	
1,2-Dichloropropane	ug/L	ND	0.50	10/04/16 19:54	
1,3-Dichlorobenzene	ug/L	ND	0.50	10/04/16 19:54	
1,4-Dichlorobenzene	ug/L	ND	0.50	10/04/16 19:54	
Bromodichloromethane	ug/L	ND	0.50	10/04/16 19:54	
Bromoform	ug/L	ND	0.50	10/04/16 19:54	
Bromomethane	ug/L	ND	20.0	10/04/16 19:54	
Carbon tetrachloride	ug/L	ND	0.50	10/04/16 19:54	
Chlorobenzene	ug/L	ND	0.50	10/04/16 19:54	
Chloroethane	ug/L	ND	2.0	10/04/16 19:54	
Chloroform	ug/L	ND	0.50	10/04/16 19:54	
Chloromethane	ug/L	ND	0.50	10/04/16 19:54	
cis-1,2-Dichloroethene	ug/L	ND	0.50	10/04/16 19:54	
cis-1,3-Dichloropropene	ug/L	ND	0.50	10/04/16 19:54	
Dibromochloromethane	ug/L	ND	0.50	10/04/16 19:54	
Methylene Chloride	ug/L	ND	5.0	10/04/16 19:54	
Tetrachloroethene	ug/L	ND	0.50	10/04/16 19:54	
trans-1,2-Dichloroethene	ug/L	ND	0.50	10/04/16 19:54	
trans-1,3-Dichloropropene	ug/L	ND	0.50	10/04/16 19:54	
Trichloroethene	ug/L	ND	0.50	10/04/16 19:54	
Trichlorofluoromethane	ug/L	ND	0.50	10/04/16 19:54	
Vinyl chloride	ug/L	ND	0.50	10/04/16 19:54	
1,2-Dichloroethane-d4 (S)	%	102	70-130	10/04/16 19:54	
4-Bromofluorobenzene (S)	%	99	70-130	10/04/16 19:54	
Toluene-d8 (S)	%	101	70-130	10/04/16 19:54	

LABORATORY CONTROL SAMPLE: 379531

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	39.5	99	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	41.7	104	75-125	
1,1,2-Trichloroethane	ug/L	40	40.4	101	75-126	
1,1-Dichloroethane	ug/L	40	39.6	99	71-131	
1,1-Dichloroethene	ug/L	40	39.4	99	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

LABORATORY CONTROL SAMPLE: 379531

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	38.2	96	75-125	
1,2-Dichloroethane	ug/L	40	40.1	100	64-141	
1,2-Dichloropropane	ug/L	40	39.4	98	73-127	
1,3-Dichlorobenzene	ug/L	40	37.8	95	75-125	
1,4-Dichlorobenzene	ug/L	40	38.2	96	75-125	
Bromodichloromethane	ug/L	40	40.6	102	70-134	
Bromoform	ug/L	40	43.0	108	68-130	
Bromomethane	ug/L	40	36.0	90	30-150	
Carbon tetrachloride	ug/L	40	39.6	99	66-135	
Chlorobenzene	ug/L	40	39.6	99	75-125	
Chloroethane	ug/L	40	39.7	99	55-150	
Chloroform	ug/L	40	39.7	99	72-131	
Chloromethane	ug/L	40	40.5	101	54-132	
cis-1,2-Dichloroethene	ug/L	40	39.9	100	75-125	
cis-1,3-Dichloropropene	ug/L	40	41.7	104	74-130	
Dibromochloromethane	ug/L	40	41.2	103	70-132	
Methylene Chloride	ug/L	40	39.6	99	68-125	
Tetrachloroethene	ug/L	40	37.8	95	75-130	
trans-1,2-Dichloroethene	ug/L	40	39.2	98	75-125	
trans-1,3-Dichloropropene	ug/L	40	42.1	105	69-137	
Trichloroethene	ug/L	40	39.9	100	75-125	
Trichlorofluoromethane	ug/L	40	41.6	104	59-140	
Vinyl chloride	ug/L	40	37.2	93	68-132	
1,2-Dichloroethane-d4 (S)	%			100	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 379532 379533

Parameter	Units	1275993001		379532		379533		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Result						
1,1,1-Trichloroethane	ug/L	ND	40	40	29.0	29.9	73	75	63-142	3	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	21.5	22.8	54	57	75-125	6	30	M1	
1,1,2-Trichloroethane	ug/L	ND	40	40	28.7	28.7	72	72	75-132	0	30	M1	
1,1-Dichloroethane	ug/L	ND	40	40	35.7	36.3	89	91	75-126	2	30		
1,1-Dichloroethene	ug/L	ND	40	40	30.6	31.5	77	79	75-125	3	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	9.3	11.3	23	28	75-125	19	30	M1	
1,2-Dichloroethane	ug/L	ND	40	40	34.5	35.6	86	89	75-137	3	30		
1,2-Dichloropropane	ug/L	ND	40	40	29.4	29.3	73	73	74-131	0	30	M1	
1,3-Dichlorobenzene	ug/L	ND	40	40	8.0	10.8	20	27	75-126	29	30	M1	
1,4-Dichlorobenzene	ug/L	ND	40	40	9.3	10.7	23	27	73-125	14	30	M1	
Bromodichloromethane	ug/L	ND	40	40	31.4	31.7	79	79	65-137	1	30		
Bromoform	ug/L	ND	40	40	24.7	24.8	62	62	60-147	0	30		
Bromomethane	ug/L	ND	40	40	38.9	43.6	97	109	30-150	11	30		
Carbon tetrachloride	ug/L	ND	40	40	26.2	27.2	66	68	45-150	4	30		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 379532		379533		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1275993001 Result	MS Spike Conc.	MSD Spike Conc.									
Chlorobenzene	ug/L	ND	40	40	13.0	13.6	33	34	75-125	5	30	M1	
Chloroethane	ug/L	ND	40	40	36.7	38.6	92	96	66-145	5	30		
Chloroform	ug/L	ND	40	40	34.9	35.4	86	87	74-128	1	30		
Chloromethane	ug/L	ND	40	40	40.0	41.4	100	103	51-150	3	30		
cis-1,2-Dichloroethene	ug/L	ND	40	40	30.1	30.4	75	76	75-125	1	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	24.6	25.3	61	63	75-129	3	30	M1	
Dibromochloromethane	ug/L	ND	40	40	27.5	27.8	69	70	66-141	1	30		
Methylene Chloride	ug/L	ND	40	40	37.5	38.3	94	96	74-125	2	30		
Tetrachloroethene	ug/L	ND	40	40	15.1	16.2	38	41	75-135	7	30	M1	
trans-1,2-Dichloroethene	ug/L	ND	40	40	25.3	25.7	63	64	75-125	2	30	M1	
trans-1,3-Dichloropropene	ug/L	ND	40	40	22.9	23.6	57	59	67-139	3	30	M1	
Trichloroethene	ug/L	ND	40	40	20.4	20.6	51	52	75-130	1	30	M1	
Trichlorofluoromethane	ug/L	ND	40	40	34.9	35.8	87	90	57-144	3	30		
Vinyl chloride	ug/L	ND	40	40	34.0	34.9	85	87	70-136	3	30		
1,2-Dichloroethane-d4 (S)	%						100	100	70-130				
4-Bromofluorobenzene (S)	%						90	100	70-130				
Toluene-d8 (S)	%						100	101	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

QC Batch: 96313 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1276153008, 1276153009, 1276153010, 1276153011, 1276153012, 1276153014, 1276153017, 1276153039

METHOD BLANK: 379866 Matrix: Water  
Associated Lab Samples: 1276153008, 1276153009, 1276153010, 1276153011, 1276153012, 1276153014, 1276153017, 1276153039

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	10/05/16 07:34	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	10/05/16 07:34	
1,1,2-Trichloroethane	ug/L	ND	0.50	10/05/16 07:34	
1,1-Dichloroethane	ug/L	ND	0.50	10/05/16 07:34	
1,1-Dichloroethene	ug/L	ND	0.50	10/05/16 07:34	
1,2-Dichlorobenzene	ug/L	ND	0.50	10/05/16 07:34	
1,2-Dichloroethane	ug/L	ND	0.50	10/05/16 07:34	
1,2-Dichloropropane	ug/L	ND	0.50	10/05/16 07:34	
1,3-Dichlorobenzene	ug/L	ND	0.50	10/05/16 07:34	
1,4-Dichlorobenzene	ug/L	ND	0.50	10/05/16 07:34	
Bromodichloromethane	ug/L	ND	0.50	10/05/16 07:34	
Bromoform	ug/L	ND	0.50	10/05/16 07:34	
Bromomethane	ug/L	ND	20.0	10/05/16 07:34	
Carbon tetrachloride	ug/L	ND	0.50	10/05/16 07:34	
Chlorobenzene	ug/L	ND	0.50	10/05/16 07:34	
Chloroethane	ug/L	ND	2.0	10/05/16 07:34	
Chloroform	ug/L	ND	0.50	10/05/16 07:34	
Chloromethane	ug/L	ND	0.50	10/05/16 07:34	
cis-1,2-Dichloroethene	ug/L	ND	0.50	10/05/16 07:34	
cis-1,3-Dichloropropene	ug/L	ND	0.50	10/05/16 07:34	
Dibromochloromethane	ug/L	ND	0.50	10/05/16 07:34	
Methylene Chloride	ug/L	ND	5.0	10/05/16 07:34	
Tetrachloroethene	ug/L	ND	0.50	10/05/16 07:34	
trans-1,2-Dichloroethene	ug/L	ND	0.50	10/05/16 07:34	
trans-1,3-Dichloropropene	ug/L	ND	0.50	10/05/16 07:34	
Trichloroethene	ug/L	ND	0.50	10/05/16 07:34	
Trichlorofluoromethane	ug/L	ND	0.50	10/05/16 07:34	
Vinyl chloride	ug/L	ND	0.50	10/05/16 07:34	
1,2-Dichloroethane-d4 (S)	%	102	70-130	10/05/16 07:34	
4-Bromofluorobenzene (S)	%	97	70-130	10/05/16 07:34	
Toluene-d8 (S)	%	102	70-130	10/05/16 07:34	

LABORATORY CONTROL SAMPLE: 379867

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	38.2	95	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	38.4	96	75-125	
1,1,2-Trichloroethane	ug/L	40	37.9	95	75-126	
1,1-Dichloroethane	ug/L	40	38.2	95	71-131	
1,1-Dichloroethene	ug/L	40	38.3	96	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

LABORATORY CONTROL SAMPLE: 379867

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	38.6	97	75-125	
1,2-Dichloroethane	ug/L	40	38.2	95	64-141	
1,2-Dichloropropane	ug/L	40	38.2	96	73-127	
1,3-Dichlorobenzene	ug/L	40	39.2	98	75-125	
1,4-Dichlorobenzene	ug/L	40	38.6	96	75-125	
Bromodichloromethane	ug/L	40	39.2	98	70-134	
Bromoform	ug/L	40	41.1	103	68-130	
Bromomethane	ug/L	40	51.8	130	30-150	
Carbon tetrachloride	ug/L	40	38.7	97	66-135	
Chlorobenzene	ug/L	40	38.7	97	75-125	
Chloroethane	ug/L	40	38.2	95	55-150	
Chloroform	ug/L	40	38.6	96	72-131	
Chloromethane	ug/L	40	40.2	100	54-132	
cis-1,2-Dichloroethene	ug/L	40	38.4	96	75-125	
cis-1,3-Dichloropropene	ug/L	40	39.5	99	74-130	
Dibromochloromethane	ug/L	40	39.4	99	70-132	
Methylene Chloride	ug/L	40	38.3	96	68-125	
Tetrachloroethene	ug/L	40	37.9	95	75-130	
trans-1,2-Dichloroethene	ug/L	40	38.4	96	75-125	
trans-1,3-Dichloropropene	ug/L	40	40.2	101	69-137	
Trichloroethene	ug/L	40	38.8	97	75-125	
Trichlorofluoromethane	ug/L	40	40.5	101	59-140	
Vinyl chloride	ug/L	40	36.1	90	68-132	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 379873 379874

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		1276153012	Spike Conc.	Spike Conc.	Result								
1,1,1-Trichloroethane	ug/L	ND	800	800	786	818	98	102	63-142	4	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	800	800	836	891	105	111	75-125	6	30		
1,1,2-Trichloroethane	ug/L	ND	800	800	803	844	100	105	75-132	5	30		
1,1-Dichloroethane	ug/L	26.0	800	800	817	851	99	103	75-126	4	30		
1,1-Dichloroethene	ug/L	ND	800	800	796	833	99	104	75-125	5	30		
1,2-Dichlorobenzene	ug/L	ND	800	800	742	776	93	97	75-125	4	30		
1,2-Dichloroethane	ug/L	ND	800	800	791	829	99	104	75-137	5	30		
1,2-Dichloropropane	ug/L	ND	800	800	786	815	98	102	74-131	4	30		
1,3-Dichlorobenzene	ug/L	ND	800	800	741	779	93	97	75-126	5	30		
1,4-Dichlorobenzene	ug/L	ND	800	800	740	769	92	96	73-125	4	30		
Bromodichloromethane	ug/L	ND	800	800	807	840	101	105	65-137	4	30		
Bromoform	ug/L	ND	800	800	851	913	106	114	60-147	7	30		
Bromomethane	ug/L	ND	800	800	848	946	106	118	30-150	11	30		
Carbon tetrachloride	ug/L	ND	800	800	789	822	99	103	45-150	4	30		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Parameter	Units	1276153012		379873		379874		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Chlorobenzene	ug/L	ND	800	800	767	803	96	100	75-125	5	30		
Chloroethane	ug/L	ND	800	800	778	808	97	101	66-145	4	30		
Chloroform	ug/L	ND	800	800	800	822	100	103	74-128	3	30		
Chloromethane	ug/L	ND	800	800	830	852	104	106	51-150	3	30		
cis-1,2-Dichloroethene	ug/L	525	800	800	1320	1380	100	107	75-125	4	30		
cis-1,3-Dichloropropene	ug/L	ND	800	800	822	861	103	108	75-129	5	30		
Dibromochloromethane	ug/L	ND	800	800	832	870	104	109	66-141	5	30		
Methylene Chloride	ug/L	ND	800	800	792	816	99	102	74-125	3	30		
Tetrachloroethene	ug/L	67.6	800	800	812	853	93	98	75-135	5	30		
trans-1,2-Dichloroethene	ug/L	ND	800	800	787	820	98	102	75-125	4	30		
trans-1,3-Dichloropropene	ug/L	ND	800	800	843	880	105	110	67-139	4	30		
Trichloroethene	ug/L	45.4	800	800	836	878	99	104	75-130	5	30		
Trichlorofluoromethane	ug/L	ND	800	800	815	846	102	106	57-144	4	30		
Vinyl chloride	ug/L	14.8	800	800	749	780	92	96	70-136	4	30		
1,2-Dichloroethane-d4 (S)	%						101	101	70-130				
4-Bromofluorobenzene (S)	%						101	103	70-130				
Toluene-d8 (S)	%						101	102	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

QC Batch: 96378 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1276153004, 1276153005, 1276153018, 1276153019, 1276153020, 1276153021, 1276153022, 1276153023, 1276153024, 1276153025, 1276153026

METHOD BLANK: 380160 Matrix: Water  
Associated Lab Samples: 1276153004, 1276153005, 1276153018, 1276153019, 1276153020, 1276153021, 1276153022, 1276153023, 1276153024, 1276153025, 1276153026

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	10/05/16 18:49	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	10/05/16 18:49	
1,1,2-Trichloroethane	ug/L	ND	0.50	10/05/16 18:49	
1,1-Dichloroethane	ug/L	ND	0.50	10/05/16 18:49	
1,1-Dichloroethene	ug/L	ND	0.50	10/05/16 18:49	
1,2-Dichlorobenzene	ug/L	ND	0.50	10/05/16 18:49	
1,2-Dichloroethane	ug/L	ND	0.50	10/05/16 18:49	
1,2-Dichloropropane	ug/L	ND	0.50	10/05/16 18:49	
1,3-Dichlorobenzene	ug/L	ND	0.50	10/05/16 18:49	
1,4-Dichlorobenzene	ug/L	ND	0.50	10/05/16 18:49	
Bromodichloromethane	ug/L	ND	0.50	10/05/16 18:49	
Bromoform	ug/L	ND	0.50	10/05/16 18:49	
Bromomethane	ug/L	ND	20.0	10/05/16 18:49	
Carbon tetrachloride	ug/L	ND	0.50	10/05/16 18:49	
Chlorobenzene	ug/L	ND	0.50	10/05/16 18:49	
Chloroethane	ug/L	ND	2.0	10/05/16 18:49	
Chloroform	ug/L	ND	0.50	10/05/16 18:49	
Chloromethane	ug/L	ND	0.50	10/05/16 18:49	
cis-1,2-Dichloroethene	ug/L	ND	0.50	10/05/16 18:49	
cis-1,3-Dichloropropene	ug/L	ND	0.50	10/05/16 18:49	
Dibromochloromethane	ug/L	ND	0.50	10/05/16 18:49	
Methylene Chloride	ug/L	ND	5.0	10/05/16 18:49	
Tetrachloroethene	ug/L	ND	0.50	10/05/16 18:49	
trans-1,2-Dichloroethene	ug/L	ND	0.50	10/05/16 18:49	
trans-1,3-Dichloropropene	ug/L	ND	0.50	10/05/16 18:49	
Trichloroethene	ug/L	ND	0.50	10/05/16 18:49	
Trichlorofluoromethane	ug/L	ND	0.50	10/05/16 18:49	
Vinyl chloride	ug/L	ND	0.50	10/05/16 18:49	
1,2-Dichloroethane-d4 (S)	%	101	70-130	10/05/16 18:49	
4-Bromofluorobenzene (S)	%	99	70-130	10/05/16 18:49	
Toluene-d8 (S)	%	101	70-130	10/05/16 18:49	

LABORATORY CONTROL SAMPLE: 380161

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	40.1	100	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	41.6	104	75-125	
1,1,2-Trichloroethane	ug/L	40	40.8	102	75-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

LABORATORY CONTROL SAMPLE: 380161

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethane	ug/L	40	40.1	100	71-131	
1,1-Dichloroethene	ug/L	40	41.1	103	74-126	
1,2-Dichlorobenzene	ug/L	40	40.3	101	75-125	
1,2-Dichloroethane	ug/L	40	40.3	101	64-141	
1,2-Dichloropropane	ug/L	40	40.5	101	73-127	
1,3-Dichlorobenzene	ug/L	40	40.9	102	75-125	
1,4-Dichlorobenzene	ug/L	40	40.6	102	75-125	
Bromodichloromethane	ug/L	40	41.2	103	70-134	
Bromoform	ug/L	40	43.3	108	68-130	
Bromomethane	ug/L	40	46.7	117	30-150	
Carbon tetrachloride	ug/L	40	41.0	102	66-135	
Chlorobenzene	ug/L	40	40.4	101	75-125	
Chloroethane	ug/L	40	40.8	102	55-150	
Chloroform	ug/L	40	40.2	101	72-131	
Chloromethane	ug/L	40	44.0	110	54-132	
cis-1,2-Dichloroethene	ug/L	40	40.8	102	75-125	
cis-1,3-Dichloropropene	ug/L	40	41.7	104	74-130	
Dibromochloromethane	ug/L	40	42.3	106	70-132	
Methylene Chloride	ug/L	40	40.3	101	68-125	
Tetrachloroethene	ug/L	40	40.4	101	75-130	
trans-1,2-Dichloroethene	ug/L	40	40.4	101	75-125	
trans-1,3-Dichloropropene	ug/L	40	42.6	107	69-137	
Trichloroethene	ug/L	40	41.1	103	75-125	
Trichlorofluoromethane	ug/L	40	42.9	107	59-140	
Vinyl chloride	ug/L	40	39.4	98	68-132	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 380181 380182

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		1276153019 Result	Spike Conc.	Spike Conc.	MSD Result							
1,1,1-Trichloroethane	ug/L	ND	40	40	39.4	39.7	99	99	63-142	1	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	39.7	39.7	99	99	75-125	0	30	
1,1,2-Trichloroethane	ug/L	ND	40	40	39.9	40.1	100	100	75-132	1	30	
1,1-Dichloroethane	ug/L	0.53	40	40	39.9	40.3	98	99	75-126	1	30	
1,1-Dichloroethene	ug/L	ND	40	40	39.8	40.2	99	101	75-125	1	30	
1,2-Dichlorobenzene	ug/L	ND	40	40	39.0	39.5	97	99	75-125	1	30	
1,2-Dichloroethane	ug/L	ND	40	40	39.6	40.0	99	100	75-137	1	30	
1,2-Dichloropropane	ug/L	ND	40	40	39.0	39.4	98	98	74-131	1	30	
1,3-Dichlorobenzene	ug/L	ND	40	40	39.6	40.1	99	100	75-126	1	30	
1,4-Dichlorobenzene	ug/L	ND	40	40	39.2	39.4	98	99	73-125	1	30	
Bromodichloromethane	ug/L	ND	40	40	40.3	41.0	101	102	65-137	2	30	
Bromoform	ug/L	ND	40	40	42.0	42.6	105	106	60-147	1	30	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Parameter	Units	1276153019		380181		380182		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Bromomethane	ug/L	ND	40	40	49.2	55.4	123	139	30-150	12	30			
Carbon tetrachloride	ug/L	ND	40	40	40.1	40.4	100	101	45-150	1	30			
Chlorobenzene	ug/L	ND	40	40	39.6	39.7	99	99	75-125	0	30			
Chloroethane	ug/L	ND	40	40	39.3	39.8	98	100	66-145	1	30			
Chloroform	ug/L	ND	40	40	39.8	39.9	99	100	74-128	0	30			
Chloromethane	ug/L	ND	40	40	43.5	44.1	109	110	51-150	1	30			
cis-1,2-Dichloroethene	ug/L	5.4	40	40	45.2	45.5	99	100	75-125	1	30			
cis-1,3-Dichloropropene	ug/L	ND	40	40	40.7	41.3	102	103	75-129	1	30			
Dibromochloromethane	ug/L	ND	40	40	41.2	41.7	103	104	66-141	1	30			
Methylene Chloride	ug/L	ND	40	40	39.3	39.6	98	99	74-125	1	30			
Tetrachloroethene	ug/L	5.8	40	40	44.7	44.9	97	98	75-135	0	30			
trans-1,2-Dichloroethene	ug/L	ND	40	40	39.2	39.5	98	99	75-125	1	30			
trans-1,3-Dichloropropene	ug/L	ND	40	40	41.2	42.1	103	105	67-139	2	30			
Trichloroethene	ug/L	3.1	40	40	42.9	43.0	100	100	75-130	0	30			
Trichlorofluoromethane	ug/L	ND	40	40	42.1	42.1	105	105	57-144	0	30			
Vinyl chloride	ug/L	ND	40	40	38.0	39.1	95	98	70-136	3	30			
1,2-Dichloroethane-d4 (S)	%.						100	99	70-130					
4-Bromofluorobenzene (S)	%.						102	102	70-130					
Toluene-d8 (S)	%.						101	102	70-130					

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

QC Batch: 96457 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1276153027, 1276153028, 1276153029, 1276153030, 1276153031, 1276153032, 1276153033, 1276153034, 1276153035, 1276153036, 1276153040, 1276153041, 1276153042, 1276153043, 1276153044, 1276153045

METHOD BLANK: 380767 Matrix: Water  
Associated Lab Samples: 1276153027, 1276153028, 1276153029, 1276153030, 1276153031, 1276153032, 1276153033, 1276153034, 1276153035, 1276153036, 1276153040, 1276153041, 1276153042, 1276153043, 1276153044, 1276153045

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	10/06/16 10:10	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	10/06/16 10:10	
1,1,2-Trichloroethane	ug/L	ND	0.50	10/06/16 10:10	
1,1-Dichloroethane	ug/L	ND	0.50	10/06/16 10:10	
1,1-Dichloroethene	ug/L	ND	0.50	10/06/16 10:10	
1,2-Dichlorobenzene	ug/L	ND	0.50	10/06/16 10:10	
1,2-Dichloroethane	ug/L	ND	0.50	10/06/16 10:10	
1,2-Dichloropropane	ug/L	ND	0.50	10/06/16 10:10	
1,3-Dichlorobenzene	ug/L	ND	0.50	10/06/16 10:10	
1,4-Dichlorobenzene	ug/L	ND	0.50	10/06/16 10:10	
Bromodichloromethane	ug/L	ND	0.50	10/06/16 10:10	
Bromoform	ug/L	ND	0.50	10/06/16 10:10	
Bromomethane	ug/L	ND	20.0	10/06/16 10:10	
Carbon tetrachloride	ug/L	ND	0.50	10/06/16 10:10	
Chlorobenzene	ug/L	ND	0.50	10/06/16 10:10	
Chloroethane	ug/L	ND	2.0	10/06/16 10:10	
Chloroform	ug/L	ND	0.50	10/06/16 10:10	
Chloromethane	ug/L	ND	0.50	10/06/16 10:10	
cis-1,2-Dichloroethene	ug/L	ND	0.50	10/06/16 10:10	
cis-1,3-Dichloropropene	ug/L	ND	0.50	10/06/16 10:10	
Dibromochloromethane	ug/L	ND	0.50	10/06/16 10:10	
Methylene Chloride	ug/L	ND	5.0	10/06/16 10:10	
Tetrachloroethene	ug/L	ND	0.50	10/06/16 10:10	
trans-1,2-Dichloroethene	ug/L	ND	0.50	10/06/16 10:10	
trans-1,3-Dichloropropene	ug/L	ND	0.50	10/06/16 10:10	
Trichloroethene	ug/L	ND	0.50	10/06/16 10:10	
Trichlorofluoromethane	ug/L	ND	0.50	10/06/16 10:10	
Vinyl chloride	ug/L	ND	0.50	10/06/16 10:10	
1,2-Dichloroethane-d4 (S)	%	101	70-130	10/06/16 10:10	
4-Bromofluorobenzene (S)	%	98	70-130	10/06/16 10:10	
Toluene-d8 (S)	%	101	70-130	10/06/16 10:10	

LABORATORY CONTROL SAMPLE: 380768

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	39.5	99	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	39.8	99	75-125	
1,1,2-Trichloroethane	ug/L	40	40.0	100	75-126	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

LABORATORY CONTROL SAMPLE: 380768

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethane	ug/L	40	39.2	98	71-131	
1,1-Dichloroethene	ug/L	40	39.6	99	74-126	
1,2-Dichlorobenzene	ug/L	40	39.3	98	75-125	
1,2-Dichloroethane	ug/L	40	39.8	99	64-141	
1,2-Dichloropropane	ug/L	40	39.6	99	73-127	
1,3-Dichlorobenzene	ug/L	40	40.3	101	75-125	
1,4-Dichlorobenzene	ug/L	40	39.7	99	75-125	
Bromodichloromethane	ug/L	40	40.4	101	70-134	
Bromoform	ug/L	40	42.3	106	68-130	
Bromomethane	ug/L	40	54.7	137	30-150	
Carbon tetrachloride	ug/L	40	40.1	100	66-135	
Chlorobenzene	ug/L	40	39.9	100	75-125	
Chloroethane	ug/L	40	38.6	96	55-150	
Chloroform	ug/L	40	39.6	99	72-131	
Chloromethane	ug/L	40	41.9	105	54-132	
cis-1,2-Dichloroethene	ug/L	40	40.2	100	75-125	
cis-1,3-Dichloropropene	ug/L	40	41.3	103	74-130	
Dibromochloromethane	ug/L	40	41.4	104	70-132	
Methylene Chloride	ug/L	40	39.4	98	68-125	
Tetrachloroethene	ug/L	40	39.9	100	75-130	
trans-1,2-Dichloroethene	ug/L	40	39.5	99	75-125	
trans-1,3-Dichloropropene	ug/L	40	41.4	104	69-137	
Trichloroethene	ug/L	40	40.4	101	75-125	
Trichlorofluoromethane	ug/L	40	41.4	104	59-140	
Vinyl chloride	ug/L	40	36.9	92	68-132	
1,2-Dichloroethane-d4 (S)	%			100	70-130	
4-Bromofluorobenzene (S)	%			104	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 380769 380770

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		1276153027 Result	Spike Conc.	Spike Conc.	Result							
1,1,1-Trichloroethane	ug/L	ND	40	40	41.2	40.3	103	101	63-142	2	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	41.9	42.5	105	106	75-125	1	30	
1,1,2-Trichloroethane	ug/L	ND	40	40	41.2	40.9	103	102	75-132	1	30	
1,1-Dichloroethane	ug/L	ND	40	40	40.9	40.2	102	101	75-126	2	30	
1,1-Dichloroethene	ug/L	ND	40	40	41.5	40.6	104	101	75-125	2	30	
1,2-Dichlorobenzene	ug/L	ND	40	40	41.2	40.2	103	101	75-125	2	30	
1,2-Dichloroethane	ug/L	ND	40	40	41.1	40.4	103	101	75-137	2	30	
1,2-Dichloropropane	ug/L	ND	40	40	40.8	40.0	102	100	74-131	2	30	
1,3-Dichlorobenzene	ug/L	ND	40	40	42.1	40.8	105	102	75-126	3	30	
1,4-Dichlorobenzene	ug/L	ND	40	40	41.3	40.4	103	101	73-125	2	30	
Bromodichloromethane	ug/L	ND	40	40	42.1	41.3	105	103	65-137	2	30	
Bromoform	ug/L	ND	40	40	44.5	44.6	111	112	60-147	0	30	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Parameter	Units	1276153027		380770		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Bromomethane	ug/L	ND	40	40	52.5	52.4	131	131	30-150	0	30	
Carbon tetrachloride	ug/L	ND	40	40	41.6	41.0	104	103	45-150	1	30	
Chlorobenzene	ug/L	ND	40	40	41.3	40.2	103	100	75-125	3	30	
Chloroethane	ug/L	ND	40	40	42.5	41.0	102	98	66-145	4	30	
Chloroform	ug/L	ND	40	40	41.2	40.4	103	101	74-128	2	30	
Chloromethane	ug/L	ND	40	40	43.1	41.9	108	105	51-150	3	30	
cis-1,2-Dichloroethene	ug/L	ND	40	40	41.4	40.4	103	101	75-125	2	30	
cis-1,3-Dichloropropene	ug/L	ND	40	40	42.3	41.5	106	104	75-129	2	30	
Dibromochloromethane	ug/L	ND	40	40	42.8	42.8	107	107	66-141	0	30	
Methylene Chloride	ug/L	ND	40	40	40.9	40.4	102	101	74-125	1	30	
Tetrachloroethene	ug/L	ND	40	40	41.4	40.5	103	101	75-135	2	30	
trans-1,2-Dichloroethene	ug/L	ND	40	40	41.4	40.3	104	101	75-125	3	30	
trans-1,3-Dichloropropene	ug/L	ND	40	40	42.9	42.6	107	106	67-139	1	30	
Trichloroethene	ug/L	ND	40	40	41.9	40.9	105	102	75-130	2	30	
Trichlorofluoromethane	ug/L	ND	40	40	43.1	42.1	108	105	57-144	2	30	
Vinyl chloride	ug/L	ND	40	40	38.0	37.3	95	93	70-136	2	30	
1,2-Dichloroethane-d4 (S)	%.						99	99	70-130			
4-Bromofluorobenzene (S)	%.						103	102	70-130			
Toluene-d8 (S)	%.						101	101	70-130			

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

QC Batch: 96600 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1276153037, 1276153038, 1276153046, 1276153047, 1276153048, 1276153049, 1276153050, 1276153051, 1276153052, 1276153053, 1276153054

METHOD BLANK: 381293 Matrix: Water  
Associated Lab Samples: 1276153037, 1276153038, 1276153046, 1276153047, 1276153048, 1276153049, 1276153050, 1276153051, 1276153052, 1276153053, 1276153054

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	10/07/16 08:06	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	10/07/16 08:06	
1,1,2-Trichloroethane	ug/L	ND	0.50	10/07/16 08:06	
1,1-Dichloroethane	ug/L	ND	0.50	10/07/16 08:06	
1,1-Dichloroethene	ug/L	ND	0.50	10/07/16 08:06	
1,2-Dichlorobenzene	ug/L	ND	0.50	10/07/16 08:06	
1,2-Dichloroethane	ug/L	ND	0.50	10/07/16 08:06	
1,2-Dichloropropane	ug/L	ND	0.50	10/07/16 08:06	
1,3-Dichlorobenzene	ug/L	ND	0.50	10/07/16 08:06	
1,4-Dichlorobenzene	ug/L	ND	0.50	10/07/16 08:06	
Bromodichloromethane	ug/L	ND	0.50	10/07/16 08:06	
Bromoform	ug/L	ND	0.50	10/07/16 08:06	
Bromomethane	ug/L	ND	20.0	10/07/16 08:06	
Carbon tetrachloride	ug/L	ND	0.50	10/07/16 08:06	
Chlorobenzene	ug/L	ND	0.50	10/07/16 08:06	
Chloroethane	ug/L	ND	2.0	10/07/16 08:06	
Chloroform	ug/L	ND	0.50	10/07/16 08:06	
Chloromethane	ug/L	ND	0.50	10/07/16 08:06	
cis-1,2-Dichloroethene	ug/L	ND	0.50	10/07/16 08:06	
cis-1,3-Dichloropropene	ug/L	ND	0.50	10/07/16 08:06	
Dibromochloromethane	ug/L	ND	0.50	10/07/16 08:06	
Methylene Chloride	ug/L	ND	5.0	10/07/16 08:06	
Tetrachloroethene	ug/L	ND	0.50	10/07/16 08:06	
trans-1,2-Dichloroethene	ug/L	ND	0.50	10/07/16 08:06	
trans-1,3-Dichloropropene	ug/L	ND	0.50	10/07/16 08:06	
Trichloroethene	ug/L	ND	0.50	10/07/16 08:06	
Trichlorofluoromethane	ug/L	ND	0.50	10/07/16 08:06	
Vinyl chloride	ug/L	ND	0.50	10/07/16 08:06	
1,2-Dichloroethane-d4 (S)	%	102	70-130	10/07/16 08:06	
4-Bromofluorobenzene (S)	%	97	70-130	10/07/16 08:06	
Toluene-d8 (S)	%	102	70-130	10/07/16 08:06	

LABORATORY CONTROL SAMPLE: 381294

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	38.3	96	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	37.6	94	75-125	
1,1,2-Trichloroethane	ug/L	40	37.9	95	75-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

LABORATORY CONTROL SAMPLE: 381294

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethane	ug/L	40	37.8	94	71-131	
1,1-Dichloroethene	ug/L	40	39.0	97	74-126	
1,2-Dichlorobenzene	ug/L	40	38.3	96	75-125	
1,2-Dichloroethane	ug/L	40	37.9	95	64-141	
1,2-Dichloropropane	ug/L	40	37.9	95	73-127	
1,3-Dichlorobenzene	ug/L	40	39.5	99	75-125	
1,4-Dichlorobenzene	ug/L	40	38.4	96	75-125	
Bromodichloromethane	ug/L	40	39.1	98	70-134	
Bromoform	ug/L	40	40.5	101	68-130	
Bromomethane	ug/L	40	45.0	112	30-150	
Carbon tetrachloride	ug/L	40	38.9	97	66-135	
Chlorobenzene	ug/L	40	38.8	97	75-125	
Chloroethane	ug/L	40	38.4	96	55-150	
Chloroform	ug/L	40	38.1	95	72-131	
Chloromethane	ug/L	40	39.6	99	54-132	
cis-1,2-Dichloroethene	ug/L	40	38.7	97	75-125	
cis-1,3-Dichloropropene	ug/L	40	39.2	98	74-130	
Dibromochloromethane	ug/L	40	39.6	99	70-132	
Methylene Chloride	ug/L	40	38.1	95	68-125	
Tetrachloroethene	ug/L	40	38.5	96	75-130	
trans-1,2-Dichloroethene	ug/L	40	38.4	96	75-125	
trans-1,3-Dichloropropene	ug/L	40	39.6	99	69-137	
Trichloroethene	ug/L	40	38.8	97	75-125	
Trichlorofluoromethane	ug/L	40	41.1	103	59-140	
Vinyl chloride	ug/L	40	36.6	91	68-132	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			103	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 381295 381296

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		1276153054	Spike Conc.	Spike Conc.	Result							
1,1,1-Trichloroethane	ug/L	ND	40	40	40.1	40.5	99	100	63-142	1	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	38.5	38.9	96	97	75-125	1	30	
1,1,2-Trichloroethane	ug/L	ND	40	40	38.9	39.5	97	99	75-132	1	30	
1,1-Dichloroethane	ug/L	0.84	40	40	39.5	40.5	97	99	75-126	2	30	
1,1-Dichloroethene	ug/L	0.54	40	40	40.7	41.3	100	102	75-125	1	30	
1,2-Dichlorobenzene	ug/L	ND	40	40	39.8	40.0	99	100	75-125	1	30	
1,2-Dichloroethane	ug/L	ND	40	40	39.1	39.5	98	99	75-137	1	30	
1,2-Dichloropropane	ug/L	ND	40	40	38.6	39.2	96	98	74-131	2	30	
1,3-Dichlorobenzene	ug/L	ND	40	40	40.5	40.7	101	102	75-126	0	30	
1,4-Dichlorobenzene	ug/L	ND	40	40	39.9	40.2	100	100	73-125	1	30	
Bromodichloromethane	ug/L	ND	40	40	40.2	40.4	100	101	65-137	1	30	
Bromoform	ug/L	ND	40	40	41.3	41.6	103	104	60-147	1	30	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Parameter	Units	381295		381296		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1276153054 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Bromomethane	ug/L	ND	40	40	48.3	55.6	121	139	30-150	14	30		
Carbon tetrachloride	ug/L	ND	40	40	40.2	40.9	101	102	45-150	2	30		
Chlorobenzene	ug/L	ND	40	40	39.9	40.0	100	100	75-125	0	30		
Chloroethane	ug/L	ND	40	40	39.3	39.3	98	98	66-145	0	30		
Chloroform	ug/L	ND	40	40	39.4	39.7	98	99	74-128	1	30		
Chloromethane	ug/L	ND	40	40	41.2	42.4	103	106	51-150	3	30		
cis-1,2-Dichloroethene	ug/L	12.9	40	40	53.1	52.7	100	100	75-125	1	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	40.2	40.7	100	102	75-129	1	30		
Dibromochloromethane	ug/L	ND	40	40	40.5	41.5	101	104	66-141	2	30		
Methylene Chloride	ug/L	ND	40	40	39.0	39.7	97	99	74-125	2	30		
Tetrachloroethene	ug/L	13.8	40	40	53.0	53.3	98	99	75-135	1	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	40.3	40.1	100	100	75-125	0	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	40.7	41.3	102	103	67-139	1	30		
Trichloroethene	ug/L	11.9	40	40	52.2	52.7	101	102	75-130	1	30		
Trichlorofluoromethane	ug/L	ND	40	40	42.7	42.4	107	106	57-144	1	30		
Vinyl chloride	ug/L	ND	40	40	37.8	38.4	94	95	70-136	2	30		
1,2-Dichloroethane-d4 (S)	%.						99	98	70-130				
4-Bromofluorobenzene (S)	%.						102	102	70-130				
Toluene-d8 (S)	%.						101	101	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

QC Batch: 96701 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1276153004

METHOD BLANK: 381691 Matrix: Water  
Associated Lab Samples: 1276153004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	10/07/16 18:54	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	10/07/16 18:54	
1,1,2-Trichloroethane	ug/L	ND	0.50	10/07/16 18:54	
1,1-Dichloroethane	ug/L	ND	0.50	10/07/16 18:54	
1,1-Dichloroethene	ug/L	ND	0.50	10/07/16 18:54	
1,2-Dichlorobenzene	ug/L	ND	0.50	10/07/16 18:54	
1,2-Dichloroethane	ug/L	ND	0.50	10/07/16 18:54	
1,2-Dichloropropane	ug/L	ND	0.50	10/07/16 18:54	
1,3-Dichlorobenzene	ug/L	ND	0.50	10/07/16 18:54	
1,4-Dichlorobenzene	ug/L	ND	0.50	10/07/16 18:54	
Bromodichloromethane	ug/L	ND	0.50	10/07/16 18:54	
Bromoform	ug/L	ND	0.50	10/07/16 18:54	
Bromomethane	ug/L	ND	20.0	10/07/16 18:54	
Carbon tetrachloride	ug/L	ND	0.50	10/07/16 18:54	
Chlorobenzene	ug/L	ND	0.50	10/07/16 18:54	
Chloroethane	ug/L	ND	2.0	10/07/16 18:54	
Chloroform	ug/L	ND	0.50	10/07/16 18:54	
Chloromethane	ug/L	ND	0.50	10/07/16 18:54	
cis-1,2-Dichloroethene	ug/L	ND	0.50	10/07/16 18:54	
cis-1,3-Dichloropropene	ug/L	ND	0.50	10/07/16 18:54	
Dibromochloromethane	ug/L	ND	0.50	10/07/16 18:54	
Methylene Chloride	ug/L	ND	5.0	10/07/16 18:54	
Tetrachloroethene	ug/L	ND	0.50	10/07/16 18:54	
trans-1,2-Dichloroethene	ug/L	ND	0.50	10/07/16 18:54	
trans-1,3-Dichloropropene	ug/L	ND	0.50	10/07/16 18:54	
Trichloroethene	ug/L	ND	0.50	10/07/16 18:54	
Trichlorofluoromethane	ug/L	ND	0.50	10/07/16 18:54	
Vinyl chloride	ug/L	ND	0.50	10/07/16 18:54	
1,2-Dichloroethane-d4 (S)	%	101	70-130	10/07/16 18:54	
4-Bromofluorobenzene (S)	%	97	70-130	10/07/16 18:54	
Toluene-d8 (S)	%	101	70-130	10/07/16 18:54	

LABORATORY CONTROL SAMPLE: 381692

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	39.2	98	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	41.6	104	75-125	
1,1,2-Trichloroethane	ug/L	40	39.8	100	75-126	
1,1-Dichloroethane	ug/L	40	38.5	96	71-131	
1,1-Dichloroethene	ug/L	40	39.7	99	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

LABORATORY CONTROL SAMPLE: 381692

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	39.5	99	75-125	
1,2-Dichloroethane	ug/L	40	39.4	99	64-141	
1,2-Dichloropropane	ug/L	40	38.6	97	73-127	
1,3-Dichlorobenzene	ug/L	40	39.8	99	75-125	
1,4-Dichlorobenzene	ug/L	40	39.6	99	75-125	
Bromodichloromethane	ug/L	40	39.9	100	70-134	
Bromoform	ug/L	40	43.6	109	68-130	
Bromomethane	ug/L	40	41.6	104	30-150	
Carbon tetrachloride	ug/L	40	39.7	99	66-135	
Chlorobenzene	ug/L	40	39.2	98	75-125	
Chloroethane	ug/L	40	39.2	98	55-150	
Chloroform	ug/L	40	39.0	98	72-131	
Chloromethane	ug/L	40	41.2	103	54-132	
cis-1,2-Dichloroethene	ug/L	40	39.3	98	75-125	
cis-1,3-Dichloropropene	ug/L	40	40.6	102	74-130	
Dibromochloromethane	ug/L	40	41.1	103	70-132	
Methylene Chloride	ug/L	40	38.9	97	68-125	
Tetrachloroethene	ug/L	40	39.3	98	75-130	
trans-1,2-Dichloroethene	ug/L	40	39.3	98	75-125	
trans-1,3-Dichloropropene	ug/L	40	41.1	103	69-137	
Trichloroethene	ug/L	40	39.6	99	75-125	
Trichlorofluoromethane	ug/L	40	42.3	106	59-140	
Vinyl chloride	ug/L	40	37.1	93	68-132	
1,2-Dichloroethane-d4 (S)	%			100	70-130	
4-Bromofluorobenzene (S)	%			102	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 381696 381697

Parameter	Units	1276372001		381696		381697		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
1,1,1-Trichloroethane	ug/L	ND	40	40	40.2	39.0	101	98	63-142	3	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	41.1	39.8	103	99	75-125	3	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	40.2	39.5	100	99	75-132	2	30		
1,1-Dichloroethane	ug/L	ND	40	40	39.9	38.4	100	96	75-126	4	30		
1,1-Dichloroethene	ug/L	ND	40	40	40.7	39.6	102	99	75-125	3	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	40.7	39.2	102	98	75-125	4	30		
1,2-Dichloroethane	ug/L	ND	40	40	40.1	38.7	100	97	75-137	4	30		
1,2-Dichloropropane	ug/L	ND	40	40	39.6	38.7	99	97	74-131	2	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	41.0	39.9	102	100	75-126	3	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	40.6	39.1	101	98	73-125	4	30		
Bromodichloromethane	ug/L	ND	40	40	40.6	39.8	102	99	65-137	2	30		
Bromoform	ug/L	ND	40	40	43.2	42.9	108	107	60-147	1	30		
Bromomethane	ug/L	ND	40	40	49.0	50.7	122	127	30-150	3	30		
Carbon tetrachloride	ug/L	ND	40	40	41.1	39.8	103	99	45-150	3	30		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Parameter	Units	381696		381697		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		1276372001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Chlorobenzene	ug/L	ND	40	40	40.5	39.7	101	99	75-125	2	30	
Chloroethane	ug/L	ND	40	40	39.9	38.4	100	96	66-145	4	30	
Chloroform	ug/L	ND	40	40	40.0	39.0	100	98	74-128	3	30	
Chloromethane	ug/L	ND	40	40	42.2	41.3	106	103	51-150	2	30	
cis-1,2-Dichloroethene	ug/L	ND	40	40	40.3	39.4	101	98	75-125	2	30	
cis-1,3-Dichloropropene	ug/L	ND	40	40	41.0	39.7	102	99	75-129	3	30	
Dibromochloromethane	ug/L	ND	40	40	41.9	41.2	105	103	66-141	2	30	
Methylene Chloride	ug/L	ND	40	40	39.8	38.6	99	97	74-125	3	30	
Tetrachloroethene	ug/L	ND	40	40	40.4	39.0	101	97	75-135	4	30	
trans-1,2-Dichloroethene	ug/L	ND	40	40	40.2	38.8	100	97	75-125	4	30	
trans-1,3-Dichloropropene	ug/L	ND	40	40	41.9	40.8	105	102	67-139	3	30	
Trichloroethene	ug/L	ND	40	40	41.0	39.7	103	99	75-130	3	30	
Trichlorofluoromethane	ug/L	ND	40	40	43.0	41.5	108	104	57-144	4	30	
Vinyl chloride	ug/L	ND	40	40	38.0	36.8	95	92	70-136	3	30	
1,2-Dichloroethane-d4 (S)	%						100	100	70-130			
4-Bromofluorobenzene (S)	%						102	103	70-130			
Toluene-d8 (S)	%						101	101	70-130			

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

QC Batch: 96782 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1276153009, 1276153013, 1276153015, 1276153016, 1276153017, 1276153018

METHOD BLANK: 382075 Matrix: Water  
Associated Lab Samples: 1276153009, 1276153013, 1276153015, 1276153016, 1276153017, 1276153018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	10/10/16 20:00	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	10/10/16 20:00	
1,1,2-Trichloroethane	ug/L	ND	0.50	10/10/16 20:00	
1,1-Dichloroethane	ug/L	ND	0.50	10/10/16 20:00	
1,1-Dichloroethene	ug/L	ND	0.50	10/10/16 20:00	
1,2-Dichlorobenzene	ug/L	ND	0.50	10/10/16 20:00	
1,2-Dichloroethane	ug/L	ND	0.50	10/10/16 20:00	
1,2-Dichloropropane	ug/L	ND	0.50	10/10/16 20:00	
1,3-Dichlorobenzene	ug/L	ND	0.50	10/10/16 20:00	
1,4-Dichlorobenzene	ug/L	ND	0.50	10/10/16 20:00	
Bromodichloromethane	ug/L	ND	0.50	10/10/16 20:00	
Bromoform	ug/L	ND	0.50	10/10/16 20:00	
Bromomethane	ug/L	ND	20.0	10/10/16 20:00	
Carbon tetrachloride	ug/L	ND	0.50	10/10/16 20:00	
Chlorobenzene	ug/L	ND	0.50	10/10/16 20:00	
Chloroethane	ug/L	ND	2.0	10/10/16 20:00	
Chloroform	ug/L	ND	0.50	10/10/16 20:00	
Chloromethane	ug/L	ND	2.0	10/10/16 20:00	
cis-1,2-Dichloroethene	ug/L	ND	0.50	10/10/16 20:00	
cis-1,3-Dichloropropene	ug/L	ND	0.50	10/10/16 20:00	
Dibromochloromethane	ug/L	ND	0.50	10/10/16 20:00	
Methylene Chloride	ug/L	ND	5.0	10/10/16 20:00	
Tetrachloroethene	ug/L	ND	0.50	10/10/16 20:00	
trans-1,2-Dichloroethene	ug/L	ND	0.50	10/10/16 20:00	
trans-1,3-Dichloropropene	ug/L	ND	0.50	10/10/16 20:00	
Trichloroethene	ug/L	ND	0.50	10/10/16 20:00	
Trichlorofluoromethane	ug/L	ND	0.50	10/10/16 20:00	
Vinyl chloride	ug/L	ND	0.50	10/10/16 20:00	
1,2-Dichloroethane-d4 (S)	%	103	70-130	10/10/16 20:00	
4-Bromofluorobenzene (S)	%	94	70-130	10/10/16 20:00	
Toluene-d8 (S)	%	99	70-130	10/10/16 20:00	

LABORATORY CONTROL SAMPLE: 382076

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	38.5	96	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	40.0	100	75-125	
1,1,2-Trichloroethane	ug/L	40	38.0	95	75-126	
1,1-Dichloroethane	ug/L	40	38.4	96	71-131	
1,1-Dichloroethene	ug/L	40	35.9	90	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

LABORATORY CONTROL SAMPLE: 382076

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	38.2	95	75-125	
1,2-Dichloroethane	ug/L	40	42.5	106	64-141	
1,2-Dichloropropane	ug/L	40	41.6	104	73-127	
1,3-Dichlorobenzene	ug/L	40	35.2	88	75-125	
1,4-Dichlorobenzene	ug/L	40	37.5	94	75-125	
Bromodichloromethane	ug/L	40	37.1	93	70-134	
Bromoform	ug/L	40	38.8	97	68-130	
Bromomethane	ug/L	40	41.0	103	30-150	
Carbon tetrachloride	ug/L	40	37.1	93	66-135	
Chlorobenzene	ug/L	40	37.0	92	75-125	
Chloroethane	ug/L	40	41.5	104	55-150	
Chloroform	ug/L	40	37.7	94	72-131	
Chloromethane	ug/L	40	33.6	84	54-132	
cis-1,2-Dichloroethene	ug/L	40	37.5	94	75-125	
cis-1,3-Dichloropropene	ug/L	40	42.9	107	74-130	
Dibromochloromethane	ug/L	40	37.1	93	70-132	
Methylene Chloride	ug/L	40	36.2	90	68-125	
Tetrachloroethene	ug/L	40	34.5	86	75-130	
trans-1,2-Dichloroethene	ug/L	40	35.6	89	75-125	
trans-1,3-Dichloropropene	ug/L	40	41.4	103	69-137	
Trichloroethene	ug/L	40	33.5	84	75-125	
Trichlorofluoromethane	ug/L	40	34.5	86	59-140	
Vinyl chloride	ug/L	40	35.4	89	68-132	
1,2-Dichloroethane-d4 (S)	%			106	70-130	
4-Bromofluorobenzene (S)	%			92	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 382197 382198

Parameter	Units	1276599025		382197		382198		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
1,1,1-Trichloroethane	ug/L	ND	40	40	37.7	39.8	94	100	63-142	5	30			
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	38.3	40.4	96	101	75-125	5	30			
1,1,2-Trichloroethane	ug/L	ND	40	40	37.9	38.6	95	97	75-132	2	30			
1,1-Dichloroethane	ug/L	ND	40	40	38.4	40.4	96	101	75-126	5	30			
1,1-Dichloroethene	ug/L	ND	40	40	35.7	37.4	89	93	75-125	5	30			
1,2-Dichlorobenzene	ug/L	ND	40	40	38.5	40.6	96	101	75-125	5	30			
1,2-Dichloroethane	ug/L	ND	40	40	40.9	42.6	102	107	75-137	4	30			
1,2-Dichloropropane	ug/L	ND	40	40	41.8	43.5	104	109	74-131	4	30			
1,3-Dichlorobenzene	ug/L	ND	40	40	36.4	37.3	91	93	75-126	3	30			
1,4-Dichlorobenzene	ug/L	ND	40	40	38.3	40.4	96	101	73-125	5	30			
Bromodichloromethane	ug/L	ND	40	40	36.7	38.5	92	96	65-137	5	30			
Bromoform	ug/L	ND	40	40	38.5	40.1	96	100	60-147	4	30			
Bromomethane	ug/L	ND	40	40	41.8	43.4	104	109	30-150	4	30			
Carbon tetrachloride	ug/L	ND	40	40	37.3	39.9	93	100	45-150	7	30			

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Parameter	Units	1276599025		382197		382198		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Chlorobenzene	ug/L	ND	40	40	37.7	39.5	94	99	75-125	4	30		
Chloroethane	ug/L	ND	40	40	40.7	39.7	102	99	66-145	2	30		
Chloroform	ug/L	ND	40	40	37.7	39.1	94	98	74-128	4	30		
Chloromethane	ug/L	ND	40	40	33.8	35.7	84	89	51-150	5	30		
cis-1,2-Dichloroethene	ug/L	ND	40	40	36.7	39.3	92	98	75-125	7	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	41.8	44.4	104	111	75-129	6	30		
Dibromochloromethane	ug/L	ND	40	40	36.6	38.7	91	97	66-141	6	30		
Methylene Chloride	ug/L	ND	40	40	34.1	38.3	85	96	74-125	12	30		
Tetrachloroethene	ug/L	ND	40	40	34.0	36.3	85	91	75-135	6	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	34.9	37.5	87	94	75-125	7	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	40.2	42.6	101	106	67-139	6	30		
Trichloroethene	ug/L	ND	40	40	34.3	34.7	86	87	75-130	1	30		
Trichlorofluoromethane	ug/L	ND	40	40	32.9	35.3	82	88	57-144	7	30		
Vinyl chloride	ug/L	ND	40	40	35.6	37.4	89	94	70-136	5	30		
1,2-Dichloroethane-d4 (S)	%						103	103	70-130				
4-Bromofluorobenzene (S)	%						94	94	70-130				
Toluene-d8 (S)	%						99	99	70-130				

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

QC Batch: 96881 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1276153050, 1276153051

METHOD BLANK: 382524 Matrix: Water  
Associated Lab Samples: 1276153050, 1276153051

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	10/11/16 11:35	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	10/11/16 11:35	
1,1,2-Trichloroethane	ug/L	ND	0.50	10/11/16 11:35	
1,1-Dichloroethane	ug/L	ND	0.50	10/11/16 11:35	
1,1-Dichloroethene	ug/L	ND	0.50	10/11/16 11:35	
1,2-Dichlorobenzene	ug/L	ND	0.50	10/11/16 11:35	
1,2-Dichloroethane	ug/L	ND	0.50	10/11/16 11:35	
1,2-Dichloropropane	ug/L	ND	0.50	10/11/16 11:35	
1,3-Dichlorobenzene	ug/L	ND	0.50	10/11/16 11:35	
1,4-Dichlorobenzene	ug/L	ND	0.50	10/11/16 11:35	
Bromodichloromethane	ug/L	ND	0.50	10/11/16 11:35	
Bromoform	ug/L	ND	0.50	10/11/16 11:35	
Bromomethane	ug/L	ND	20.0	10/11/16 11:35	
Carbon tetrachloride	ug/L	ND	0.50	10/11/16 11:35	
Chlorobenzene	ug/L	ND	0.50	10/11/16 11:35	
Chloroethane	ug/L	ND	2.0	10/11/16 11:35	
Chloroform	ug/L	ND	0.50	10/11/16 11:35	
Chloromethane	ug/L	ND	0.50	10/11/16 11:35	
cis-1,3-Dichloropropene	ug/L	ND	0.50	10/11/16 11:35	
Dibromochloromethane	ug/L	ND	0.50	10/11/16 11:35	
Methylene Chloride	ug/L	ND	5.0	10/11/16 11:35	
Tetrachloroethene	ug/L	ND	0.50	10/11/16 11:35	
trans-1,2-Dichloroethene	ug/L	ND	0.50	10/11/16 11:35	
trans-1,3-Dichloropropene	ug/L	ND	0.50	10/11/16 11:35	
Trichloroethene	ug/L	ND	0.50	10/11/16 11:35	
Trichlorofluoromethane	ug/L	ND	0.50	10/11/16 11:35	
Vinyl chloride	ug/L	ND	0.50	10/11/16 11:35	
1,2-Dichloroethane-d4 (S)	%	101	70-130	10/11/16 11:35	
4-Bromofluorobenzene (S)	%	101	70-130	10/11/16 11:35	
Toluene-d8 (S)	%	100	70-130	10/11/16 11:35	

LABORATORY CONTROL SAMPLE: 382525

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	40.0	100	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	39.8	99	75-125	
1,1,2-Trichloroethane	ug/L	40	39.0	98	75-126	
1,1-Dichloroethane	ug/L	40	39.1	98	71-131	
1,1-Dichloroethene	ug/L	40	41.2	103	74-126	
1,2-Dichlorobenzene	ug/L	40	39.9	100	75-125	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

LABORATORY CONTROL SAMPLE: 382525

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	40	38.7	97	64-141	
1,2-Dichloropropane	ug/L	40	40.9	102	73-127	
1,3-Dichlorobenzene	ug/L	40	40.3	101	75-125	
1,4-Dichlorobenzene	ug/L	40	40.0	100	75-125	
Bromodichloromethane	ug/L	40	39.4	98	70-134	
Bromoform	ug/L	40	41.9	105	68-130	
Bromomethane	ug/L	40	25.4	63	30-150	
Carbon tetrachloride	ug/L	40	39.8	99	66-135	
Chlorobenzene	ug/L	40	40.2	101	75-125	
Chloroethane	ug/L	40	38.4	96	55-150	
Chloroform	ug/L	40	38.9	97	72-131	
Chloromethane	ug/L	40	37.5	94	54-132	
cis-1,3-Dichloropropene	ug/L	40	43.5	109	74-130	
Dibromochloromethane	ug/L	40	40.0	100	70-132	
Methylene Chloride	ug/L	40	39.3	98	68-125	
Tetrachloroethene	ug/L	40	40.0	100	75-130	
trans-1,2-Dichloroethene	ug/L	40	39.6	99	75-125	
trans-1,3-Dichloropropene	ug/L	40	42.7	107	69-137	
Trichloroethene	ug/L	40	40.1	100	75-125	
Trichlorofluoromethane	ug/L	40	39.6	99	59-140	
Vinyl chloride	ug/L	40	36.2	91	68-132	
1,2-Dichloroethane-d4 (S)	%			98	70-130	
4-Bromofluorobenzene (S)	%			104	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 382528 382529

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		1276601003 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	ND	40	40	40.0	41.6	100	104	63-142	4	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	42.5	44.6	106	111	75-125	5	30	
1,1,2-Trichloroethane	ug/L	ND	40	40	40.4	41.8	101	105	75-132	3	30	
1,1-Dichloroethane	ug/L	ND	40	40	39.1	40.9	98	102	75-126	4	30	
1,1-Dichloroethene	ug/L	ND	40	40	41.2	42.2	103	106	75-125	2	30	
1,2-Dichlorobenzene	ug/L	ND	40	40	39.2	41.0	98	102	75-125	4	30	
1,2-Dichloroethane	ug/L	ND	40	40	38.8	40.6	97	101	75-137	4	30	
1,2-Dichloropropane	ug/L	ND	40	40	40.9	42.4	102	106	74-131	3	30	
1,3-Dichlorobenzene	ug/L	ND	40	40	39.8	41.4	100	103	75-126	4	30	
1,4-Dichlorobenzene	ug/L	ND	40	40	39.3	41.0	98	102	73-125	4	30	
Bromodichloromethane	ug/L	ND	40	40	39.5	41.0	99	103	65-137	4	30	
Bromoform	ug/L	ND	40	40	43.9	46.0	110	115	60-147	5	30	
Bromomethane	ug/L	ND	40	40	33.5	40.4	84	101	30-150	19	30	
Carbon tetrachloride	ug/L	ND	40	40	39.9	41.8	100	105	45-150	5	30	
Chlorobenzene	ug/L	ND	40	40	39.9	41.3	100	103	75-125	4	30	
Chloroethane	ug/L	ND	40	40	38.3	39.4	96	99	66-145	3	30	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Parameter	Units	382528		382529		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1276601003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Chloroform	ug/L	ND	40	40	38.9	40.6	97	101	74-128	4	30		
Chloromethane	ug/L	ND	40	40	36.7	39.0	92	98	51-150	6	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	43.4	45.2	108	113	75-129	4	30		
Dibromochloromethane	ug/L	ND	40	40	40.6	42.8	102	107	66-141	5	30		
Methylene Chloride	ug/L	ND	40	40	39.5	40.7	99	102	74-125	3	30		
Tetrachloroethene	ug/L	ND	40	40	39.7	40.7	99	101	75-135	2	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	39.6	41.0	99	103	75-125	4	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	43.4	45.4	109	114	67-139	5	30		
Trichloroethene	ug/L	ND	40	40	39.9	41.4	100	104	75-130	4	30		
Trichlorofluoromethane	ug/L	ND	40	40	41.1	42.0	103	105	57-144	2	30		
Vinyl chloride	ug/L	ND	40	40	36.7	38.3	92	96	70-136	4	30		
1,2-Dichloroethane-d4 (S)	%.						99	99	70-130				
4-Bromofluorobenzene (S)	%.						103	103	70-130				
Toluene-d8 (S)	%.						100	100	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

QC Batch: 96897 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1276153018

METHOD BLANK: 382608 Matrix: Water  
Associated Lab Samples: 1276153018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	10/11/16 13:34	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	10/11/16 13:34	
1,1,2-Trichloroethane	ug/L	ND	0.50	10/11/16 13:34	
1,1-Dichloroethane	ug/L	ND	0.50	10/11/16 13:34	
1,1-Dichloroethene	ug/L	ND	0.50	10/11/16 13:34	
1,2-Dichlorobenzene	ug/L	ND	0.50	10/11/16 13:34	
1,2-Dichloroethane	ug/L	ND	0.50	10/11/16 13:34	
1,2-Dichloropropane	ug/L	ND	0.50	10/11/16 13:34	
1,3-Dichlorobenzene	ug/L	ND	0.50	10/11/16 13:34	
1,4-Dichlorobenzene	ug/L	ND	0.50	10/11/16 13:34	
Bromodichloromethane	ug/L	ND	0.50	10/11/16 13:34	
Bromoform	ug/L	ND	0.50	10/11/16 13:34	
Bromomethane	ug/L	ND	20.0	10/11/16 13:34	
Carbon tetrachloride	ug/L	ND	0.50	10/11/16 13:34	
Chlorobenzene	ug/L	ND	0.50	10/11/16 13:34	
Chloroethane	ug/L	ND	2.0	10/11/16 13:34	
Chloroform	ug/L	ND	0.50	10/11/16 13:34	
Chloromethane	ug/L	ND	2.0	10/11/16 13:34	
cis-1,2-Dichloroethene	ug/L	ND	0.50	10/11/16 13:34	
cis-1,3-Dichloropropene	ug/L	ND	0.50	10/11/16 13:34	
Dibromochloromethane	ug/L	ND	0.50	10/11/16 13:34	
Methylene Chloride	ug/L	ND	5.0	10/11/16 13:34	
Tetrachloroethene	ug/L	ND	0.50	10/11/16 13:34	
trans-1,2-Dichloroethene	ug/L	ND	0.50	10/11/16 13:34	
trans-1,3-Dichloropropene	ug/L	ND	0.50	10/11/16 13:34	
Trichloroethene	ug/L	ND	0.50	10/11/16 13:34	
Trichlorofluoromethane	ug/L	ND	0.50	10/11/16 13:34	
Vinyl chloride	ug/L	ND	0.50	10/11/16 13:34	
1,2-Dichloroethane-d4 (S)	%	105	70-130	10/11/16 13:34	
4-Bromofluorobenzene (S)	%	89	70-130	10/11/16 13:34	
Toluene-d8 (S)	%	99	70-130	10/11/16 13:34	

LABORATORY CONTROL SAMPLE: 382609

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	39.1	98	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	39.7	99	75-125	
1,1,2-Trichloroethane	ug/L	40	37.7	94	75-126	
1,1-Dichloroethane	ug/L	40	38.7	97	71-131	
1,1-Dichloroethene	ug/L	40	36.1	90	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

LABORATORY CONTROL SAMPLE: 382609

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	38.1	95	75-125	
1,2-Dichloroethane	ug/L	40	41.0	103	64-141	
1,2-Dichloropropane	ug/L	40	42.5	106	73-127	
1,3-Dichlorobenzene	ug/L	40	35.4	89	75-125	
1,4-Dichlorobenzene	ug/L	40	38.5	96	75-125	
Bromodichloromethane	ug/L	40	37.0	92	70-134	
Bromoform	ug/L	40	38.6	97	68-130	
Bromomethane	ug/L	40	41.9	105	30-150	
Carbon tetrachloride	ug/L	40	38.1	95	66-135	
Chlorobenzene	ug/L	40	37.1	93	75-125	
Chloroethane	ug/L	40	42.1	105	55-150	
Chloroform	ug/L	40	37.3	93	72-131	
Chloromethane	ug/L	40	33.4	84	54-132	
cis-1,2-Dichloroethene	ug/L	40	37.1	93	75-125	
cis-1,3-Dichloropropene	ug/L	40	42.7	107	74-130	
Dibromochloromethane	ug/L	40	36.6	92	70-132	
Methylene Chloride	ug/L	40	35.7	89	68-125	
Tetrachloroethene	ug/L	40	34.7	87	75-130	
trans-1,2-Dichloroethene	ug/L	40	35.2	88	75-125	
trans-1,3-Dichloropropene	ug/L	40	41.2	103	69-137	
Trichloroethene	ug/L	40	34.0	85	75-125	
Trichlorofluoromethane	ug/L	40	33.5	84	59-140	
Vinyl chloride	ug/L	40	35.5	89	68-132	
1,2-Dichloroethane-d4 (S)	%			103	70-130	
4-Bromofluorobenzene (S)	%			91	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 382610 382611

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		1276153018	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1-Trichloroethane	ug/L	ND	40	40	41.6	40.5	104	101	63-142	3	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	40.5	38.4	101	96	75-125	5	30	
1,1,2-Trichloroethane	ug/L	ND	40	40	38.9	36.7	97	92	75-132	6	30	
1,1-Dichloroethane	ug/L	1.3	40	40	42.6	41.2	103	100	75-126	3	30	
1,1-Dichloroethene	ug/L	3.1	40	40	41.1	41.1	95	95	75-125	0	30	
1,2-Dichlorobenzene	ug/L	ND	40	40	40.5	39.5	101	99	75-125	3	30	
1,2-Dichloroethane	ug/L	ND	40	40	43.0	41.0	108	103	75-137	5	30	
1,2-Dichloropropane	ug/L	ND	40	40	43.5	42.5	109	106	74-131	2	30	
1,3-Dichlorobenzene	ug/L	ND	40	40	36.8	36.6	92	91	75-126	1	30	
1,4-Dichlorobenzene	ug/L	ND	40	40	41.2	40.3	103	101	73-125	2	30	
Bromodichloromethane	ug/L	ND	40	40	37.7	37.1	94	93	65-137	1	30	
Bromoform	ug/L	ND	40	40	40.0	38.6	100	97	60-147	4	30	
Bromomethane	ug/L	ND	40	40	46.6	45.2	117	113	30-150	3	30	
Carbon tetrachloride	ug/L	ND	40	40	40.6	40.0	102	100	45-150	2	30	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Parameter	Units	382610		382611		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1276153018 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Chlorobenzene	ug/L	ND	40	40	38.9	38.9	97	97	75-125	0	30		
Chloroethane	ug/L	ND	40	40	42.4	37.8	106	94	66-145	12	30		
Chloroform	ug/L	ND	40	40	39.3	37.9	98	95	74-128	4	30		
Chloromethane	ug/L	ND	40	40	37.5	36.7	94	92	51-150	2	30		
cis-1,2-Dichloroethene	ug/L	40.5	40	40	78.1	74.1	94	84	75-125	5	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	44.0	42.9	110	107	75-129	2	30		
Dibromochloromethane	ug/L	ND	40	40	37.9	36.9	95	92	66-141	3	30		
Methylene Chloride	ug/L	ND	40	40	37.1	35.5	93	89	74-125	4	30		
Tetrachloroethene	ug/L	99.4	40	40	130	126	78	66	75-135	4	30	M1	
trans-1,2-Dichloroethene	ug/L	ND	40	40	38.0	38.5	94	95	75-125	1	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	42.2	40.5	106	101	67-139	4	30		
Trichloroethene	ug/L	35.5	40	40	70.5	68.3	87	82	75-130	3	30		
Trichlorofluoromethane	ug/L	ND	40	40	37.4	36.9	94	92	57-144	1	30		
Vinyl chloride	ug/L	3.3	40	40	39.9	41.5	92	96	70-136	4	30		
1,2-Dichloroethane-d4 (S)	%						103	99	70-130				
4-Bromofluorobenzene (S)	%						90	91	70-130				
Toluene-d8 (S)	%						98	98	70-130				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

QC Batch: 64924

Analysis Method: SM 5310B

QC Batch Method: SM 5310B

Analysis Description: 5310B TOC

Associated Lab Samples: 1276153004, 1276153005, 1276153012, 1276153019, 1276153047, 1276153050

METHOD BLANK: 269410

Matrix: Water

Associated Lab Samples: 1276153004, 1276153005, 1276153012, 1276153019, 1276153047, 1276153050

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	10/06/16 16:20	

LABORATORY CONTROL SAMPLE: 269411

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	20.1	19.3	96	90-110	

MATRIX SPIKE SAMPLE: 269413

Parameter	Units	2043723001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	ND	2000	1780	88	75-125	

SAMPLE DUPLICATE: 269412

Parameter	Units	2043723001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	ND	ND		20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

QC Batch: 64976	Analysis Method: SM 5310B
QC Batch Method: SM 5310B	Analysis Description: 5310B TOC
Associated Lab Samples: 1276153018	

METHOD BLANK: 269620 Matrix: Water

Associated Lab Samples: 1276153018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	10/07/16 18:10	

LABORATORY CONTROL SAMPLE: 269621

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	20.1	19.1	95	90-110	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

QC Batch: 65151	Analysis Method: SM 5310B
QC Batch Method: SM 5310B	Analysis Description: 5310B TOC
Associated Lab Samples: 1276153015	

METHOD BLANK: 270288 Matrix: Water

Associated Lab Samples: 1276153015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	10/11/16 09:48	

LABORATORY CONTROL SAMPLE: 270289

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	20.1	20.8	103	90-110	

MATRIX SPIKE SAMPLE: 270291

Parameter	Units	1276153015 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	33600	20000	61700	140	75-125	M6

SAMPLE DUPLICATE: 270290

Parameter	Units	1276153015 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	33600	37300	10	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-DAV Pace Analytical Services - Davis

PASI-M Pace Analytical Services - Minneapolis

PASI-N Pace Analytical Services - New Orleans

### ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NuStar Vancouver GWM  
Pace Project No.: 1276153

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1276153004	MW-19	RSK 175	440104		
1276153005	MW-14	RSK 175	440104		
1276153012	MW-12	RSK 175	440104		
1276153015	MW-13	RSK 175	440104		
1276153018	MP-1	RSK 175	440104		
1276153019	MW-24i	RSK 175	440104		
1276153047	MGMS1-40	RSK 175	440104		
1276153050	MGMS3-40	RSK 175	440104		
1276153001	S-2	EPA 8260B	96238		
1276153002	MW-21i-105	EPA 8260B	96238		
1276153003	MW-21i-40	EPA 8260B	96238		
1276153004	MW-19	EPA 8260B	96378		
1276153004	MW-19	EPA 8260B	96701		
1276153005	MW-14	EPA 8260B	96238		
1276153005	MW-14	EPA 8260B	96378		
1276153006	MW-23i	EPA 8260B	96238		
1276153007	MW-17	EPA 8260B	96238		
1276153008	S-1	EPA 8260B	96313		
1276153009	MW-26	EPA 8260B	96313		
1276153009	MW-26	EPA 8260B	96782		
1276153010	MW-10	EPA 8260B	96313		
1276153011	MW-1	EPA 8260B	96313		
1276153012	MW-12	EPA 8260B	96313		
1276153013	MW-12 DUP	EPA 8260B	96782		
1276153014	MW-8	EPA 8260B	96313		
1276153015	MW-13	EPA 8260B	96782		
1276153016	MW-13 DUP	EPA 8260B	96782		
1276153017	EX-1	EPA 8260B	96313		
1276153017	EX-1	EPA 8260B	96782		
1276153018	MP-1	EPA 8260B	96378		
1276153018	MP-1	EPA 8260B	96782		
1276153018	MP-1	EPA 8260B	96897		
1276153019	MW-24i	EPA 8260B	96378		
1276153020	MW-22i	EPA 8260B	96378		
1276153021	MW-16	EPA 8260B	96378		
1276153022	MW-18i	EPA 8260B	96378		
1276153023	MW-20i	EPA 8260B	96378		
1276153024	MW-19i	EPA 8260B	96378		
1276153025	MW-6	EPA 8260B	96378		
1276153026	MW-25i	EPA 8260B	96378		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NuStar Vancouver GWM

Pace Project No.: 1276153

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1276153027	MW-2	EPA 8260B	96457		
1276153028	EW-1	EPA 8260B	96457		
1276153029	MW-5	EPA 8260B	96457		
1276153030	MW-7	EPA 8260B	96457		
1276153031	MW-7 DUP	EPA 8260B	96457		
1276153032	MW-9	EPA 8260B	96457		
1276153033	MGMS2-40	EPA 8260B	96457		
1276153034	MGMS2-110	EPA 8260B	96457		
1276153035	MGMS2-132	EPA 8260B	96457		
1276153036	MW-3	EPA 8260B	96457		
1276153037	MW-15	EPA 8260B	96600		
1276153038	MW-24d	EPA 8260B	96600		
1276153039	Field Blank 1	EPA 8260B	96313		
1276153040	Field Blank 2	EPA 8260B	96457		
1276153041	Field Blank 3	EPA 8260B	96457		
1276153042	Field Blank 4	EPA 8260B	96457		
1276153043	Field Blank 5	EPA 8260B	96457		
1276153044	Equipment Blank	EPA 8260B	96457		
1276153045	Trip Blank	EPA 8260B	96457		
1276153046	MGMS2-60	EPA 8260B	96600		
1276153047	MGMS1-40	EPA 8260B	96600		
1276153048	MGMS1-60	EPA 8260B	96600		
1276153049	MGMS1-132	EPA 8260B	96600		
1276153050	MGMS3-40	EPA 8260B	96600		
1276153050	MGMS3-40	EPA 8260B	96881		
1276153051	MGMS3-40 DUP	EPA 8260B	96600		
1276153051	MGMS3-40 DUP	EPA 8260B	96881		
1276153052	MGMS3-60	EPA 8260B	96600		
1276153053	MGMS3-110	EPA 8260B	96600		
1276153054	MGMS3-132	EPA 8260B	96600		
1276153004	MW-19	SM 5310B	64924		
1276153005	MW-14	SM 5310B	64924		
1276153012	MW-12	SM 5310B	64924		
1276153015	MW-13	SM 5310B	65151		
1276153018	MP-1	SM 5310B	64976		
1276153019	MW-24i	SM 5310B	64924		
1276153047	MGMS1-40	SM 5310B	64924		
1276153050	MGMS3-40	SM 5310B	64924		

### REPORT OF LABORATORY ANALYSIS

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Davis, CA 95618  
Lab: 530.297.4800  
Fax: 530.297.4802

SRG # / Lab No.

1276153

Page 1 of 4

Project Contact (Hardcopy or PDF To):

Stephanie Bosze  
Company / Address: Apex Companies  
3015 SW 1st Ave., Portland, OR 97201

Phone Number:  
503-924-4704 ext 1925  
Fax Number:  
503-924-4707

Project #: 320001126-18  
P.O. #:

Project Name:  
NuStar Vancouver GWM

Bill to:  
Apex Companies

EDD Deliverable To (Email Address):  
Ssalisbury@apexcos.com

Sampler Name & Signature: Kyle Kline

California EDF Report?  Yes  No  
CRA EQUIS Required  Yes  No  
XLS Report Required  Yes  No

Global ID:

Chain-of-Custody Record and Analysis Request

Analysis Request

Other: Please Specify

TAT  
 12 hr  
 24 hr  
 48hr  
 72hr  
 1 wk

Sample Designation	Date	Time	Sampling			Container			Preservative			Matrix			Volatile Halocarbons (EPA 8260B)	TOC	Methane, Ethane, Ethene	HOLD	TAT
			Date	Time	40 ml VOA	Sleeve	Poly	Tedlar	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	None	Water	Soil					
S-2	9/26/2016	1326		3										X				X	001
MW-21i-105	9/26/2016	1358		3										X				X	002
MW-21i-40	9/26/2016	1422		3										X				X	003
MW-19	9/26/2016	1523		6	1				X					X	X			X	004
MW-14	9/27/2016	0900		6	1				X					X	X			X	005
MW-23i	9/27/2016	1008		3					X					X				X	006
MW-17	9/27/2016	1050		3					X					X				X	007
S-1	9/27/2016	1150		3					X					X				X	008
MW-26	9/27/2016	1240		3					X					X				X	009
MW-10	9/27/2016	1330		3					X					X				X	010
MW-1	9/27/2016	1415		3					X					X				X	011
MW-12	9/27/2016	1500		6	1				X	X				X	X			X	012
MW-12 DUP	9/27/2016	1500		3					X					X				X	013

Remarks: MS/MSD is from well MW-12 (extra bottles labeled as MW-12 MS/MSD)

Received by: *Kyle Kline*  
Date: 10/13/16  
Time: 1130

Received by: *Kyle Kline*  
Date: 10/13/16  
Time: 1130

Relinquished by: *Kyle Kline*  
Date: 10/13/16  
Time: 1130

Received by: *Kyle Kline*  
Date: 10/13/16  
Time: 1130

Relinquished by: *Kyle Kline*  
Date: 10/13/16  
Time: 1130

Received by: *Kyle Kline*  
Date: 10/13/16  
Time: 1130

Relinquished by: *Kyle Kline*  
Date: 10/13/16  
Time: 1130

Received by: *Kyle Kline*  
Date: 10/13/16  
Time: 1130

Relinquished by: *Kyle Kline*  
Date: 10/13/16  
Time: 1130

Temp °C	Initials	Date	Time	Therm. ID #	Reagent Present
21.9	<i>KK</i>	10/13/16	1000	1424	Yes



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Davis, CA 95618  
Lab: 530.297.4800  
Fax: 530.297.4802

SRG # / Lab No.

Page 2 of 4

1276153

Project Contact (Hardcopy or PDF To): Stephanie Bosze Company / Address: Apex Companies 3015 SW 1st Ave., Portland, OR 97201		California EDF Report? <b>CRA EQUIS Required</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>XLS Report Required</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Chain-of-Custody Record and Analysis Request																
Phone Number: 503-924-4704 ext 1925 Fax Number: 503-924-4707		Global ID:		Analysis Request																
Project #: 320001126-18		EDD Deliverable To (Email Address): Ssalisbury@apexcos.com		Other: Please Specify																
Project Name: NuStar Vancouver GWM		Bill to: Apex Companies		Methane, Ethane, Ethene																
Project Address:		Sampler Name & Signature: Kyle Kline		TOC																
				Volatile Halocarbons (EPA 8260B)																
				HOLD																
				For Lab Use Only																
				TAT																
				<input type="checkbox"/> 12 hr <input type="checkbox"/> 24 hr <input type="checkbox"/> 48hr <input type="checkbox"/> 72hr <input checked="" type="checkbox"/> 1 wk																
Sample Designation	Date	Time	40 ml VOA	500 ml Glass	Poly Teflar	Container	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Preservative	Matrix	Water	Soil	Air	TOC	Volatile Halocarbons (EPA 8260B)	Methane, Ethane, Ethene	Other: Please Specify	TAT	
MW-8	09/27/16	1625	3				X			None		X			X				X	014
MW-13	09/28/16	0833	6	1			X					X			X				X	015
MW-13 DUP	09/28/16	0833	3				X					X			X				X	016
EX-1	09/28/16	0930	3				X					X			X				X	017
MP-1	09/28/16	1030	6	1			X					X			X				X	018
MW-24i	09/28/16	1115	6	1			X					X			X				X	019
MW-22i	09/28/16	1210	3				X					X			X				X	020
MW-16	09/28/16	1250	3				X					X			X				X	021
MW-18i	09/28/16	1330	3				X					X			X				X	022
MW-20i	09/28/16	1438	3				X					X			X				X	023
MW-19i	09/28/16	1518	3				X					X			X				X	024
MW-6	09/28/16	1608	3				X					X			X				X	025
MW-25i	09/29/16	0800	3				X					X			X				X	026
Relinquished by: <i>K/K/Apex</i>	Date 10/13/16	Time 1130	Received by: <i>K/Apex</i>		Time 1200	Remarks: MS/MSD is from well MW-12 (extra bottles labeled as MW-12 MS/MSD)														
Relinquished by:	Date	Time	Received by:		Time	For Lab Use Only: Sample Receipt														
Relinquished by:	Date	Time	Received by Laboratory:		Time	Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present									
											Yes / No									



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 Davis, CA 95618  
 Lab: 530.297.4800  
 Fax: 530.297.4802

1276153

SRG # / Lab No.

Project Contact (Hardcopy or PDF To): Stephanie Bosze		California EDF Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		CRA EQUIS Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		XLS Report Required <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No												
Company / Address: Apex Companies 3015 SW 1st Ave., Portland, OR 97201		Global ID:		Chain-of-Custody Record and Analysis Request														
Phone Number: 503-924-4704 ext 1925		EDD Deliverable To (Email Address): Ssaalisbury@apexcos.com		Analysis Request														
Fax Number: 503-924-4707		Bill to: Apex Companies		Other: Please Specify														
Project #: 320001126-18		P.O. #:		Methane, Ethane, Ethene														
Project Name: NuStar Vancouver GWM		Sampler Name & Signature: Kyle Kline		TOC														
Project Address:		Sampling		Volatile Halocarbons (EPA 8260B)														
		Date	Time	40 ml VOA	Sleeve	Poly	250 mL Glass	Container	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	None	Preservative	Matrix	Water	Soil	Air	
MW-2		9/29/2016	0905	3					X						X			
EW-1		9/29/2016	0955	3					X						X			
MW-5		9/29/2016	1126	3					X						X			
MW-7		9/29/2016	1210	3					X						X			
MW-7 DUP		9/29/2016	1210	3					X						X			
MW-9		9/29/2016	1258	3					X						X			
MGMS2-40		9/29/2016	1525	3					X						X			
MGMS2-110		9/29/2016	1607	3					X						X			
MGMS2-132		9/29/2016	1625	3					X						X			
MW-3		9/30/2016	0754	3					X						X			
MW-15		9/30/2016	0833	3					X						X			
MW-24d		9/30/2016	1015	3					X						X			
Relinquished by: <i>Kyle Kline / Apex</i>		Date	10/3/16	Time	1130	Received by: <i>[Signature]</i>		Remarks: MS/MSD is from well MW-12 (extra bottles labeled as MW-12 MS/MSD)										
Relinquished by:		Date		Time		Received by:												
Relinquished by:		Date		Time		Received by Laboratory:												
				Temp °C	Initials	Date	Time	Therm. ID #	For Lab Use Only: Sample Receipt									
									Coolant Present Yes / No									



2795 2nd Street, Suite 300  
 Davis, CA 95618  
 Lab: 530.297.4800  
 Fax: 530.297.4802

Project Contact (Hardcopy or PDF To):  
 Stephanie Bosze  
 Company / Address: Apex Companies  
 3015 SW 1st Ave., Portland, OR 97201

Phone Number: 503-924-4704 ext 1925  
 Fax Number: 503-924-4707

Project #: P.O. #:  
 320001126-18

Project Name:  
 NuStar Vancouver GWM

Project Address:

Global ID:  
 EDD Deliverable To (Email Address):  
 Ssallisbury@apexcos.com  
 Bill to:  
 Apex Companies  
 Sampler Name & Signature: Kyle Kline

Sampling	Date	Time	Container			Preservative				Matrix				
			40 ml VOA	250 mL Glass	Poly	Tedlar	1L	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	None	Water	Soil	Air
Field Blank 1	9/26/2016	1500	3				X					X		
Field Blank 2	9/27/2016	1600	3				X					X		
Field Blank 3	9/28/2016	1620	3				X					X		
Field Blank 4	9/29/2016	1630	3				X					X		
Field Blank 5	9/30/2016	1500	3				X					X		
Equipment Blank	9/30/2016	1500	3				X					X		
Trip Blank	9/30/2016	1500	2				X					X		

Chain-of-Custody Record and Analysis Request

Analysis Request	Other, Please Specify						TAT	
	12 hr	24 hr	48hr	72hr	1 wk	For Lab Use Only		
TOC							X	039
Volatle Halocarbons (EPA 826B)							X	040
Methane, Ethane, Ethene							X	041
							X	042
							X	043
							X	044
							X	045

Remarks:  
 MS/MSD is from well MW-12 (extra bottles labeled as MW-12 MS/MSD)

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Relinquished by: *Kyle Kline / Apex*  
 Date: 10/13/16 1130  
 Received by: *Stephanie Bosze*  
 Date: 10/13/16 1000

Relinquished by:  
 Date:  
 Received by Laboratory:  
 Date:  
 For Lab Use Only: Sample Receipt

SRG # / Lab No. (226157)



2795 2nd Street, Suite 300  
 Davis, CA 95618  
 Lab: 530.297.4800  
 Fax: 530.297.4802

127453

SRG # / Lab No.

Page 1 of 4

Project Contact (Hardcopy or PDF To):  
 Stephanie Bosze

Company / Address: Apex Companies  
 3015 SW 1st Ave., Portland, OR 97201

Phone Number: 503-924-4704 ext 1925

Fax Number: 503-924-4707

Project #: 320001126-18

P.O. #: NuStar Vancouver GWM

Project Name: NuStar Vancouver GWM

Project Address:

Sampler Name & Signature: Kyle Kline

Bill to: Ssalisbury@apexcos.com

Apex Companies

Global ID:

California EDF Report?  Yes  No

CRA EQUIS Required  Yes  No

XLS Report Required  Yes  No

EDD Deliverable To (Email Address):

Ssalisbury@apexcos.com

Bill to: Apex Companies

Sampler Name & Signature: Kyle Kline

Chain-of-Custody Record and Analysis Request

Analysis Request

Other: Please Specify

Sample Designation	Sampling		Container			Preservative				Matrix			TAT	
	Date	Time	40 ml VOA	Sleeve	Poly	250 ml Glass	Tedlar	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	None	Water		Soil
MGMS2-60	9/30/2016	1112	3					X				X		
MGMS1-40	9/30/2016	1143	6	1				X	X			X		
MGMS1-60	9/30/2016	1215	3					X				X		
MGMS1-132	9/30/2016	1245	3					X				X		
MGMS3-40	9/30/2016	1325	6	1				X	X			X		
MGMS3-40 DUP	9/30/2016	1325	3					X				X		
MGMS3-60	9/30/2016	1354	3					X				X		
MGMS3-110	9/30/2016	1425	3					X				X		
MGMS3-132	9/30/2016	1445	3					X				X		

Volatile Halocarbons (EPA 8260B)

TOC

Methane, Ethane, Ethene

HOLD

12 hr  
 24 hr  
 48hr  
 72hr  
 1 wk

For Lab Use Only

046  
047  
048  
049  
050  
051  
052  
053  
054

Remarks: MS/MSD is from well MW-12 (extra bottles labeled as MW-12 MS/MSD)

Relinquished by: *Kyle Kline*  
 Date: 10/5/16

Received by: *Patricia Anderson*  
 Time: 1:30  
 Date: 10/4/16

Relinquished by: *Kyle Kline*  
 Date: 10/5/16

Received by: *Patricia Anderson*  
 Time: 1:30  
 Date: 10/4/16

Relinquished by: *Kyle Kline*  
 Date: 10/5/16

Received by: *Patricia Anderson*  
 Time: 1:30  
 Date: 10/4/16

For Lab Use Only: Sample Receipt			
Temp °C	Initials	Date	Time

Coolant Present  
 Yes / No

**Sample Condition Upon Receipt**

Client Name: Apex Companies

Project #:

**WO#: 1276153**



1276153

Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  OnTrac  Other: \_\_\_\_\_  
 Tracking Number: 8107 8807 7240 / 7230

Custody Seal on Cooler/Box Present?  Yes  No      Seals Intact?  Yes  No      Optional: Proj. Due Date: \_\_\_\_\_ Proj. Name: \_\_\_\_\_  
 Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_      Temp Blank?  Yes  No  
 Thermom. Used:  DA1434  DA2285      Type of Ice:  Wet  Blue  Dry Ice  None  Samples on ice, cooling process has begun  
 Cooler Temp Read(°C): 2.4/1.8      Cooler Temp Corrected(°C): 2.9/2.3      Biological Tissue Frozen?  Yes  No  N/A  
 Temp should be above freezing to 6°C      Correction Factor: -10.5      Date and Initials of Person Examining Contents: gy 10/4/16

			Comments:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	2 of the 5 pages of the COC
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	have "page 1 of 4" are the upper
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	right hand corner of the page.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.	SR will treat the page with
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	9 samples on page 5 until further
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.	clarification.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.	Sample has one broken
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	container.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.	Note if sediment is visible in the dissolved container.
Sample Labels Match COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12.	A few containers do not have the true. Field blanks do not have numbers on
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>			
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13.	<input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>12 Cyanide)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #	The labels for the sample ID
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed:	Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.	
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.	
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased):			

**CLIENT NOTIFICATION/RESOLUTION**

Field Data Required?  Yes  No

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

Project Manager Review: Scott Jones

Date: 10/4/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

December 30, 2016

Stephanie Bosze-Salisbury  
Apex Companies, LLC  
3015 SW First Avenue  
Portland, OR 97201

RE: Project: NuStar Vancouver  
Pace Project No.: 1280701

Dear Stephanie Bosze-Salisbury:

Enclosed are the analytical results for sample(s) received by the laboratory on December 20, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott M Forbes  
scott.forbes@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: NuStar Vancouver  
Pace Project No.: 1280701

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### Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414  
525 N 8th Street, Salina, KS 67401  
Alaska Certification UST-107  
A2LA Certification #: 2926.01  
Alaska Certification #: UST-078  
Alaska Certification #MN00064  
Alabama Certification #40770  
Arizona Certification #: AZ-0014  
Arkansas Certification #: 88-0680  
California Certification #: 01155CA  
Colorado Certification #Pace  
Connecticut Certification #: PH-0256  
EPA Region 8 Certification #: 8TMS-L  
Florida/NELAP Certification #: E87605  
Guam Certification #:14-008r  
Georgia Certification #: 959  
Georgia EPD #: Pace  
Idaho Certification #: MN00064  
Hawaii Certification #MN00064  
Illinois Certification #: 200011  
Indiana Certification#C-MN-01  
Iowa Certification #: 368  
Kansas Certification #: E-10167  
Kentucky Dept of Envi. Protection - DW #90062  
Kentucky Dept of Envi. Protection - WW #:90062  
Louisiana DEQ Certification #: 3086  
Louisiana DHH #: LA140001  
Maine Certification #: 2013011  
Maryland Certification #: 322

Michigan DEPH Certification #: 9909  
Minnesota Certification #: 027-053-137  
Mississippi Certification #: Pace  
Montana Certification #: MT0092  
Nevada Certification #: MN\_00064  
Nebraska Certification #: Pace  
New Jersey Certification #: MN-002  
New York Certification #: 11647  
North Carolina Certification #: 530  
North Carolina State Public Health #: 27700  
North Dakota Certification #: R-036  
Ohio EPA #: 4150  
Ohio VAP Certification #: CL101  
Oklahoma Certification #: 9507  
Oregon Certification #: MN200001  
Oregon Certification #: MN300001  
Pennsylvania Certification #: 68-00563  
Puerto Rico Certification  
Saipan (CNMI) #:MP0003  
South Carolina #:74003001  
Texas Certification #: T104704192  
Tennessee Certification #: 02818  
Utah Certification #: MN000642013-4  
Virginia DGS Certification #: 251  
Virginia/VELAP Certification #: Pace  
Washington Certification #: C486  
West Virginia Certification #: 382  
West Virginia DHHR #:9952C  
Wisconsin Certification #: 999407970

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### Davis Certification IDs

2795 Second Street Suite 300 Davis, CA 95618  
North Dakota Certification #: R-214  
Oregon Certification #: CA300002  
Washington Certification #: C926-15a

California Certification #: 08263CA  
Minnesota Department of Health Certification #: 006-999-465

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### New Orleans Certification IDs

California Env. Lab Accreditation Program Branch:  
11277CA  
Florida Department of Health (NELAC): E87595  
Illinois Environmental Protection Agency: 0025721  
Kansas Department of Health and Environment (NELAC):  
E-10266  
Louisiana Dept. of Environmental Quality (NELAC/LELAP):  
02006

Pennsylvania Dept. of Env Protection (NELAC): 68-04202  
Texas Commission on Env. Quality (NELAC):  
T104704405-09-TX  
U.S. Dept. of Agriculture Foreign Soil Import: P330-10-00119  
Commonwealth of Virginia (TNI): 480246

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## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: NuStar Vancouver

Pace Project No.: 1280701

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1280701001	MW-1	Water	12/16/16 09:44	12/20/16 10:15
1280701002	MW-3	Water	12/16/16 11:19	12/20/16 10:15
1280701003	MW-5	Water	12/14/16 13:09	12/20/16 10:15
1280701004	MW-7	Water	12/14/16 13:37	12/20/16 10:15
1280701005	MW-8	Water	12/14/16 08:27	12/20/16 10:15
1280701006	MW-9	Water	12/14/16 14:27	12/20/16 10:15
1280701007	MW-12	Water	12/14/16 15:12	12/20/16 10:15
1280701008	MW-13	Water	12/16/16 08:44	12/20/16 10:15
1280701009	MW-14	Water	12/13/16 11:02	12/20/16 10:15
1280701010	MW-16	Water	12/14/16 10:32	12/20/16 10:15
1280701011	S-1	Water	12/13/16 09:17	12/20/16 10:15
1280701012	MW-18i	Water	12/14/16 09:47	12/20/16 10:15
1280701013	MW-19i	Water	12/14/16 11:29	12/20/16 10:15
1280701014	MW-20i	Water	12/14/16 09:02	12/20/16 10:15
1280701015	MW-21i-40	Water	12/13/16 16:09	12/20/16 10:15
1280701016	MW-22i	Water	12/13/16 13:47	12/20/16 10:15
1280701017	MW-23i	Water	12/13/16 10:39	12/20/16 10:15
1280701018	MW-21i-105	Water	12/13/16 14:49	12/20/16 10:15
1280701019	MW-7 DUP	Water	12/14/16 13:37	12/20/16 10:15
1280701020	MW-12 DUP	Water	12/14/16 15:12	12/20/16 10:15
1280701021	MW-19	Water	12/12/16 13:17	12/20/16 10:15
1280701022	MW-32S	Water	12/14/16 12:11	12/20/16 10:15
1280701023	MGMS1-43	Water	12/16/16 11:44	12/20/16 10:15
1280701024	MGMS2-40	Water	12/16/16 12:54	12/20/16 10:15
1280701025	MGMS3-40	Water	12/16/16 10:19	12/20/16 10:15
1280701026	MP-1	Water	12/13/16 08:14	12/20/16 10:15
1280701027	EX-1	Water	12/12/16 14:07	12/20/16 10:15
1280701028	MGMS1-60	Water	12/16/16 12:19	12/20/16 10:15
1280701029	MGMS2-60	Water	12/16/16 13:14	12/20/16 10:15
1280701030	MGMS3-60	Water	12/16/16 10:44	12/20/16 10:15
1280701031	MW-19 DUP	Water	12/12/16 13:17	12/20/16 10:15
1280701032	MW-24i	Water	12/12/16 14:44	12/20/16 10:15
1280701033	MW-25i	Water	12/13/16 12:54	12/20/16 10:15
1280701034	MW-26	Water	12/13/16 12:07	12/20/16 10:15
1280701035	TRIP BLANK	Water	12/16/16 13:35	12/20/16 10:15
1280701036	Field Blank	Water	12/12/16 08:00	12/20/16 10:15
1280701037	Equipment Blank	Water	12/16/16 13:40	12/20/16 10:15

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## SAMPLE SUMMARY

Project: NuStar Vancouver

Pace Project No.: 1280701

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<b>Lab ID</b>	<b>Sample ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Received</b>
1280701038	MW 24D	Water	12/12/16 15:49	12/20/16 10:15
1280701039	S-2	Water	12/13/16 09:39	12/20/16 10:15
1280701040	Field Blank 1	Water	12/12/16 13:30	12/20/16 10:15

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: NuStar Vancouver  
Pace Project No.: 1280701

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1280701001	MW-1	EPA 8260B	JCP	31	PASI-DAV
1280701002	MW-3	EPA 8260B	JCP	31	PASI-DAV
1280701003	MW-5	EPA 8260B	SJ1	31	PASI-DAV
1280701004	MW-7	EPA 8260B	JCP	31	PASI-DAV
1280701005	MW-8	EPA 8260B	JCP	31	PASI-DAV
1280701006	MW-9	EPA 8260B	JCP	31	PASI-DAV
1280701007	MW-12	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP, SJ1	31	PASI-DAV
		SM 5310B	TAE	1	PASI-N
1280701008	MW-13	RSK 175	DR1	3	PASI-M
		EPA 8260B	SJ1	31	PASI-DAV
		SM 5310B	TAE	1	PASI-N
1280701009	MW-14	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	TAE	1	PASI-N
1280701010	MW-16	EPA 8260B	JCP	31	PASI-DAV
1280701011	S-1	EPA 8260B	JCP	31	PASI-DAV
1280701012	MW-18i	EPA 8260B	JCP	31	PASI-DAV
1280701013	MW-19i	EPA 8260B	JCP	31	PASI-DAV
1280701014	MW-20i	EPA 8260B	JCP	31	PASI-DAV
1280701015	MW-21i-40	EPA 8260B	JCP	31	PASI-DAV
1280701016	MW-22i	EPA 8260B	JCP	31	PASI-DAV
1280701017	MW-23i	EPA 8260B	JCP	31	PASI-DAV
1280701018	MW-21i-105	EPA 8260B	JCP	31	PASI-DAV
1280701019	MW-7 DUP	EPA 8260B	JCP	31	PASI-DAV
1280701020	MW-12 DUP	EPA 8260B	SJ1	31	PASI-DAV
1280701021	MW-19	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	TAE	1	PASI-N
1280701022	MW-32S	EPA 8260B	JCP	31	PASI-DAV
1280701023	MGMS1-43	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	TAE	1	PASI-N
1280701024	MGMS2-40	EPA 8260B	JCP	31	PASI-DAV
1280701025	MGMS3-40	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	TAE	1	PASI-N

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: NuStar Vancouver  
Pace Project No.: 1280701

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1280701026	MP-1	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	TAE	1	PASI-N
1280701027	EX-1	EPA 8260B	JCP	31	PASI-DAV
1280701028	MGMS1-60	EPA 8260B	JCP	31	PASI-DAV
1280701029	MGMS2-60	EPA 8260B	JCP	31	PASI-DAV
1280701030	MGMS3-60	EPA 8260B	JCP	31	PASI-DAV
1280701031	MW-19 DUP	EPA 8260B	JCP	31	PASI-DAV
1280701032	MW-24i	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	TAE	1	PASI-N
1280701033	MW-25i	EPA 8260B	JCP	31	PASI-DAV
1280701034	MW-26	RSK 175	DR1	3	PASI-M
		EPA 8260B	JCP	31	PASI-DAV
		SM 5310B	TAE	1	PASI-N
1280701035	TRIP BLANK	EPA 8260B	JCP	31	PASI-DAV
1280701036	Field Blank	EPA 8260B	JCP	31	PASI-DAV
1280701037	Equipment Blank	EPA 8260B	JCP	31	PASI-DAV
1280701038	MW 24D	EPA 8260B	JCP	31	PASI-DAV
1280701039	S-2	EPA 8260B	JCP	31	PASI-DAV

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-1	Lab ID: 1280701001	Collected: 12/16/16 09:44	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/26/16 21:31	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/26/16 21:31	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/26/16 21:31	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/26/16 21:31	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/26/16 21:31	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/26/16 21:31	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/26/16 21:31	67-66-3	
Chloromethane	ND	ug/L	2.0	1		12/26/16 21:31	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/26/16 21:31	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 21:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 21:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 21:31	106-46-7	
1,1-Dichloroethane	3.4	ug/L	0.50	1		12/26/16 21:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/26/16 21:31	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/26/16 21:31	75-35-4	
cis-1,2-Dichloroethene	22.5	ug/L	0.50	1		12/26/16 21:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/26/16 21:31	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/26/16 21:31	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 21:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 21:31	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/26/16 21:31	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/26/16 21:31	79-34-5	
Tetrachloroethene	8.0	ug/L	0.50	1		12/26/16 21:31	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/26/16 21:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/26/16 21:31	79-00-5	
Trichloroethene	5.8	ug/L	0.50	1		12/26/16 21:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/26/16 21:31	75-69-4	
Vinyl chloride	0.86	ug/L	0.50	1		12/26/16 21:31	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	111	%	70-130	1		12/26/16 21:31	17060-07-0	
Toluene-d8 (S)	104	%	70-130	1		12/26/16 21:31	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		12/26/16 21:31	460-00-4	

Sample: MW-3	Lab ID: 1280701002	Collected: 12/16/16 11:19	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/26/16 19:32	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/26/16 19:32	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/26/16 19:32	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/26/16 19:32	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/26/16 19:32	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/26/16 19:32	75-00-3	
Chloroform	0.52	ug/L	0.50	1		12/26/16 19:32	67-66-3	
Chloromethane	ND	ug/L	2.0	1		12/26/16 19:32	74-87-3	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-3		Lab ID: 1280701002	Collected: 12/16/16 11:19	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		12/26/16 19:32	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 19:32	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 19:32	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 19:32	106-46-7	
1,1-Dichloroethane	<b>1.1</b>	ug/L	0.50	1		12/26/16 19:32	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/26/16 19:32	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/26/16 19:32	75-35-4	
cis-1,2-Dichloroethene	<b>26.8</b>	ug/L	0.50	1		12/26/16 19:32	156-59-2	
trans-1,2-Dichloroethene	<b>0.90</b>	ug/L	0.50	1		12/26/16 19:32	156-60-5	
1,2-Dichloropropane	<b>0.57</b>	ug/L	0.50	1		12/26/16 19:32	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 19:32	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 19:32	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/26/16 19:32	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		12/26/16 19:32	79-34-5	
Tetrachloroethene	<b>86.2</b>	ug/L	0.50	1		12/26/16 19:32	127-18-4	
1,1,1-Trichloroethane	<b>1.2</b>	ug/L	0.50	1		12/26/16 19:32	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/26/16 19:32	79-00-5	
Trichloroethene	<b>23.9</b>	ug/L	0.50	1		12/26/16 19:32	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/26/16 19:32	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/26/16 19:32	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	107	%	70-130	1		12/26/16 19:32	17060-07-0	
Toluene-d8 (S)	103	%	70-130	1		12/26/16 19:32	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		12/26/16 19:32	460-00-4	

Sample: MW-5		Lab ID: 1280701003	Collected: 12/14/16 13:09	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/28/16 12:43	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/28/16 12:43	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/28/16 12:43	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/28/16 12:43	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/28/16 12:43	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/28/16 12:43	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/28/16 12:43	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/28/16 12:43	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/28/16 12:43	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/28/16 12:43	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/28/16 12:43	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/28/16 12:43	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/28/16 12:43	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/28/16 12:43	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/28/16 12:43	75-35-4	
cis-1,2-Dichloroethene	<b>4.3</b>	ug/L	0.50	1		12/28/16 12:43	156-59-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-5		Lab ID: 1280701003		Collected: 12/14/16 13:09		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/28/16 12:43	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		12/28/16 12:43	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/28/16 12:43	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/28/16 12:43	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		12/28/16 12:43	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/28/16 12:43	79-34-5		
Tetrachloroethene	<b>11.5</b>	ug/L	0.50	1		12/28/16 12:43	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/28/16 12:43	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/28/16 12:43	79-00-5		
Trichloroethene	<b>2.5</b>	ug/L	0.50	1		12/28/16 12:43	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		12/28/16 12:43	75-69-4		
Vinyl chloride	<b>1.1</b>	ug/L	0.50	1		12/28/16 12:43	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		12/28/16 12:43	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		12/28/16 12:43	2037-26-5		
4-Bromofluorobenzene (S)	94	%	70-130	1		12/28/16 12:43	460-00-4		

Sample: MW-7		Lab ID: 1280701004		Collected: 12/14/16 13:37		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		12/26/16 21:51	75-27-4		
Bromoform	ND	ug/L	0.50	1		12/26/16 21:51	75-25-2		
Bromomethane	ND	ug/L	20.0	1		12/26/16 21:51	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		12/26/16 21:51	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		12/26/16 21:51	108-90-7		
Chloroethane	ND	ug/L	2.0	1		12/26/16 21:51	75-00-3		
Chloroform	ND	ug/L	0.50	1		12/26/16 21:51	67-66-3		
Chloromethane	ND	ug/L	2.0	1		12/26/16 21:51	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		12/26/16 21:51	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 21:51	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 21:51	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 21:51	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		12/26/16 21:51	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		12/26/16 21:51	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		12/26/16 21:51	75-35-4		
cis-1,2-Dichloroethene	<b>9.2</b>	ug/L	0.50	1		12/26/16 21:51	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/26/16 21:51	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		12/26/16 21:51	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 21:51	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 21:51	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		12/26/16 21:51	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/26/16 21:51	79-34-5		
Tetrachloroethene	<b>0.65</b>	ug/L	0.50	1		12/26/16 21:51	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/26/16 21:51	71-55-6		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-7		Lab ID: 1280701004	Collected: 12/14/16 13:37	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/26/16 21:51	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/26/16 21:51	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/26/16 21:51	75-69-4	
Vinyl chloride	<b>0.98</b>	ug/L	0.50	1		12/26/16 21:51	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	108	%	70-130	1		12/26/16 21:51	17060-07-0	
Toluene-d8 (S)	103	%	70-130	1		12/26/16 21:51	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		12/26/16 21:51	460-00-4	

Sample: MW-8		Lab ID: 1280701005	Collected: 12/14/16 08:27	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/26/16 22:11	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/26/16 22:11	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/26/16 22:11	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/26/16 22:11	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/26/16 22:11	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/26/16 22:11	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/26/16 22:11	67-66-3	
Chloromethane	ND	ug/L	2.0	1		12/26/16 22:11	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/26/16 22:11	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 22:11	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 22:11	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 22:11	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/26/16 22:11	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/26/16 22:11	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/26/16 22:11	75-35-4	
cis-1,2-Dichloroethene	<b>3.1</b>	ug/L	0.50	1		12/26/16 22:11	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/26/16 22:11	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/26/16 22:11	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 22:11	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 22:11	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/26/16 22:11	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/26/16 22:11	79-34-5	
Tetrachloroethene	<b>3.8</b>	ug/L	0.50	1		12/26/16 22:11	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/26/16 22:11	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/26/16 22:11	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/26/16 22:11	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/26/16 22:11	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/26/16 22:11	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	110	%	70-130	1		12/26/16 22:11	17060-07-0	
Toluene-d8 (S)	103	%	70-130	1		12/26/16 22:11	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	1		12/26/16 22:11	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-9		Lab ID: 1280701006	Collected: 12/14/16 14:27	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/26/16 22:31	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/26/16 22:31	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/26/16 22:31	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/26/16 22:31	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/26/16 22:31	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/26/16 22:31	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/26/16 22:31	67-66-3	
Chloromethane	ND	ug/L	2.0	1		12/26/16 22:31	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/26/16 22:31	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 22:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 22:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 22:31	106-46-7	
1,1-Dichloroethane	1.3	ug/L	0.50	1		12/26/16 22:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/26/16 22:31	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/26/16 22:31	75-35-4	
cis-1,2-Dichloroethene	59.7	ug/L	0.50	1		12/26/16 22:31	156-59-2	
trans-1,2-Dichloroethene	1.6	ug/L	0.50	1		12/26/16 22:31	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/26/16 22:31	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 22:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 22:31	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/26/16 22:31	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/26/16 22:31	79-34-5	
Tetrachloroethene	75.8	ug/L	0.50	1		12/26/16 22:31	127-18-4	
1,1,1-Trichloroethane	1.1	ug/L	0.50	1		12/26/16 22:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/26/16 22:31	79-00-5	
Trichloroethene	44.9	ug/L	0.50	1		12/26/16 22:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/26/16 22:31	75-69-4	
Vinyl chloride	0.52	ug/L	0.50	1		12/26/16 22:31	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	108	%	70-130	1		12/26/16 22:31	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		12/26/16 22:31	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		12/26/16 22:31	460-00-4	

Sample: MW-12		Lab ID: 1280701007	Collected: 12/14/16 15:12	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	13.1	ug/L	10.0	1		12/27/16 16:43	74-84-0	
Ethene	ND	ug/L	10.0	1		12/27/16 16:43	74-85-1	
Methane	1020	ug/L	10.0	1		12/27/16 16:43	74-82-8	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	1.0	2		12/26/16 22:51	75-27-4	
Bromoform	ND	ug/L	1.0	2		12/26/16 22:51	75-25-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: MW-12		Lab ID: 1280701007		Collected: 12/14/16 15:12		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromomethane	ND	ug/L	40.0	2		12/26/16 22:51	74-83-9		
Carbon tetrachloride	ND	ug/L	1.0	2		12/26/16 22:51	56-23-5		
Chlorobenzene	ND	ug/L	1.0	2		12/26/16 22:51	108-90-7		
Chloroethane	ND	ug/L	4.0	2		12/26/16 22:51	75-00-3		
Chloroform	ND	ug/L	1.0	2		12/26/16 22:51	67-66-3		
Chloromethane	ND	ug/L	4.0	2		12/26/16 22:51	74-87-3		
Dibromochloromethane	ND	ug/L	1.0	2		12/26/16 22:51	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	1.0	2		12/26/16 22:51	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	1.0	2		12/26/16 22:51	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	1.0	2		12/26/16 22:51	106-46-7		
1,1-Dichloroethane	ND	ug/L	1.0	2		12/26/16 22:51	75-34-3		
1,2-Dichloroethane	ND	ug/L	1.0	2		12/26/16 22:51	107-06-2		
1,1-Dichloroethene	ND	ug/L	1.0	2		12/26/16 22:51	75-35-4		
cis-1,2-Dichloroethene	<b>6.9</b>	ug/L	1.0	2		12/26/16 22:51	156-59-2		
trans-1,2-Dichloroethene	<b>2.3</b>	ug/L	1.0	2		12/26/16 22:51	156-60-5		
1,2-Dichloropropane	ND	ug/L	1.0	2		12/26/16 22:51	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	1.0	2		12/26/16 22:51	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	1.0	2		12/26/16 22:51	10061-02-6		
Methylene Chloride	ND	ug/L	10.0	2		12/26/16 22:51	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	2		12/26/16 22:51	79-34-5		
Tetrachloroethene	ND	ug/L	1.0	2		12/26/16 22:51	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	1.0	2		12/26/16 22:51	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	1.0	2		12/26/16 22:51	79-00-5		
Trichloroethene	ND	ug/L	1.0	2		12/26/16 22:51	79-01-6		
Trichlorofluoromethane	ND	ug/L	1.0	2		12/26/16 22:51	75-69-4		
Vinyl chloride	<b>20.5</b>	ug/L	6.2	12.5		12/28/16 13:46	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	110	%	70-130	2		12/26/16 22:51	17060-07-0		
Toluene-d8 (S)	103	%	70-130	2		12/26/16 22:51	2037-26-5		
4-Bromofluorobenzene (S)	98	%	70-130	2		12/26/16 22:51	460-00-4		

Sample: MW-13		Lab ID: 1280701008		Collected: 12/16/16 08:44		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>5310B TOC</b>		Analytical Method: SM 5310B							
Total Organic Carbon	<b>1930</b>	mg/L	25.0	25		12/29/16 09:49	7440-44-0	D6,M6	

Sample: MW-13		Lab ID: 1280701008		Collected: 12/16/16 08:44		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175							
Ethane	ND	ug/L	10.0	1		12/27/16 16:51	74-84-0		
Ethene	ND	ug/L	10.0	1		12/27/16 16:51	74-85-1		
Methane	<b>89.4</b>	ug/L	10.0	1		12/27/16 16:51	74-82-8		
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	5.0	10		12/28/16 14:26	75-27-4		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-13	Lab ID: 1280701008	Collected: 12/16/16 08:44	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromoform	ND	ug/L	5.0	10		12/28/16 14:26	75-25-2	
Bromomethane	ND	ug/L	200	10		12/28/16 14:26	74-83-9	
Carbon tetrachloride	ND	ug/L	5.0	10		12/28/16 14:26	56-23-5	
Chlorobenzene	ND	ug/L	5.0	10		12/28/16 14:26	108-90-7	
Chloroethane	ND	ug/L	20.0	10		12/28/16 14:26	75-00-3	
Chloroform	ND	ug/L	5.0	10		12/28/16 14:26	67-66-3	
Chloromethane	ND	ug/L	20.0	10		12/28/16 14:26	74-87-3	
Dibromochloromethane	ND	ug/L	5.0	10		12/28/16 14:26	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	5.0	10		12/28/16 14:26	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	10		12/28/16 14:26	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	10		12/28/16 14:26	106-46-7	
1,1-Dichloroethane	ND	ug/L	5.0	10		12/28/16 14:26	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	10		12/28/16 14:26	107-06-2	
1,1-Dichloroethene	ND	ug/L	5.0	10		12/28/16 14:26	75-35-4	
cis-1,2-Dichloroethene	<b>509</b>	ug/L	5.0	10		12/28/16 14:26	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	5.0	10		12/28/16 14:26	156-60-5	
1,2-Dichloropropane	ND	ug/L	5.0	10		12/28/16 14:26	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	5.0	10		12/28/16 14:26	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	10		12/28/16 14:26	10061-02-6	
Methylene Chloride	ND	ug/L	50.0	10		12/28/16 14:26	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0	10		12/28/16 14:26	79-34-5	
Tetrachloroethene	<b>1020</b>	ug/L	5.0	10		12/28/16 14:26	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	5.0	10		12/28/16 14:26	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	10		12/28/16 14:26	79-00-5	
Trichloroethene	<b>394</b>	ug/L	5.0	10		12/28/16 14:26	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	10		12/28/16 14:26	75-69-4	
Vinyl chloride	ND	ug/L	5.0	10		12/28/16 14:26	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	110	%	70-130	10		12/28/16 14:26	17060-07-0	
Toluene-d8 (S)	104	%	70-130	10		12/28/16 14:26	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	10		12/28/16 14:26	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>2220</b>	mg/L	25.0	25		12/29/16 10:46	7440-44-0	

Sample: MW-14	Lab ID: 1280701009	Collected: 12/13/16 11:02	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		12/27/16 16:18	74-84-0	
Ethene	ND	ug/L	10.0	1		12/27/16 16:18	74-85-1	
Methane	ND	ug/L	10.0	1		12/27/16 16:18	74-82-8	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: MW-14		Lab ID: 1280701009	Collected: 12/13/16 11:02	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 21:21	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/23/16 21:21	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/23/16 21:21	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 21:21	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 21:21	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/23/16 21:21	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/23/16 21:21	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/23/16 21:21	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 21:21	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 21:21	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 21:21	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 21:21	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/23/16 21:21	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 21:21	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/23/16 21:21	75-35-4	
cis-1,2-Dichloroethene	1.3	ug/L	0.50	1		12/23/16 21:21	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 21:21	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 21:21	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 21:21	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 21:21	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 21:21	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 21:21	79-34-5	
Tetrachloroethene	0.56	ug/L	0.50	1		12/23/16 21:21	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 21:21	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 21:21	79-00-5	
Trichloroethene	0.97	ug/L	0.50	1		12/23/16 21:21	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 21:21	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 21:21	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	104	%	70-130	1		12/23/16 21:21	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		12/23/16 21:21	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130	1		12/23/16 21:21	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	5.1	mg/L	1.0	1		12/29/16 11:05	7440-44-0	

Sample: MW-16		Lab ID: 1280701010	Collected: 12/14/16 10:32	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/27/16 20:15	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/27/16 20:15	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/27/16 20:15	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/27/16 20:15	56-23-5	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-16	Lab ID: 1280701010	Collected: 12/14/16 10:32	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Chlorobenzene	ND	ug/L	0.50	1		12/27/16 20:15	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/27/16 20:15	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/27/16 20:15	67-66-3	
Chloromethane	ND	ug/L	2.0	1		12/27/16 20:15	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/27/16 20:15	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 20:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 20:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 20:15	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/27/16 20:15	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/27/16 20:15	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/27/16 20:15	75-35-4	
cis-1,2-Dichloroethene	3.1	ug/L	0.50	1		12/27/16 20:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/27/16 20:15	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/27/16 20:15	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/27/16 20:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/27/16 20:15	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/27/16 20:15	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/27/16 20:15	79-34-5	
Tetrachloroethene	51.5	ug/L	0.50	1		12/27/16 20:15	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/27/16 20:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/27/16 20:15	79-00-5	
Trichloroethene	11.6	ug/L	0.50	1		12/27/16 20:15	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/27/16 20:15	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/27/16 20:15	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	110	%	70-130	1		12/27/16 20:15	17060-07-0	
Toluene-d8 (S)	104	%	70-130	1		12/27/16 20:15	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	1		12/27/16 20:15	460-00-4	

Sample: S-1	Lab ID: 1280701011	Collected: 12/13/16 09:17	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 21:40	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/23/16 21:40	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/23/16 21:40	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 21:40	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 21:40	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/23/16 21:40	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/23/16 21:40	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/23/16 21:40	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 21:40	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 21:40	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 21:40	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 21:40	106-46-7	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: S-1		Lab ID: 1280701011	Collected: 12/13/16 09:17	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1-Dichloroethane	ND	ug/L	0.50	1		12/23/16 21:40	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 21:40	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/23/16 21:40	75-35-4	
cis-1,2-Dichloroethene	<b>0.57</b>	ug/L	0.50	1		12/23/16 21:40	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 21:40	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 21:40	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 21:40	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 21:40	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 21:40	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 21:40	79-34-5	
Tetrachloroethene	<b>0.54</b>	ug/L	0.50	1		12/23/16 21:40	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 21:40	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 21:40	79-00-5	
Trichloroethene	<b>1.6</b>	ug/L	0.50	1		12/23/16 21:40	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 21:40	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 21:40	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		12/23/16 21:40	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		12/23/16 21:40	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130	1		12/23/16 21:40	460-00-4	

Sample: MW-18i		Lab ID: 1280701012	Collected: 12/14/16 09:47	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/27/16 20:35	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/27/16 20:35	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/27/16 20:35	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/27/16 20:35	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/27/16 20:35	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/27/16 20:35	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/27/16 20:35	67-66-3	
Chloromethane	ND	ug/L	2.0	1		12/27/16 20:35	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/27/16 20:35	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 20:35	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 20:35	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 20:35	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/27/16 20:35	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/27/16 20:35	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/27/16 20:35	75-35-4	
cis-1,2-Dichloroethene	<b>2.8</b>	ug/L	0.50	1		12/27/16 20:35	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/27/16 20:35	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/27/16 20:35	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/27/16 20:35	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/27/16 20:35	10061-02-6	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: MW-18i		Lab ID: 1280701012	Collected: 12/14/16 09:47	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Methylene Chloride	ND	ug/L	5.0	1		12/27/16 20:35	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/27/16 20:35	79-34-5	
Tetrachloroethene	1.5	ug/L	0.50	1		12/27/16 20:35	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/27/16 20:35	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/27/16 20:35	79-00-5	
Trichloroethene	1.2	ug/L	0.50	1		12/27/16 20:35	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/27/16 20:35	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/27/16 20:35	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	109	%.	70-130	1		12/27/16 20:35	17060-07-0	
Toluene-d8 (S)	104	%.	70-130	1		12/27/16 20:35	2037-26-5	
4-Bromofluorobenzene (S)	95	%.	70-130	1		12/27/16 20:35	460-00-4	

Sample: MW-19i		Lab ID: 1280701013	Collected: 12/14/16 11:29	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/27/16 20:55	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/27/16 20:55	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/27/16 20:55	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/27/16 20:55	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/27/16 20:55	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/27/16 20:55	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/27/16 20:55	67-66-3	
Chloromethane	ND	ug/L	2.0	1		12/27/16 20:55	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/27/16 20:55	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 20:55	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 20:55	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 20:55	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/27/16 20:55	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/27/16 20:55	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/27/16 20:55	75-35-4	
cis-1,2-Dichloroethene	2.4	ug/L	0.50	1		12/27/16 20:55	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/27/16 20:55	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/27/16 20:55	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/27/16 20:55	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/27/16 20:55	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/27/16 20:55	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/27/16 20:55	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		12/27/16 20:55	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/27/16 20:55	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/27/16 20:55	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/27/16 20:55	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/27/16 20:55	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/27/16 20:55	75-01-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: MW-19i		Lab ID: 1280701013	Collected: 12/14/16 11:29	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	109	%	70-130	1		12/27/16 20:55	17060-07-0	
Toluene-d8 (S)	104	%	70-130	1		12/27/16 20:55	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		12/27/16 20:55	460-00-4	

Sample: MW-20i		Lab ID: 1280701014	Collected: 12/14/16 09:02	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 16:33	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/23/16 16:33	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/23/16 16:33	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 16:33	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 16:33	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/23/16 16:33	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/23/16 16:33	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/23/16 16:33	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 16:33	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 16:33	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 16:33	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 16:33	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/23/16 16:33	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 16:33	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/23/16 16:33	75-35-4	
cis-1,2-Dichloroethene	<b>2.5</b>	ug/L	0.50	1		12/23/16 16:33	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 16:33	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 16:33	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 16:33	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 16:33	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 16:33	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 16:33	79-34-5	
Tetrachloroethene	<b>0.54</b>	ug/L	0.50	1		12/23/16 16:33	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 16:33	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 16:33	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/23/16 16:33	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 16:33	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 16:33	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		12/23/16 16:33	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		12/23/16 16:33	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130	1		12/23/16 16:33	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: MW-21i-40		Lab ID: 1280701015		Collected: 12/13/16 16:09		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 21:59	75-27-4		
Bromoform	ND	ug/L	0.50	1		12/23/16 21:59	75-25-2		
Bromomethane	ND	ug/L	20.0	1		12/23/16 21:59	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 21:59	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 21:59	108-90-7		
Chloroethane	ND	ug/L	2.0	1		12/23/16 21:59	75-00-3		
Chloroform	ND	ug/L	0.50	1		12/23/16 21:59	67-66-3		
Chloromethane	ND	ug/L	0.50	1		12/23/16 21:59	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 21:59	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 21:59	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 21:59	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 21:59	106-46-7		
1,1-Dichloroethane	2.4	ug/L	0.50	1		12/23/16 21:59	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 21:59	107-06-2		
1,1-Dichloroethene	0.83	ug/L	0.50	1		12/23/16 21:59	75-35-4		
cis-1,2-Dichloroethene	74.2	ug/L	0.50	1		12/23/16 21:59	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 21:59	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 21:59	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 21:59	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 21:59	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 21:59	75-09-2		
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 21:59	79-34-5		
Tetrachloroethene	21.4	ug/L	0.50	1		12/23/16 21:59	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 21:59	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 21:59	79-00-5		
Trichloroethene	19.4	ug/L	0.50	1		12/23/16 21:59	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 21:59	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 21:59	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		12/23/16 21:59	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		12/23/16 21:59	2037-26-5		
4-Bromofluorobenzene (S)	103	%	70-130	1		12/23/16 21:59	460-00-4		

Sample: MW-22i		Lab ID: 1280701016		Collected: 12/13/16 13:47		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 22:19	75-27-4		
Bromoform	ND	ug/L	0.50	1		12/23/16 22:19	75-25-2		
Bromomethane	ND	ug/L	20.0	1		12/23/16 22:19	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 22:19	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 22:19	108-90-7		
Chloroethane	ND	ug/L	2.0	1		12/23/16 22:19	75-00-3		
Chloroform	ND	ug/L	0.50	1		12/23/16 22:19	67-66-3		
Chloromethane	ND	ug/L	0.50	1		12/23/16 22:19	74-87-3		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-22i		Lab ID: 1280701016		Collected: 12/13/16 13:47		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 22:19	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 22:19	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 22:19	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 22:19	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		12/23/16 22:19	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 22:19	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		12/23/16 22:19	75-35-4		
cis-1,2-Dichloroethene	<b>8.6</b>	ug/L	0.50	1		12/23/16 22:19	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 22:19	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 22:19	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 22:19	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 22:19	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 22:19	75-09-2		
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 22:19	79-34-5		
Tetrachloroethene	<b>2.0</b>	ug/L	0.50	1		12/23/16 22:19	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 22:19	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 22:19	79-00-5		
Trichloroethene	<b>10.2</b>	ug/L	0.50	1		12/23/16 22:19	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 22:19	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 22:19	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		12/23/16 22:19	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		12/23/16 22:19	2037-26-5		
4-Bromofluorobenzene (S)	103	%	70-130	1		12/23/16 22:19	460-00-4		

Sample: MW-23i		Lab ID: 1280701017		Collected: 12/13/16 10:39		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 22:38	75-27-4		
Bromoform	ND	ug/L	0.50	1		12/23/16 22:38	75-25-2		
Bromomethane	ND	ug/L	20.0	1		12/23/16 22:38	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 22:38	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 22:38	108-90-7		
Chloroethane	ND	ug/L	2.0	1		12/23/16 22:38	75-00-3		
Chloroform	ND	ug/L	0.50	1		12/23/16 22:38	67-66-3		
Chloromethane	ND	ug/L	0.50	1		12/23/16 22:38	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 22:38	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 22:38	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 22:38	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 22:38	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		12/23/16 22:38	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 22:38	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		12/23/16 22:38	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 22:38	156-59-2		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-23i		Lab ID: 1280701017		Collected: 12/13/16 10:39		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 22:38	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 22:38	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 22:38	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 22:38	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 22:38	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 22:38	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		12/23/16 22:38	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 22:38	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 22:38	79-00-5		
Trichloroethene	ND	ug/L	0.50	1		12/23/16 22:38	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 22:38	75-69-4		
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 22:38	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		12/23/16 22:38	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		12/23/16 22:38	2037-26-5		
4-Bromofluorobenzene (S)	103	%	70-130	1		12/23/16 22:38	460-00-4		

Sample: MW-21i-105		Lab ID: 1280701018		Collected: 12/13/16 14:49		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 22:57	75-27-4		
Bromoform	ND	ug/L	0.50	1		12/23/16 22:57	75-25-2		
Bromomethane	ND	ug/L	20.0	1		12/23/16 22:57	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 22:57	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 22:57	108-90-7		
Chloroethane	ND	ug/L	2.0	1		12/23/16 22:57	75-00-3		
Chloroform	ND	ug/L	0.50	1		12/23/16 22:57	67-66-3		
Chloromethane	ND	ug/L	0.50	1		12/23/16 22:57	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 22:57	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 22:57	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 22:57	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 22:57	106-46-7		
1,1-Dichloroethane	ND	ug/L	0.50	1		12/23/16 22:57	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 22:57	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		12/23/16 22:57	75-35-4		
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 22:57	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 22:57	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 22:57	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 22:57	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 22:57	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 22:57	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 22:57	79-34-5		
Tetrachloroethene	ND	ug/L	0.50	1		12/23/16 22:57	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 22:57	71-55-6		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-21i-105		Lab ID: 1280701018	Collected: 12/13/16 14:49	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 22:57	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/23/16 22:57	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 22:57	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 22:57	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%.	70-130	1		12/23/16 22:57	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		12/23/16 22:57	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	70-130	1		12/23/16 22:57	460-00-4	

Sample: MW-7 DUP		Lab ID: 1280701019	Collected: 12/14/16 13:37	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 16:53	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/23/16 16:53	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/23/16 16:53	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 16:53	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 16:53	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/23/16 16:53	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/23/16 16:53	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/23/16 16:53	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 16:53	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 16:53	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 16:53	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 16:53	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/23/16 16:53	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 16:53	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/23/16 16:53	75-35-4	
cis-1,2-Dichloroethene	9.4	ug/L	0.50	1		12/23/16 16:53	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 16:53	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 16:53	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 16:53	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 16:53	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 16:53	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 16:53	79-34-5	
Tetrachloroethene	0.78	ug/L	0.50	1		12/23/16 16:53	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 16:53	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 16:53	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/23/16 16:53	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 16:53	75-69-4	
Vinyl chloride	1.0	ug/L	0.50	1		12/23/16 16:53	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%.	70-130	1		12/23/16 16:53	17060-07-0	
Toluene-d8 (S)	102	%.	70-130	1		12/23/16 16:53	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	70-130	1		12/23/16 16:53	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

<b>Sample: MW-12 DUP</b>		<b>Lab ID: 1280701020</b>		Collected: 12/14/16 15:12	Received: 12/20/16 10:15	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	2.5	5		12/28/16 13:26	75-27-4	
Bromoform	ND	ug/L	2.5	5		12/28/16 13:26	75-25-2	
Bromomethane	ND	ug/L	100	5		12/28/16 13:26	74-83-9	
Carbon tetrachloride	ND	ug/L	2.5	5		12/28/16 13:26	56-23-5	
Chlorobenzene	ND	ug/L	2.5	5		12/28/16 13:26	108-90-7	
Chloroethane	<b>29.1</b>	ug/L	10.0	5		12/28/16 13:26	75-00-3	
Chloroform	ND	ug/L	2.5	5		12/28/16 13:26	67-66-3	
Chloromethane	ND	ug/L	10.0	5		12/28/16 13:26	74-87-3	
Dibromochloromethane	ND	ug/L	2.5	5		12/28/16 13:26	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	2.5	5		12/28/16 13:26	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	2.5	5		12/28/16 13:26	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	2.5	5		12/28/16 13:26	106-46-7	
1,1-Dichloroethane	<b>16.5</b>	ug/L	2.5	5		12/28/16 13:26	75-34-3	
1,2-Dichloroethane	ND	ug/L	2.5	5		12/28/16 13:26	107-06-2	
1,1-Dichloroethene	<b>4.7</b>	ug/L	2.5	5		12/28/16 13:26	75-35-4	
cis-1,2-Dichloroethene	<b>744</b>	ug/L	2.5	5		12/28/16 13:26	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	2.5	5		12/28/16 13:26	156-60-5	
1,2-Dichloropropane	ND	ug/L	2.5	5		12/28/16 13:26	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	2.5	5		12/28/16 13:26	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	2.5	5		12/28/16 13:26	10061-02-6	
Methylene Chloride	ND	ug/L	25.0	5		12/28/16 13:26	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	2.5	5		12/28/16 13:26	79-34-5	
Tetrachloroethene	<b>62.3</b>	ug/L	2.5	5		12/28/16 13:26	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	2.5	5		12/28/16 13:26	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	2.5	5		12/28/16 13:26	79-00-5	
Trichloroethene	<b>42.2</b>	ug/L	2.5	5		12/28/16 13:26	79-01-6	
Trichlorofluoromethane	ND	ug/L	2.5	5		12/28/16 13:26	75-69-4	
Vinyl chloride	<b>21.2</b>	ug/L	2.5	5		12/28/16 13:26	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	108	%	70-130	5		12/28/16 13:26	17060-07-0	
Toluene-d8 (S)	103	%	70-130	5		12/28/16 13:26	2037-26-5	
4-Bromofluorobenzene (S)	92	%	70-130	5		12/28/16 13:26	460-00-4	

<b>Sample: MW-19</b>		<b>Lab ID: 1280701021</b>		Collected: 12/12/16 13:17	Received: 12/20/16 10:15	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	<b>10.3</b>	ug/L	10.0	1		12/27/16 15:54	74-84-0	H1
Ethene	ND	ug/L	10.0	1		12/27/16 15:54	74-85-1	H1
Methane	<b>2350</b>	ug/L	10.0	1		12/27/16 15:54	74-82-8	H1
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	5.0	10		12/23/16 01:39	75-27-4	
Bromoform	ND	ug/L	5.0	10		12/23/16 01:39	75-25-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-19	Lab ID: 1280701021	Collected: 12/12/16 13:17	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromomethane	ND	ug/L	200	10		12/23/16 01:39	74-83-9	
Carbon tetrachloride	ND	ug/L	5.0	10		12/23/16 01:39	56-23-5	
Chlorobenzene	ND	ug/L	5.0	10		12/23/16 01:39	108-90-7	
Chloroethane	ND	ug/L	20.0	10		12/23/16 01:39	75-00-3	
Chloroform	ND	ug/L	5.0	10		12/23/16 01:39	67-66-3	
Chloromethane	ND	ug/L	5.0	10		12/23/16 01:39	74-87-3	
Dibromochloromethane	ND	ug/L	5.0	10		12/23/16 01:39	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	5.0	10		12/23/16 01:39	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	10		12/23/16 01:39	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	10		12/23/16 01:39	106-46-7	
1,1-Dichloroethane	<b>72.8</b>	ug/L	5.0	10		12/23/16 01:39	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	10		12/23/16 01:39	107-06-2	
1,1-Dichloroethene	<b>11.2</b>	ug/L	5.0	10		12/23/16 01:39	75-35-4	
cis-1,2-Dichloroethene	<b>1030</b>	ug/L	5.0	10		12/23/16 01:39	156-59-2	
trans-1,2-Dichloroethene	<b>10.7</b>	ug/L	5.0	10		12/23/16 01:39	156-60-5	
1,2-Dichloropropane	ND	ug/L	5.0	10		12/23/16 01:39	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	5.0	10		12/23/16 01:39	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	10		12/23/16 01:39	10061-02-6	
Methylene Chloride	ND	ug/L	50.0	10		12/23/16 01:39	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	10		12/23/16 01:39	79-34-5	
Tetrachloroethene	<b>1730</b>	ug/L	25.0	50		12/24/16 17:45	127-18-4	
1,1,1-Trichloroethane	<b>10.9</b>	ug/L	5.0	10		12/23/16 01:39	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	10		12/23/16 01:39	79-00-5	
Trichloroethene	<b>812</b>	ug/L	5.0	10		12/23/16 01:39	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	10		12/23/16 01:39	75-69-4	
Vinyl chloride	<b>28.2</b>	ug/L	5.0	10		12/23/16 01:39	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	10		12/23/16 01:39	17060-07-0	
Toluene-d8 (S)	101	%	70-130	10		12/23/16 01:39	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130	10		12/23/16 01:39	460-00-4	

Sample: MW-32S	Lab ID: 1280701022	Collected: 12/14/16 12:11	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>8.1</b>	mg/L	1.0	1		12/29/16 11:24	7440-44-0	

Sample: MW-32S	Lab ID: 1280701022	Collected: 12/14/16 12:11	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/24/16 11:58	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/24/16 11:58	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/24/16 11:58	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/24/16 11:58	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/24/16 11:58	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/24/16 11:58	75-00-3	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-32S		Lab ID: 1280701022	Collected: 12/14/16 12:11	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Chloroform	ND	ug/L	0.50	1		12/24/16 11:58	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/24/16 11:58	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/24/16 11:58	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 11:58	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 11:58	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 11:58	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/24/16 11:58	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/24/16 11:58	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/24/16 11:58	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 11:58	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 11:58	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/24/16 11:58	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 11:58	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 11:58	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/24/16 11:58	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/24/16 11:58	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		12/24/16 11:58	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/24/16 11:58	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/24/16 11:58	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/24/16 11:58	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/24/16 11:58	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/24/16 11:58	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		12/24/16 11:58	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		12/24/16 11:58	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-130	1		12/24/16 11:58	460-00-4	

Sample: MGMS1-43		Lab ID: 1280701023	Collected: 12/16/16 11:44	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	17.9	ug/L	10.0	1		12/27/16 16:59	74-84-0	
Ethene	ND	ug/L	10.0	1		12/27/16 16:59	74-85-1	
Methane	2110	ug/L	10.0	1		12/27/16 16:59	74-82-8	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	8.4	16.7		12/26/16 19:22	75-27-4	
Bromoform	ND	ug/L	8.4	16.7		12/26/16 19:22	75-25-2	
Bromomethane	ND	ug/L	334	16.7		12/26/16 19:22	74-83-9	
Carbon tetrachloride	ND	ug/L	8.4	16.7		12/26/16 19:22	56-23-5	
Chlorobenzene	ND	ug/L	8.4	16.7		12/26/16 19:22	108-90-7	
Chloroethane	ND	ug/L	33.4	16.7		12/26/16 19:22	75-00-3	
Chloroform	ND	ug/L	8.4	16.7		12/26/16 19:22	67-66-3	
Chloromethane	ND	ug/L	8.4	16.7		12/26/16 19:22	74-87-3	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: <b>MGMS1-43</b>		Lab ID: <b>1280701023</b>		Collected: 12/16/16 11:44		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	8.4	16.7		12/26/16 19:22	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	8.4	16.7		12/26/16 19:22	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	8.4	16.7		12/26/16 19:22	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	8.4	16.7		12/26/16 19:22	106-46-7		
1,1-Dichloroethane	<b>92.6</b>	ug/L	8.4	16.7		12/26/16 19:22	75-34-3		
1,2-Dichloroethane	ND	ug/L	8.4	16.7		12/26/16 19:22	107-06-2		
1,1-Dichloroethene	<b>9.5</b>	ug/L	8.4	16.7		12/26/16 19:22	75-35-4		
cis-1,2-Dichloroethene	<b>1810</b>	ug/L	8.4	16.7		12/26/16 19:22	156-59-2		
trans-1,2-Dichloroethene	<b>20.1</b>	ug/L	8.4	16.7		12/26/16 19:22	156-60-5		
1,2-Dichloropropane	ND	ug/L	8.4	16.7		12/26/16 19:22	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	8.4	16.7		12/26/16 19:22	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	8.4	16.7		12/26/16 19:22	10061-02-6		
Methylene Chloride	ND	ug/L	83.5	16.7		12/26/16 19:22	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	8.4	16.7		12/26/16 19:22	79-34-5		
Tetrachloroethene	<b>64.1</b>	ug/L	8.4	16.7		12/26/16 19:22	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	8.4	16.7		12/26/16 19:22	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	8.4	16.7		12/26/16 19:22	79-00-5		
Trichloroethene	<b>171</b>	ug/L	8.4	16.7		12/26/16 19:22	79-01-6		
Trichlorofluoromethane	ND	ug/L	8.4	16.7		12/26/16 19:22	75-69-4		
Vinyl chloride	<b>239</b>	ug/L	8.4	16.7		12/26/16 19:22	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	103	%	70-130	16.7		12/26/16 19:22	17060-07-0		
Toluene-d8 (S)	101	%	70-130	16.7		12/26/16 19:22	2037-26-5		
4-Bromofluorobenzene (S)	98	%	70-130	16.7		12/26/16 19:22	460-00-4		
<b>5310B TOC</b>		Analytical Method: SM 5310B							
Total Organic Carbon	<b>6.2</b>	mg/L	1.0	1		12/29/16 11:43	7440-44-0		

Sample: <b>MGMS2-40</b>		Lab ID: <b>1280701024</b>		Collected: 12/16/16 12:54		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		12/27/16 12:30	75-27-4		
Bromoform	ND	ug/L	0.50	1		12/27/16 12:30	75-25-2		
Bromomethane	ND	ug/L	20.0	1		12/27/16 12:30	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		12/27/16 12:30	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		12/27/16 12:30	108-90-7		
Chloroethane	ND	ug/L	2.0	1		12/27/16 12:30	75-00-3		
Chloroform	ND	ug/L	0.50	1		12/27/16 12:30	67-66-3		
Chloromethane	ND	ug/L	0.50	1		12/27/16 12:30	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		12/27/16 12:30	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 12:30	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 12:30	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 12:30	106-46-7		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: <b>MGMS2-40</b>		Lab ID: <b>1280701024</b>		Collected: 12/16/16 12:54		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
1,1-Dichloroethane	<b>10.3</b>	ug/L	0.50	1		12/27/16 12:30	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		12/27/16 12:30	107-06-2		
1,1-Dichloroethene	ND	ug/L	0.50	1		12/27/16 12:30	75-35-4		
cis-1,2-Dichloroethene	<b>5.2</b>	ug/L	0.50	1		12/27/16 12:30	156-59-2		
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/27/16 12:30	156-60-5		
1,2-Dichloropropane	ND	ug/L	0.50	1		12/27/16 12:30	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/27/16 12:30	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/27/16 12:30	10061-02-6		
Methylene Chloride	ND	ug/L	5.0	1		12/27/16 12:30	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/27/16 12:30	79-34-5		
Tetrachloroethene	<b>2.6</b>	ug/L	0.50	1		12/27/16 12:30	127-18-4		
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/27/16 12:30	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/27/16 12:30	79-00-5		
Trichloroethene	<b>1.9</b>	ug/L	0.50	1		12/27/16 12:30	79-01-6		
Trichlorofluoromethane	ND	ug/L	0.50	1		12/27/16 12:30	75-69-4		
Vinyl chloride	<b>2.0</b>	ug/L	0.50	1		12/27/16 12:30	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		12/27/16 12:30	17060-07-0		
Toluene-d8 (S)	101	%	70-130	1		12/27/16 12:30	2037-26-5		
4-Bromofluorobenzene (S)	97	%	70-130	1		12/27/16 12:30	460-00-4		

Sample: <b>MGMS3-40</b>		Lab ID: <b>1280701025</b>		Collected: 12/16/16 10:19		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175							
Ethane	ND	ug/L	10.0	1		12/27/16 17:07	74-84-0		
Ethene	<b>55.2</b>	ug/L	10.0	1		12/27/16 17:07	74-85-1		
Methane	<b>6340</b>	ug/L	10.0	1		12/27/16 17:07	74-82-8		
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		12/27/16 12:49	75-27-4		
Bromoform	ND	ug/L	0.50	1		12/27/16 12:49	75-25-2		
Bromomethane	ND	ug/L	20.0	1		12/27/16 12:49	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		12/27/16 12:49	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		12/27/16 12:49	108-90-7		
Chloroethane	ND	ug/L	2.0	1		12/27/16 12:49	75-00-3		
Chloroform	ND	ug/L	0.50	1		12/27/16 12:49	67-66-3		
Chloromethane	ND	ug/L	0.50	1		12/27/16 12:49	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		12/27/16 12:49	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 12:49	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 12:49	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/27/16 12:49	106-46-7		
1,1-Dichloroethane	<b>1.0</b>	ug/L	0.50	1		12/27/16 12:49	75-34-3		
1,2-Dichloroethane	ND	ug/L	0.50	1		12/27/16 12:49	107-06-2		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

<b>Sample: MGMS3-40</b>		<b>Lab ID: 1280701025</b>		Collected: 12/16/16 10:19	Received: 12/20/16 10:15	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1-Dichloroethene	ND	ug/L	0.50	1		12/27/16 12:49	75-35-4	
cis-1,2-Dichloroethene	<b>1.3</b>	ug/L	0.50	1		12/27/16 12:49	156-59-2	
trans-1,2-Dichloroethene	<b>0.97</b>	ug/L	0.50	1		12/27/16 12:49	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/27/16 12:49	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/27/16 12:49	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/27/16 12:49	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/27/16 12:49	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/27/16 12:49	79-34-5	
Tetrachloroethene	<b>0.63</b>	ug/L	0.50	1		12/27/16 12:49	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/27/16 12:49	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/27/16 12:49	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/27/16 12:49	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/27/16 12:49	75-69-4	
Vinyl chloride	<b>0.88</b>	ug/L	0.50	1		12/27/16 12:49	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	104	%	70-130	1		12/27/16 12:49	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		12/27/16 12:49	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	1		12/27/16 12:49	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>86.9</b>	mg/L	1.0	1		12/29/16 12:02	7440-44-0	

<b>Sample: MP-1</b>		<b>Lab ID: 1280701026</b>		Collected: 12/13/16 08:14	Received: 12/20/16 10:15	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		12/27/16 16:26	74-84-0	
Ethene	ND	ug/L	10.0	1		12/27/16 16:26	74-85-1	
Methane	<b>2810</b>	ug/L	10.0	1		12/27/16 16:26	74-82-8	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 23:16	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/23/16 23:16	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/23/16 23:16	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 23:16	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 23:16	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/23/16 23:16	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/23/16 23:16	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/23/16 23:16	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 23:16	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 23:16	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 23:16	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 23:16	106-46-7	
1,1-Dichloroethane	<b>0.64</b>	ug/L	0.50	1		12/23/16 23:16	75-34-3	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

<b>Sample: MP-1</b>		<b>Lab ID: 1280701026</b>		Collected: 12/13/16 08:14	Received: 12/20/16 10:15	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 23:16	107-06-2	
1,1-Dichloroethene	<b>0.92</b>	ug/L	0.50	1		12/23/16 23:16	75-35-4	
cis-1,2-Dichloroethene	<b>209</b>	ug/L	2.5	5		12/26/16 18:43	156-59-2	
trans-1,2-Dichloroethene	<b>0.55</b>	ug/L	0.50	1		12/23/16 23:16	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 23:16	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 23:16	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 23:16	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 23:16	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 23:16	79-34-5	
Tetrachloroethene	<b>2.9</b>	ug/L	0.50	1		12/23/16 23:16	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 23:16	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 23:16	79-00-5	
Trichloroethene	<b>1.0</b>	ug/L	0.50	1		12/23/16 23:16	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 23:16	75-69-4	
Vinyl chloride	<b>4.3</b>	ug/L	0.50	1		12/23/16 23:16	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		12/23/16 23:16	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		12/23/16 23:16	2037-26-5	
4-Bromofluorobenzene (S)	104	%	70-130	1		12/23/16 23:16	460-00-4	

<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	<b>130</b>	mg/L	10.0	10		12/29/16 12:21	7440-44-0	

<b>Sample: EX-1</b>		<b>Lab ID: 1280701027</b>		Collected: 12/12/16 14:07	Received: 12/20/16 10:15	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/24/16 17:06	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/24/16 17:06	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/24/16 17:06	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/24/16 17:06	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/24/16 17:06	108-90-7	
Chloroethane	<b>3.7</b>	ug/L	2.0	1		12/24/16 17:06	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/24/16 17:06	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/24/16 17:06	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/24/16 17:06	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 17:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 17:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 17:06	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/24/16 17:06	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/24/16 17:06	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/24/16 17:06	75-35-4	
cis-1,2-Dichloroethene	<b>8.1</b>	ug/L	0.50	1		12/24/16 17:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 17:06	156-60-5	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: EX-1		Lab ID: 1280701027	Collected: 12/12/16 14:07	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,2-Dichloropropane	ND	ug/L	0.50	1		12/24/16 17:06	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 17:06	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 17:06	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/24/16 17:06	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		12/24/16 17:06	79-34-5	
Tetrachloroethene	<b>4.3</b>	ug/L	0.50	1		12/24/16 17:06	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/24/16 17:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/24/16 17:06	79-00-5	
Trichloroethene	<b>0.96</b>	ug/L	0.50	1		12/24/16 17:06	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/24/16 17:06	75-69-4	
Vinyl chloride	<b>51.9</b>	ug/L	0.50	1		12/24/16 17:06	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%.	70-130	1		12/24/16 17:06	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		12/24/16 17:06	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	70-130	1		12/24/16 17:06	460-00-4	

Sample: MGMS1-60		Lab ID: 1280701028	Collected: 12/16/16 12:19	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/24/16 12:17	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/24/16 12:17	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/24/16 12:17	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/24/16 12:17	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/24/16 12:17	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/24/16 12:17	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/24/16 12:17	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/24/16 12:17	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/24/16 12:17	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 12:17	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 12:17	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 12:17	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/24/16 12:17	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/24/16 12:17	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/24/16 12:17	75-35-4	
cis-1,2-Dichloroethene	<b>5.1</b>	ug/L	0.50	1		12/24/16 12:17	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 12:17	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/24/16 12:17	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 12:17	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 12:17	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/24/16 12:17	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		12/24/16 12:17	79-34-5	
Tetrachloroethene	<b>7.6</b>	ug/L	0.50	1		12/24/16 12:17	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/24/16 12:17	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/24/16 12:17	79-00-5	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: <b>MGMS1-60</b>		Lab ID: <b>1280701028</b>	Collected: 12/16/16 12:19	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Trichloroethene	4.7	ug/L	0.50	1		12/24/16 12:17	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/24/16 12:17	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/24/16 12:17	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%.	70-130	1		12/24/16 12:17	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		12/24/16 12:17	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	70-130	1		12/24/16 12:17	460-00-4	

Sample: <b>MGMS2-60</b>		Lab ID: <b>1280701029</b>	Collected: 12/16/16 13:14	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/24/16 12:37	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/24/16 12:37	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/24/16 12:37	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/24/16 12:37	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/24/16 12:37	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/24/16 12:37	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/24/16 12:37	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/24/16 12:37	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/24/16 12:37	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 12:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 12:37	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 12:37	106-46-7	
1,1-Dichloroethane	1.7	ug/L	0.50	1		12/24/16 12:37	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/24/16 12:37	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/24/16 12:37	75-35-4	
cis-1,2-Dichloroethene	35.3	ug/L	0.50	1		12/24/16 12:37	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 12:37	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/24/16 12:37	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 12:37	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 12:37	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/24/16 12:37	75-09-2	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		12/24/16 12:37	79-34-5	
Tetrachloroethene	40.7	ug/L	0.50	1		12/24/16 12:37	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/24/16 12:37	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/24/16 12:37	79-00-5	
Trichloroethene	24.8	ug/L	0.50	1		12/24/16 12:37	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/24/16 12:37	75-69-4	
Vinyl chloride	1.4	ug/L	0.50	1		12/24/16 12:37	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%.	70-130	1		12/24/16 12:37	17060-07-0	
Toluene-d8 (S)	100	%.	70-130	1		12/24/16 12:37	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	70-130	1		12/24/16 12:37	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: <b>MGMS3-60</b>		Lab ID: <b>1280701030</b>		Collected: 12/16/16 10:44	Received: 12/20/16 10:15	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/24/16 12:56	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/24/16 12:56	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/24/16 12:56	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/24/16 12:56	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/24/16 12:56	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/24/16 12:56	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/24/16 12:56	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/24/16 12:56	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/24/16 12:56	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 12:56	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 12:56	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 12:56	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/24/16 12:56	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/24/16 12:56	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/24/16 12:56	75-35-4	
cis-1,2-Dichloroethene	<b>1.4</b>	ug/L	0.50	1		12/24/16 12:56	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 12:56	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/24/16 12:56	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 12:56	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 12:56	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/24/16 12:56	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/24/16 12:56	79-34-5	
Tetrachloroethene	<b>1.7</b>	ug/L	0.50	1		12/24/16 12:56	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/24/16 12:56	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/24/16 12:56	79-00-5	
Trichloroethene	<b>0.68</b>	ug/L	0.50	1		12/24/16 12:56	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/24/16 12:56	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/24/16 12:56	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		12/24/16 12:56	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		12/24/16 12:56	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130	1		12/24/16 12:56	460-00-4	

Sample: <b>MW-19 DUP</b>		Lab ID: <b>1280701031</b>		Collected: 12/12/16 13:17	Received: 12/20/16 10:15	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	2.5	5		12/24/16 17:26	75-27-4	
Bromoform	ND	ug/L	2.5	5		12/24/16 17:26	75-25-2	
Bromomethane	ND	ug/L	100	5		12/24/16 17:26	74-83-9	
Carbon tetrachloride	ND	ug/L	2.5	5		12/24/16 17:26	56-23-5	
Chlorobenzene	ND	ug/L	2.5	5		12/24/16 17:26	108-90-7	
Chloroethane	ND	ug/L	10.0	5		12/24/16 17:26	75-00-3	
Chloroform	ND	ug/L	2.5	5		12/24/16 17:26	67-66-3	
Chloromethane	ND	ug/L	2.5	5		12/24/16 17:26	74-87-3	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: MW-19 DUP		Lab ID: 1280701031		Collected: 12/12/16 13:17		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Dibromochloromethane	ND	ug/L	2.5	5		12/24/16 17:26	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	2.5	5		12/24/16 17:26	95-50-1		
1,3-Dichlorobenzene	ND	ug/L	2.5	5		12/24/16 17:26	541-73-1		
1,4-Dichlorobenzene	ND	ug/L	2.5	5		12/24/16 17:26	106-46-7		
1,1-Dichloroethane	<b>78.7</b>	ug/L	2.5	5		12/24/16 17:26	75-34-3		
1,2-Dichloroethane	ND	ug/L	2.5	5		12/24/16 17:26	107-06-2		
1,1-Dichloroethene	<b>14.2</b>	ug/L	2.5	5		12/24/16 17:26	75-35-4		
cis-1,2-Dichloroethene	<b>1010</b>	ug/L	12.5	25		12/23/16 02:17	156-59-2		
trans-1,2-Dichloroethene	<b>11.6</b>	ug/L	2.5	5		12/24/16 17:26	156-60-5		
1,2-Dichloropropane	ND	ug/L	2.5	5		12/24/16 17:26	78-87-5		
cis-1,3-Dichloropropene	ND	ug/L	2.5	5		12/24/16 17:26	10061-01-5		
trans-1,3-Dichloropropene	ND	ug/L	2.5	5		12/24/16 17:26	10061-02-6		
Methylene Chloride	ND	ug/L	25.0	5		12/24/16 17:26	75-09-2		
1,1,2,2-Tetrachloroethane	ND	ug/L	2.5	5		12/24/16 17:26	79-34-5		
Tetrachloroethene	<b>1530</b>	ug/L	12.5	25		12/23/16 02:17	127-18-4		
1,1,1-Trichloroethane	<b>15.5</b>	ug/L	2.5	5		12/24/16 17:26	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	2.5	5		12/24/16 17:26	79-00-5		
Trichloroethene	<b>975</b>	ug/L	12.5	25		12/23/16 02:17	79-01-6		
Trichlorofluoromethane	ND	ug/L	2.5	5		12/24/16 17:26	75-69-4		
Vinyl chloride	<b>31.9</b>	ug/L	2.5	5		12/24/16 17:26	75-01-4		
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	100	%	70-130	5		12/24/16 17:26	17060-07-0		
Toluene-d8 (S)	99	%	70-130	5		12/24/16 17:26	2037-26-5		
4-Bromofluorobenzene (S)	101	%	70-130	5		12/24/16 17:26	460-00-4		

Sample: MW-24i		Lab ID: 1280701032		Collected: 12/12/16 14:44		Received: 12/20/16 10:15		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175							
Ethane	ND	ug/L	10.0	1		12/27/16 16:10	74-84-0	H1	
Ethene	ND	ug/L	10.0	1		12/27/16 16:10	74-85-1	H1	
Methane	ND	ug/L	10.0	1		12/27/16 16:10	74-82-8	H1	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B							
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 00:41	75-27-4		
Bromoform	ND	ug/L	0.50	1		12/23/16 00:41	75-25-2		
Bromomethane	ND	ug/L	20.0	1		12/23/16 00:41	74-83-9		
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 00:41	56-23-5		
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 00:41	108-90-7		
Chloroethane	ND	ug/L	2.0	1		12/23/16 00:41	75-00-3		
Chloroform	ND	ug/L	0.50	1		12/23/16 00:41	67-66-3		
Chloromethane	ND	ug/L	0.50	1		12/23/16 00:41	74-87-3		
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 00:41	124-48-1		
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 00:41	95-50-1		

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

<b>Sample: MW-24i</b>		<b>Lab ID: 1280701032</b>		Collected: 12/12/16 14:44	Received: 12/20/16 10:15	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 00:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 00:41	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/23/16 00:41	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 00:41	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/23/16 00:41	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 00:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 00:41	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 00:41	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 00:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 00:41	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 00:41	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 00:41	79-34-5	
Tetrachloroethene	1.1	ug/L	0.50	1		12/23/16 00:41	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 00:41	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 00:41	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/23/16 00:41	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 00:41	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 00:41	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		12/23/16 00:41	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		12/23/16 00:41	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130	1		12/23/16 00:41	460-00-4	

<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	1.5	mg/L	1.0	1		12/29/16 12:39	7440-44-0	

<b>Sample: MW-25i</b>		<b>Lab ID: 1280701033</b>		Collected: 12/13/16 12:54	Received: 12/20/16 10:15	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/26/16 17:06	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/26/16 17:06	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/26/16 17:06	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/26/16 17:06	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/26/16 17:06	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/26/16 17:06	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/26/16 17:06	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/26/16 17:06	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/26/16 17:06	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 17:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 17:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/26/16 17:06	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/26/16 17:06	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/26/16 17:06	107-06-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: MW-25i	Lab ID: 1280701033	Collected: 12/13/16 12:54	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
1,1-Dichloroethene	ND	ug/L	0.50	1		12/26/16 17:06	75-35-4	
cis-1,2-Dichloroethene	<b>0.77</b>	ug/L	0.50	1		12/26/16 17:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/26/16 17:06	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/26/16 17:06	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 17:06	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/26/16 17:06	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/26/16 17:06	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/26/16 17:06	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		12/26/16 17:06	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/26/16 17:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/26/16 17:06	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/26/16 17:06	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/26/16 17:06	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/26/16 17:06	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	104	%	70-130	1		12/26/16 17:06	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		12/26/16 17:06	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	1		12/26/16 17:06	460-00-4	

Sample: MW-26	Lab ID: 1280701034	Collected: 12/13/16 12:07	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>RSK 175 AIR Headspace</b>		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		12/27/16 16:34	74-84-0	
Ethene	ND	ug/L	10.0	1		12/27/16 16:34	74-85-1	
Methane	<b>198</b>	ug/L	10.0	1		12/27/16 16:34	74-82-8	
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 23:55	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/23/16 23:55	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/23/16 23:55	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 23:55	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 23:55	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/23/16 23:55	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/23/16 23:55	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/23/16 23:55	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 23:55	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 23:55	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 23:55	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 23:55	106-46-7	
1,1-Dichloroethane	<b>8.9</b>	ug/L	0.50	1		12/23/16 23:55	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 23:55	107-06-2	
1,1-Dichloroethene	<b>2.4</b>	ug/L	0.50	1		12/23/16 23:55	75-35-4	
cis-1,2-Dichloroethene	<b>85.9</b>	ug/L	0.50	1		12/23/16 23:55	156-59-2	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: MW-26	Lab ID: 1280701034	Collected: 12/13/16 12:07	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
trans-1,2-Dichloroethene	2.0	ug/L	0.50	1		12/23/16 23:55	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 23:55	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 23:55	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 23:55	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 23:55	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 23:55	79-34-5	
Tetrachloroethene	167	ug/L	5.0	10		12/26/16 19:03	127-18-4	
1,1,1-Trichloroethane	3.3	ug/L	0.50	1		12/23/16 23:55	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 23:55	79-00-5	
Trichloroethene	410	ug/L	5.0	10		12/26/16 19:03	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 23:55	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 23:55	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		12/23/16 23:55	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		12/23/16 23:55	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130	1		12/23/16 23:55	460-00-4	
<b>5310B TOC</b>		Analytical Method: SM 5310B						
Total Organic Carbon	2.4	mg/L	1.0	1		12/29/16 13:36	7440-44-0	

Sample: TRIP BLANK	Lab ID: 1280701035	Collected: 12/16/16 13:35	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/24/16 13:15	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/24/16 13:15	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/24/16 13:15	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/24/16 13:15	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/24/16 13:15	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/24/16 13:15	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/24/16 13:15	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/24/16 13:15	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/24/16 13:15	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 13:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 13:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 13:15	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/24/16 13:15	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/24/16 13:15	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/24/16 13:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 13:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 13:15	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/24/16 13:15	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 13:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 13:15	10061-02-6	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: TRIP BLANK		Lab ID: 1280701035	Collected: 12/16/16 13:35	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Methylene Chloride	ND	ug/L	5.0	1		12/24/16 13:15	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/24/16 13:15	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		12/24/16 13:15	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/24/16 13:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/24/16 13:15	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/24/16 13:15	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/24/16 13:15	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/24/16 13:15	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	103	%.	70-130	1		12/24/16 13:15	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		12/24/16 13:15	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	70-130	1		12/24/16 13:15	460-00-4	

Sample: Field Blank		Lab ID: 1280701036	Collected: 12/12/16 08:00	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 01:00	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/23/16 01:00	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/23/16 01:00	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 01:00	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 01:00	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/23/16 01:00	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/23/16 01:00	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/23/16 01:00	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 01:00	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 01:00	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 01:00	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 01:00	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/23/16 01:00	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 01:00	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/23/16 01:00	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 01:00	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 01:00	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 01:00	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 01:00	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 01:00	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 01:00	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 01:00	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		12/23/16 01:00	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 01:00	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 01:00	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/23/16 01:00	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 01:00	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 01:00	75-01-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: Field Blank		Lab ID: 1280701036	Collected: 12/12/16 08:00	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%.	70-130	1		12/23/16 01:00	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		12/23/16 01:00	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	70-130	1		12/23/16 01:00	460-00-4	

Sample: Equipment Blank		Lab ID: 1280701037	Collected: 12/16/16 13:40	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/24/16 13:34	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/24/16 13:34	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/24/16 13:34	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/24/16 13:34	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/24/16 13:34	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/24/16 13:34	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/24/16 13:34	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/24/16 13:34	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/24/16 13:34	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 13:34	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 13:34	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 13:34	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/24/16 13:34	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/24/16 13:34	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/24/16 13:34	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 13:34	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 13:34	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/24/16 13:34	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 13:34	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 13:34	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/24/16 13:34	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/24/16 13:34	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		12/24/16 13:34	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/24/16 13:34	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/24/16 13:34	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/24/16 13:34	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/24/16 13:34	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/24/16 13:34	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	102	%.	70-130	1		12/24/16 13:34	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		12/24/16 13:34	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	70-130	1		12/24/16 13:34	460-00-4	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver

Pace Project No.: 1280701

Sample: MW 24D		Lab ID: 1280701038	Collected: 12/12/16 15:49	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/23/16 01:19	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/23/16 01:19	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/23/16 01:19	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/23/16 01:19	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/23/16 01:19	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/23/16 01:19	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/23/16 01:19	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/23/16 01:19	74-87-3	
Dibromochloromethane	ND	ug/L	0.50	1		12/23/16 01:19	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 01:19	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 01:19	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/23/16 01:19	106-46-7	
1,1-Dichloroethane	ND	ug/L	0.50	1		12/23/16 01:19	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/23/16 01:19	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/23/16 01:19	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 01:19	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/23/16 01:19	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/23/16 01:19	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 01:19	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/23/16 01:19	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/23/16 01:19	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/23/16 01:19	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		12/23/16 01:19	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/23/16 01:19	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/23/16 01:19	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/23/16 01:19	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/23/16 01:19	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/23/16 01:19	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		12/23/16 01:19	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		12/23/16 01:19	2037-26-5	
4-Bromofluorobenzene (S)	102	%	70-130	1		12/23/16 01:19	460-00-4	

Sample: S-2		Lab ID: 1280701039	Collected: 12/13/16 09:39	Received: 12/20/16 10:15	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Bromodichloromethane	ND	ug/L	0.50	1		12/24/16 00:14	75-27-4	
Bromoform	ND	ug/L	0.50	1		12/24/16 00:14	75-25-2	
Bromomethane	ND	ug/L	20.0	1		12/24/16 00:14	74-83-9	
Carbon tetrachloride	ND	ug/L	0.50	1		12/24/16 00:14	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		12/24/16 00:14	108-90-7	
Chloroethane	ND	ug/L	2.0	1		12/24/16 00:14	75-00-3	
Chloroform	ND	ug/L	0.50	1		12/24/16 00:14	67-66-3	
Chloromethane	ND	ug/L	0.50	1		12/24/16 00:14	74-87-3	

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### ANALYTICAL RESULTS

Project: NuStar Vancouver  
Pace Project No.: 1280701

Sample: S-2	Lab ID: 1280701039	Collected: 12/13/16 09:39	Received: 12/20/16 10:15	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV Med Water</b>		Analytical Method: EPA 8260B						
Dibromochloromethane	ND	ug/L	0.50	1		12/24/16 00:14	124-48-1	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 00:14	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 00:14	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		12/24/16 00:14	106-46-7	
1,1-Dichloroethane	<b>3.5</b>	ug/L	0.50	1		12/24/16 00:14	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		12/24/16 00:14	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		12/24/16 00:14	75-35-4	
cis-1,2-Dichloroethene	<b>4.9</b>	ug/L	0.50	1		12/24/16 00:14	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		12/24/16 00:14	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		12/24/16 00:14	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 00:14	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		12/24/16 00:14	10061-02-6	
Methylene Chloride	ND	ug/L	5.0	1		12/24/16 00:14	75-09-2	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		12/24/16 00:14	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		12/24/16 00:14	127-18-4	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		12/24/16 00:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		12/24/16 00:14	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		12/24/16 00:14	79-01-6	
Trichlorofluoromethane	ND	ug/L	0.50	1		12/24/16 00:14	75-69-4	
Vinyl chloride	ND	ug/L	0.50	1		12/24/16 00:14	75-01-4	
<b>Surrogates</b>								
1,2-Dichloroethane-d4 (S)	101	%.	70-130	1		12/24/16 00:14	17060-07-0	
Toluene-d8 (S)	101	%.	70-130	1		12/24/16 00:14	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	70-130	1		12/24/16 00:14	460-00-4	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver  
Pace Project No.: 1280701

QC Batch: 453342 Analysis Method: RSK 175  
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE  
Associated Lab Samples: 1280701007, 1280701008, 1280701009, 1280701021, 1280701023, 1280701025, 1280701026, 1280701032, 1280701034

METHOD BLANK: 2481938 Matrix: Water  
Associated Lab Samples: 1280701007, 1280701008, 1280701009, 1280701021, 1280701023, 1280701025, 1280701026, 1280701032, 1280701034

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	12/27/16 15:46	
Ethene	ug/L	ND	10.0	12/27/16 15:46	
Methane	ug/L	ND	10.0	12/27/16 15:46	

LABORATORY CONTROL SAMPLE & LCSD: 2481939 2481940

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	119	124	104	109	85-115	4	20	
Ethene	ug/L	106	111	115	105	108	85-115	4	20	
Methane	ug/L	60.7	64.2	65.6	106	108	85-115	2	20	

SAMPLE DUPLICATE: 2482691

Parameter	Units	1280701021 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	10.3	10.1	2	20	
Ethene	ug/L	ND	1.7J		20	
Methane	ug/L	2350	2320	1	20	

SAMPLE DUPLICATE: 2482692

Parameter	Units	60234729001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	ND	1.2J		20	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver  
Pace Project No.: 1280701

QC Batch: 102751 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1280701021, 1280701027, 1280701031, 1280701032, 1280701036, 1280701038

METHOD BLANK: 408424 Matrix: Water  
Associated Lab Samples: 1280701021, 1280701027, 1280701031, 1280701032, 1280701036, 1280701038

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	12/22/16 18:55	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	12/22/16 18:55	
1,1,2-Trichloroethane	ug/L	ND	0.50	12/22/16 18:55	
1,1-Dichloroethane	ug/L	ND	0.50	12/22/16 18:55	
1,1-Dichloroethene	ug/L	ND	0.50	12/22/16 18:55	
1,2-Dichlorobenzene	ug/L	ND	0.50	12/22/16 18:55	
1,2-Dichloroethane	ug/L	ND	0.50	12/22/16 18:55	
1,2-Dichloropropane	ug/L	ND	0.50	12/22/16 18:55	
1,3-Dichlorobenzene	ug/L	ND	0.50	12/22/16 18:55	
1,4-Dichlorobenzene	ug/L	ND	0.50	12/22/16 18:55	
Bromodichloromethane	ug/L	ND	0.50	12/22/16 18:55	
Bromoform	ug/L	ND	0.50	12/22/16 18:55	
Bromomethane	ug/L	ND	20.0	12/22/16 18:55	
Carbon tetrachloride	ug/L	ND	0.50	12/22/16 18:55	
Chlorobenzene	ug/L	ND	0.50	12/22/16 18:55	
Chloroethane	ug/L	ND	2.0	12/22/16 18:55	
Chloroform	ug/L	ND	0.50	12/22/16 18:55	
Chloromethane	ug/L	ND	0.50	12/22/16 18:55	
cis-1,2-Dichloroethene	ug/L	ND	0.50	12/22/16 18:55	
cis-1,3-Dichloropropene	ug/L	ND	0.50	12/22/16 18:55	
Dibromochloromethane	ug/L	ND	0.50	12/22/16 18:55	
Methylene Chloride	ug/L	ND	5.0	12/22/16 18:55	
Tetrachloroethene	ug/L	ND	0.50	12/22/16 18:55	
trans-1,2-Dichloroethene	ug/L	ND	0.50	12/22/16 18:55	
trans-1,3-Dichloropropene	ug/L	ND	0.50	12/22/16 18:55	
Trichloroethene	ug/L	ND	0.50	12/22/16 18:55	
Trichlorofluoromethane	ug/L	ND	0.50	12/22/16 18:55	
Vinyl chloride	ug/L	ND	0.50	12/22/16 18:55	
1,2-Dichloroethane-d4 (S)	%	102	70-130	12/22/16 18:55	
4-Bromofluorobenzene (S)	%	102	70-130	12/22/16 18:55	
Toluene-d8 (S)	%	101	70-130	12/22/16 18:55	

LABORATORY CONTROL SAMPLE: 408425

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	38.5	96	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	39.6	99	75-125	
1,1,2-Trichloroethane	ug/L	40	38.6	97	75-126	
1,1-Dichloroethane	ug/L	40	37.0	93	71-131	
1,1-Dichloroethene	ug/L	40	37.4	94	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

LABORATORY CONTROL SAMPLE: 408425

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	37.2	93	75-125	
1,2-Dichloroethane	ug/L	40	40.4	101	64-141	
1,2-Dichloropropane	ug/L	40	37.6	94	73-127	
1,3-Dichlorobenzene	ug/L	40	38.2	96	75-125	
1,4-Dichlorobenzene	ug/L	40	36.3	91	75-125	
Bromodichloromethane	ug/L	40	38.3	96	70-134	
Bromoform	ug/L	40	41.5	104	68-130	
Bromomethane	ug/L	40	30.8	77	30-150	
Carbon tetrachloride	ug/L	40	39.1	98	66-135	
Chlorobenzene	ug/L	40	37.8	95	75-125	
Chloroethane	ug/L	40	36.4	91	55-150	
Chloroform	ug/L	40	38.4	96	72-131	
Chloromethane	ug/L	40	29.6	74	54-132	
cis-1,2-Dichloroethene	ug/L	40	37.8	95	75-125	
cis-1,3-Dichloropropene	ug/L	40	38.3	96	74-130	
Dibromochloromethane	ug/L	40	39.1	98	70-132	
Methylene Chloride	ug/L	40	37.2	93	68-125	
Tetrachloroethene	ug/L	40	37.9	95	75-130	
trans-1,2-Dichloroethene	ug/L	40	38.1	95	75-125	
trans-1,3-Dichloropropene	ug/L	40	38.7	97	69-137	
Trichloroethene	ug/L	40	38.7	97	75-125	
Trichlorofluoromethane	ug/L	40	40.9	102	59-140	
Vinyl chloride	ug/L	40	36.0	90	68-132	
1,2-Dichloroethane-d4 (S)	%			101	70-130	
4-Bromofluorobenzene (S)	%			105	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408428 408429

Parameter	Units	1280432004		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
1,1,1-Trichloroethane	ug/L	ND	40	40	39.3	39.5	98	99	63-142	0	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	40.2	39.2	100	98	75-125	2	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	38.8	38.8	97	97	75-132	0	30		
1,1-Dichloroethane	ug/L	ND	40	40	37.7	37.6	94	94	75-126	0	30		
1,1-Dichloroethene	ug/L	ND	40	40	37.8	37.7	95	94	75-125	0	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	38.9	38.6	97	97	75-125	1	30		
1,2-Dichloroethane	ug/L	ND	40	40	40.6	40.8	102	102	75-137	0	30		
1,2-Dichloropropane	ug/L	ND	40	40	37.9	38.1	95	95	74-131	1	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	39.9	40.4	100	101	75-126	1	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	37.9	37.6	95	94	73-125	1	30		
Bromodichloromethane	ug/L	ND	40	40	39.0	38.9	97	97	65-137	0	30		
Bromoform	ug/L	ND	40	40	41.8	41.5	104	104	60-147	1	30		
Bromomethane	ug/L	ND	40	40	32.8	37.3	82	93	30-150	13	30		
Carbon tetrachloride	ug/L	ND	40	40	39.9	40.3	100	101	45-150	1	30		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408428		408429		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1280432004 Result	MS Spike Conc.	MSD Spike Conc.									
Chlorobenzene	ug/L	ND	40	40	38.2	38.6	95	96	75-125	1	30		
Chloroethane	ug/L	ND	40	40	36.9	35.7	92	89	66-145	3	30		
Chloroform	ug/L	ND	40	40	38.8	39.0	97	97	74-128	0	30		
Chloromethane	ug/L	ND	40	40	30.8	29.4	76	73	51-150	4	30		
cis-1,2-Dichloroethene	ug/L	7.0	40	40	46.1	45.4	98	96	75-125	2	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	38.2	38.3	96	96	75-129	0	30		
Dibromochloromethane	ug/L	ND	40	40	39.7	39.5	99	99	66-141	1	30		
Methylene Chloride	ug/L	ND	40	40	37.7	37.6	94	94	74-125	0	30		
Tetrachloroethene	ug/L	ND	40	40	39.2	39.6	98	99	75-135	1	30		
trans-1,2-Dichloroethene	ug/L	6.0	40	40	44.6	44.3	97	96	75-125	1	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	39.2	38.8	98	97	67-139	1	30		
Trichloroethene	ug/L	ND	40	40	39.3	39.3	98	98	75-130	0	30		
Trichlorofluoromethane	ug/L	ND	40	40	41.7	41.0	104	103	57-144	2	30		
1,2-Dichloroethane-d4 (S)	%						102	101	70-130				
4-Bromofluorobenzene (S)	%						106	107	70-130				
Toluene-d8 (S)	%						101	100	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

QC Batch: 102804 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1280701014, 1280701019

METHOD BLANK: 408606 Matrix: Water

Associated Lab Samples: 1280701014, 1280701019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	12/23/16 10:09	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	12/23/16 10:09	
1,1,2-Trichloroethane	ug/L	ND	0.50	12/23/16 10:09	
1,1-Dichloroethane	ug/L	ND	0.50	12/23/16 10:09	
1,1-Dichloroethene	ug/L	ND	0.50	12/23/16 10:09	
1,2-Dichlorobenzene	ug/L	ND	0.50	12/23/16 10:09	
1,2-Dichloroethane	ug/L	ND	0.50	12/23/16 10:09	
1,2-Dichloropropane	ug/L	ND	0.50	12/23/16 10:09	
1,3-Dichlorobenzene	ug/L	ND	0.50	12/23/16 10:09	
1,4-Dichlorobenzene	ug/L	ND	0.50	12/23/16 10:09	
Bromodichloromethane	ug/L	ND	0.50	12/23/16 10:09	
Bromoform	ug/L	ND	0.50	12/23/16 10:09	
Bromomethane	ug/L	ND	20.0	12/23/16 10:09	
Carbon tetrachloride	ug/L	ND	0.50	12/23/16 10:09	
Chlorobenzene	ug/L	ND	0.50	12/23/16 10:09	
Chloroethane	ug/L	ND	2.0	12/23/16 10:09	
Chloroform	ug/L	ND	0.50	12/23/16 10:09	
Chloromethane	ug/L	ND	0.50	12/23/16 10:09	
cis-1,2-Dichloroethene	ug/L	ND	0.50	12/23/16 10:09	
cis-1,3-Dichloropropene	ug/L	ND	0.50	12/23/16 10:09	
Dibromochloromethane	ug/L	ND	0.50	12/23/16 10:09	
Methylene Chloride	ug/L	ND	5.0	12/23/16 10:09	
Tetrachloroethene	ug/L	ND	0.50	12/23/16 10:09	
trans-1,2-Dichloroethene	ug/L	ND	0.50	12/23/16 10:09	
trans-1,3-Dichloropropene	ug/L	ND	0.50	12/23/16 10:09	
Trichloroethene	ug/L	ND	0.50	12/23/16 10:09	
Trichlorofluoromethane	ug/L	ND	0.50	12/23/16 10:09	
Vinyl chloride	ug/L	ND	0.50	12/23/16 10:09	
1,2-Dichloroethane-d4 (S)	%	103	70-130	12/23/16 10:09	
4-Bromofluorobenzene (S)	%	102	70-130	12/23/16 10:09	
Toluene-d8 (S)	%	102	70-130	12/23/16 10:09	

LABORATORY CONTROL SAMPLE: 408607

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	38.8	97	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	39.5	99	75-125	
1,1,2-Trichloroethane	ug/L	40	38.6	96	75-126	
1,1-Dichloroethane	ug/L	40	37.3	93	71-131	
1,1-Dichloroethene	ug/L	40	38.5	96	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver  
Pace Project No.: 1280701

LABORATORY CONTROL SAMPLE: 408607

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	37.6	94	75-125	
1,2-Dichloroethane	ug/L	40	40.0	100	64-141	
1,2-Dichloropropane	ug/L	40	37.5	94	73-127	
1,3-Dichlorobenzene	ug/L	40	38.8	97	75-125	
1,4-Dichlorobenzene	ug/L	40	37.0	92	75-125	
Bromodichloromethane	ug/L	40	38.6	96	70-134	
Bromoform	ug/L	40	40.6	102	68-130	
Bromomethane	ug/L	40	39.7	99	30-150	
Carbon tetrachloride	ug/L	40	39.6	99	66-135	
Chlorobenzene	ug/L	40	38.3	96	75-125	
Chloroethane	ug/L	40	38.5	96	55-150	
Chloroform	ug/L	40	38.9	97	72-131	
Chloromethane	ug/L	40	31.9	80	54-132	
cis-1,2-Dichloroethene	ug/L	40	38.4	96	75-125	
cis-1,3-Dichloropropene	ug/L	40	38.2	96	74-130	
Dibromochloromethane	ug/L	40	39.2	98	70-132	
Methylene Chloride	ug/L	40	37.8	94	68-125	
Tetrachloroethene	ug/L	40	38.6	97	75-130	
trans-1,2-Dichloroethene	ug/L	40	38.4	96	75-125	
trans-1,3-Dichloropropene	ug/L	40	38.6	97	69-137	
Trichloroethene	ug/L	40	38.9	97	75-125	
Trichlorofluoromethane	ug/L	40	42.6	107	59-140	
Vinyl chloride	ug/L	40	38.1	95	68-132	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			103	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408608 408609

Parameter	Units	1280639004		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
1,1,1-Trichloroethane	ug/L	ND	40	40	39.4	39.7	99	99	63-142	1	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	38.4	37.9	96	95	75-125	1	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	39.3	38.9	98	97	75-132	1	30		
1,1-Dichloroethane	ug/L	ND	40	40	38.2	38.4	96	96	75-126	0	30		
1,1-Dichloroethene	ug/L	ND	40	40	39.2	39.2	98	98	75-125	0	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	38.4	37.9	96	95	75-125	1	30		
1,2-Dichloroethane	ug/L	ND	40	40	40.7	40.6	102	102	75-137	0	30		
1,2-Dichloropropane	ug/L	ND	40	40	38.6	38.6	97	96	74-131	0	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	39.0	39.0	98	97	75-126	0	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	38.3	37.3	96	93	73-125	3	30		
Bromodichloromethane	ug/L	ND	40	40	39.6	39.1	99	98	65-137	1	30		
Bromoform	ug/L	ND	40	40	39.7	39.5	99	99	60-147	0	30		
Bromomethane	ug/L	ND	40	40	40.7	43.5	101	108	30-150	7	30		
Carbon tetrachloride	ug/L	ND	40	40	39.6	40.3	99	101	45-150	2	30		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408608		408609		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1280639004 Result	MS Spike Conc.	MSD Spike Conc.									
Chlorobenzene	ug/L	ND	40	40	38.1	38.1	95	95	75-125	0	30		
Chloroethane	ug/L	ND	40	40	38.8	38.8	97	97	66-145	0	30		
Chloroform	ug/L	ND	40	40	39.4	39.5	99	99	74-128	0	30		
Chloromethane	ug/L	ND	40	40	32.5	32.8	81	82	51-150	1	30		
cis-1,2-Dichloroethene	ug/L	1.4	40	40	40.6	41.1	98	99	75-125	1	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	38.8	38.8	97	97	75-129	0	30		
Dibromochloromethane	ug/L	ND	40	40	39.3	39.4	98	99	66-141	0	30		
Methylene Chloride	ug/L	ND	40	40	38.9	38.7	97	97	74-125	0	30		
Tetrachloroethene	ug/L	ND	40	40	39.6	39.5	99	99	75-135	0	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	38.9	39.3	97	98	75-125	1	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	38.5	38.6	96	96	67-139	0	30		
Trichloroethene	ug/L	ND	40	40	39.5	39.7	99	99	75-130	0	30		
Trichlorofluoromethane	ug/L	ND	40	40	41.2	42.6	103	106	57-144	3	30		
Vinyl chloride	ug/L	ND	40	40	39.0	39.1	97	97	70-136	0	30		
1,2-Dichloroethane-d4 (S)	%						101	101	70-130				
4-Bromofluorobenzene (S)	%						103	102	70-130				
Toluene-d8 (S)	%						101	102	70-130				

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

QC Batch: 102817 Analysis Method: EPA 8260B  
 QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
 Associated Lab Samples: 1280701009, 1280701011, 1280701015, 1280701016, 1280701017, 1280701018, 1280701026, 1280701033, 1280701034, 1280701039

METHOD BLANK: 408621 Matrix: Water  
 Associated Lab Samples: 1280701009, 1280701011, 1280701015, 1280701016, 1280701017, 1280701018, 1280701026, 1280701033, 1280701034, 1280701039

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	12/23/16 18:47	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	12/23/16 18:47	
1,1,2-Trichloroethane	ug/L	ND	0.50	12/23/16 18:47	
1,1-Dichloroethane	ug/L	ND	0.50	12/23/16 18:47	
1,1-Dichloroethene	ug/L	ND	0.50	12/23/16 18:47	
1,2-Dichlorobenzene	ug/L	ND	0.50	12/23/16 18:47	
1,2-Dichloroethane	ug/L	ND	0.50	12/23/16 18:47	
1,2-Dichloropropane	ug/L	ND	0.50	12/23/16 18:47	
1,3-Dichlorobenzene	ug/L	ND	0.50	12/23/16 18:47	
1,4-Dichlorobenzene	ug/L	ND	0.50	12/23/16 18:47	
Bromodichloromethane	ug/L	ND	0.50	12/23/16 18:47	
Bromoform	ug/L	ND	0.50	12/23/16 18:47	
Bromomethane	ug/L	ND	20.0	12/23/16 18:47	
Carbon tetrachloride	ug/L	ND	0.50	12/23/16 18:47	
Chlorobenzene	ug/L	ND	0.50	12/23/16 18:47	
Chloroethane	ug/L	ND	2.0	12/23/16 18:47	
Chloroform	ug/L	ND	0.50	12/23/16 18:47	
Chloromethane	ug/L	ND	0.50	12/23/16 18:47	
cis-1,2-Dichloroethene	ug/L	ND	0.50	12/23/16 18:47	
cis-1,3-Dichloropropene	ug/L	ND	0.50	12/23/16 18:47	
Dibromochloromethane	ug/L	ND	0.50	12/23/16 18:47	
Methylene Chloride	ug/L	ND	5.0	12/23/16 18:47	
Tetrachloroethene	ug/L	ND	0.50	12/23/16 18:47	
trans-1,2-Dichloroethene	ug/L	ND	0.50	12/23/16 18:47	
trans-1,3-Dichloropropene	ug/L	ND	0.50	12/23/16 18:47	
Trichloroethene	ug/L	ND	0.50	12/23/16 18:47	
Trichlorofluoromethane	ug/L	ND	0.50	12/23/16 18:47	
Vinyl chloride	ug/L	ND	0.50	12/23/16 18:47	
1,2-Dichloroethane-d4 (S)	%	101	70-130	12/23/16 18:47	
4-Bromofluorobenzene (S)	%	101	70-130	12/23/16 18:47	
Toluene-d8 (S)	%	101	70-130	12/23/16 18:47	

LABORATORY CONTROL SAMPLE: 408622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	40.1	100	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	38.4	96	75-125	
1,1,2-Trichloroethane	ug/L	40	39.1	98	75-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

LABORATORY CONTROL SAMPLE: 408622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethane	ug/L	40	39.1	98	71-131	
1,1-Dichloroethene	ug/L	40	38.9	97	74-126	
1,2-Dichlorobenzene	ug/L	40	35.8	89	75-125	
1,2-Dichloroethane	ug/L	40	41.0	102	64-141	
1,2-Dichloropropane	ug/L	40	39.5	99	73-127	
1,3-Dichlorobenzene	ug/L	40	36.0	90	75-125	
1,4-Dichlorobenzene	ug/L	40	35.3	88	75-125	
Bromodichloromethane	ug/L	40	40.0	100	70-134	
Bromoform	ug/L	40	38.8	97	68-130	
Bromomethane	ug/L	40	30.4	76	30-150	
Carbon tetrachloride	ug/L	40	39.7	99	66-135	
Chlorobenzene	ug/L	40	38.7	97	75-125	
Chloroethane	ug/L	40	38.4	96	55-150	
Chloroform	ug/L	40	40.1	100	72-131	
Chloromethane	ug/L	40	31.3	78	54-132	
cis-1,2-Dichloroethene	ug/L	40	39.9	100	75-125	
cis-1,3-Dichloropropene	ug/L	40	39.0	97	74-130	
Dibromochloromethane	ug/L	40	39.7	99	70-132	
Methylene Chloride	ug/L	40	38.9	97	68-125	
Tetrachloroethene	ug/L	40	37.7	94	75-130	
trans-1,2-Dichloroethene	ug/L	40	39.8	99	75-125	
trans-1,3-Dichloropropene	ug/L	40	38.3	96	69-137	
Trichloroethene	ug/L	40	40.4	101	75-125	
Trichlorofluoromethane	ug/L	40	41.2	103	59-140	
Vinyl chloride	ug/L	40	38.5	96	68-132	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			102	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408623 408624

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		1280668003 Result	Spike Conc.	Spike Conc.	MSD Result								
1,1,1-Trichloroethane	ug/L	ND	40	40	38.8	39.8	97	100	63-142	3	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	40.0	40.3	100	101	75-125	1	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	39.4	39.9	99	100	75-132	1	30		
1,1-Dichloroethane	ug/L	ND	40	40	38.2	38.7	96	97	75-126	1	30		
1,1-Dichloroethene	ug/L	ND	40	40	38.9	40.0	97	100	75-125	3	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	35.5	37.0	89	93	75-125	4	30		
1,2-Dichloroethane	ug/L	ND	40	40	40.8	41.0	102	102	75-137	0	30		
1,2-Dichloropropane	ug/L	ND	40	40	38.2	38.9	96	97	74-131	2	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	36.0	37.0	90	92	75-126	3	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	34.8	36.1	87	90	73-125	4	30		
Bromodichloromethane	ug/L	ND	40	40	39.2	40.0	98	100	65-137	2	30		
Bromoform	ug/L	ND	40	40	40.0	40.5	100	101	60-147	1	30		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408623												408624	
Parameter	Units	1280668003 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual	
			Spike Conc.	Spike Conc.									
Bromomethane	ug/L	ND	40	40	45.4	49.0	111	120	30-150	8	30		
Carbon tetrachloride	ug/L	ND	40	40	38.4	39.5	96	99	45-150	3	30		
Chlorobenzene	ug/L	ND	40	40	38.0	38.2	95	95	75-125	0	30		
Chloroethane	ug/L	ND	40	40	38.4	39.4	96	99	66-145	3	30		
Chloroform	ug/L	ND	40	40	39.2	40.0	98	100	74-128	2	30		
Chloromethane	ug/L	ND	40	40	32.9	33.4	82	83	51-150	1	30		
cis-1,2-Dichloroethene	ug/L	ND	40	40	39.1	40.1	98	100	75-125	3	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	38.4	38.9	96	97	75-129	1	30		
Dibromochloromethane	ug/L	ND	40	40	39.3	39.8	98	100	66-141	1	30		
Methylene Chloride	ug/L	ND	40	40	38.5	39.8	96	99	74-125	3	30		
Tetrachloroethene	ug/L	ND	40	40	36.9	37.9	92	95	75-135	3	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	38.9	39.7	97	99	75-125	2	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	38.2	39.3	96	98	67-139	3	30		
Trichloroethene	ug/L	ND	40	40	38.9	39.7	97	99	75-130	2	30		
Trichlorofluoromethane	ug/L	ND	40	40	39.6	41.8	99	105	57-144	5	30		
Vinyl chloride	ug/L	ND	40	40	37.8	39.0	94	98	70-136	3	30		
1,2-Dichloroethane-d4 (S)	%.						100	101	70-130				
4-Bromofluorobenzene (S)	%.						105	102	70-130				
Toluene-d8 (S)	%.						101	101	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

QC Batch: 102845 Analysis Method: EPA 8260B  
 QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
 Associated Lab Samples: 1280701001, 1280701002, 1280701003, 1280701004, 1280701005, 1280701006, 1280701007, 1280701008, 1280701010, 1280701012, 1280701013

METHOD BLANK: 408722 Matrix: Water  
 Associated Lab Samples: 1280701001, 1280701002, 1280701003, 1280701004, 1280701005, 1280701006, 1280701007, 1280701008, 1280701010, 1280701012, 1280701013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	12/26/16 19:12	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	12/26/16 19:12	
1,1,2-Trichloroethane	ug/L	ND	0.50	12/26/16 19:12	
1,1-Dichloroethane	ug/L	ND	0.50	12/26/16 19:12	
1,1-Dichloroethene	ug/L	ND	0.50	12/26/16 19:12	
1,2-Dichlorobenzene	ug/L	ND	0.50	12/26/16 19:12	
1,2-Dichloroethane	ug/L	ND	0.50	12/26/16 19:12	
1,2-Dichloropropane	ug/L	ND	0.50	12/26/16 19:12	
1,3-Dichlorobenzene	ug/L	ND	0.50	12/26/16 19:12	
1,4-Dichlorobenzene	ug/L	ND	0.50	12/26/16 19:12	
Bromodichloromethane	ug/L	ND	0.50	12/26/16 19:12	
Bromoform	ug/L	ND	0.50	12/26/16 19:12	
Bromomethane	ug/L	ND	20.0	12/26/16 19:12	
Carbon tetrachloride	ug/L	ND	0.50	12/26/16 19:12	
Chlorobenzene	ug/L	ND	0.50	12/26/16 19:12	
Chloroethane	ug/L	ND	2.0	12/26/16 19:12	
Chloroform	ug/L	ND	0.50	12/26/16 19:12	
Chloromethane	ug/L	ND	2.0	12/26/16 19:12	
cis-1,2-Dichloroethene	ug/L	ND	0.50	12/26/16 19:12	
cis-1,3-Dichloropropene	ug/L	ND	0.50	12/26/16 19:12	
Dibromochloromethane	ug/L	ND	0.50	12/26/16 19:12	
Methylene Chloride	ug/L	ND	5.0	12/26/16 19:12	
Tetrachloroethene	ug/L	ND	0.50	12/26/16 19:12	
trans-1,2-Dichloroethene	ug/L	ND	0.50	12/26/16 19:12	
trans-1,3-Dichloropropene	ug/L	ND	0.50	12/26/16 19:12	
Trichloroethene	ug/L	ND	0.50	12/26/16 19:12	
Trichlorofluoromethane	ug/L	ND	0.50	12/26/16 19:12	
Vinyl chloride	ug/L	ND	0.50	12/26/16 19:12	
1,2-Dichloroethane-d4 (S)	%	109	70-130	12/26/16 19:12	
4-Bromofluorobenzene (S)	%	97	70-130	12/26/16 19:12	
Toluene-d8 (S)	%	103	70-130	12/26/16 19:12	

LABORATORY CONTROL SAMPLE: 408723

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	39.5	99	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	42.1	105	75-125	
1,1,2-Trichloroethane	ug/L	40	42.5	106	75-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

LABORATORY CONTROL SAMPLE: 408723

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethane	ug/L	40	40.0	100	71-131	
1,1-Dichloroethene	ug/L	40	38.8	97	74-126	
1,2-Dichlorobenzene	ug/L	40	35.5	89	75-125	
1,2-Dichloroethane	ug/L	40	43.6	109	64-141	
1,2-Dichloropropane	ug/L	40	41.1	103	73-127	
1,3-Dichlorobenzene	ug/L	40	32.3	81	75-125	
1,4-Dichlorobenzene	ug/L	40	32.6	82	75-125	
Bromodichloromethane	ug/L	40	40.4	101	70-134	
Bromoform	ug/L	40	40.4	101	68-130	
Bromomethane	ug/L	40	34.5	86	30-150	
Carbon tetrachloride	ug/L	40	37.9	95	66-135	
Chlorobenzene	ug/L	40	35.4	89	75-125	
Chloroethane	ug/L	40	34.6	87	55-150	
Chloroform	ug/L	40	40.7	102	72-131	
Chloromethane	ug/L	40	42.5	106	54-132	
cis-1,2-Dichloroethene	ug/L	40	39.4	99	75-125	
cis-1,3-Dichloropropene	ug/L	40	39.7	99	74-130	
Dibromochloromethane	ug/L	40	42.2	105	70-132	
Methylene Chloride	ug/L	40	39.6	99	68-125	
Tetrachloroethene	ug/L	40	35.4	89	75-130	
trans-1,2-Dichloroethene	ug/L	40	38.0	95	75-125	
trans-1,3-Dichloropropene	ug/L	40	40.8	102	69-137	
Trichloroethene	ug/L	40	37.9	95	75-125	
Trichlorofluoromethane	ug/L	40	38.7	97	59-140	
Vinyl chloride	ug/L	40	40.5	101	68-132	
1,2-Dichloroethane-d4 (S)	%			109	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			104	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408729 408730

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		1280701002 Result	Spike Conc.	Spike Conc.	MS Result							
1,1,1-Trichloroethane	ug/L	1.2	40	40	40.1	39.0	97	94	63-142	3	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	40.2	41.6	101	104	75-125	3	30	
1,1,2-Trichloroethane	ug/L	ND	40	40	41.7	41.8	104	105	75-132	0	30	
1,1-Dichloroethane	ug/L	1.1	40	40	40.6	39.7	99	97	75-126	2	30	
1,1-Dichloroethene	ug/L	ND	40	40	38.3	37.6	96	94	75-125	2	30	
1,2-Dichlorobenzene	ug/L	ND	40	40	36.4	34.3	91	86	75-125	6	30	
1,2-Dichloroethane	ug/L	ND	40	40	42.8	42.2	107	105	75-137	1	30	
1,2-Dichloropropane	ug/L	0.57	40	40	41.0	40.8	101	101	74-131	1	30	
1,3-Dichlorobenzene	ug/L	ND	40	40	33.3	31.0	83	78	75-126	7	30	
1,4-Dichlorobenzene	ug/L	ND	40	40	33.4	31.5	84	79	73-125	6	30	
Bromodichloromethane	ug/L	ND	40	40	40.4	39.8	101	100	65-137	1	30	
Bromoform	ug/L	ND	40	40	39.9	40.9	100	102	60-147	2	30	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408729		408730		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1280701002 Result	MS Spike Conc.	MSD Spike Conc.									
Bromomethane	ug/L	ND	40	40	35.7	34.1	89	85	30-150	5	30		
Carbon tetrachloride	ug/L	ND	40	40	38.1	37.3	95	93	45-150	2	30		
Chlorobenzene	ug/L	ND	40	40	36.1	34.3	90	86	75-125	5	30		
Chloroethane	ug/L	ND	40	40	35.0	32.6	88	81	66-145	7	30		
Chloroform	ug/L	0.52	40	40	40.7	39.7	100	98	74-128	2	30		
Chloromethane	ug/L	ND	40	40	40.8	39.7	102	99	51-150	3	30		
cis-1,2-Dichloroethene	ug/L	26.8	40	40	63.9	63.1	93	91	75-125	1	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	39.2	38.5	98	96	75-129	2	30		
Dibromochloromethane	ug/L	ND	40	40	41.5	41.6	104	104	66-141	0	30		
Methylene Chloride	ug/L	ND	40	40	39.0	37.2	98	93	74-125	5	30		
Tetrachloroethene	ug/L	86.2	40	40	117	112	78	65	75-135	5	30		
trans-1,2-Dichloroethene	ug/L	0.90	40	40	39.1	37.7	96	92	75-125	4	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	40.1	39.7	100	99	67-139	1	30		
Trichloroethene	ug/L	23.9	40	40	60.5	57.7	92	85	75-130	5	30		
Trichlorofluoromethane	ug/L	ND	40	40	38.6	37.3	96	93	57-144	3	30		
Vinyl chloride	ug/L	ND	40	40	40.2	39.0	99	96	70-136	3	30		
1,2-Dichloroethane-d4 (S)	%.						108	110	70-130				
4-Bromofluorobenzene (S)	%.						98	99	70-130				
Toluene-d8 (S)	%.						104	104	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver  
Pace Project No.: 1280701

QC Batch: 102850 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1280701021, 1280701022, 1280701027, 1280701028, 1280701029, 1280701030, 1280701031, 1280701035, 1280701037

METHOD BLANK: 408731 Matrix: Water  
Associated Lab Samples: 1280701021, 1280701022, 1280701027, 1280701028, 1280701029, 1280701030, 1280701031, 1280701035, 1280701037

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	12/24/16 10:21	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	12/24/16 10:21	
1,1,2-Trichloroethane	ug/L	ND	0.50	12/24/16 10:21	
1,1-Dichloroethane	ug/L	ND	0.50	12/24/16 10:21	
1,1-Dichloroethene	ug/L	ND	0.50	12/24/16 10:21	
1,2-Dichlorobenzene	ug/L	ND	0.50	12/24/16 10:21	
1,2-Dichloroethane	ug/L	ND	0.50	12/24/16 10:21	
1,2-Dichloropropane	ug/L	ND	0.50	12/24/16 10:21	
1,3-Dichlorobenzene	ug/L	ND	0.50	12/24/16 10:21	
1,4-Dichlorobenzene	ug/L	ND	0.50	12/24/16 10:21	
Bromodichloromethane	ug/L	ND	0.50	12/24/16 10:21	
Bromoform	ug/L	ND	0.50	12/24/16 10:21	
Bromomethane	ug/L	ND	20.0	12/24/16 10:21	
Carbon tetrachloride	ug/L	ND	0.50	12/24/16 10:21	
Chlorobenzene	ug/L	ND	0.50	12/24/16 10:21	
Chloroethane	ug/L	ND	2.0	12/24/16 10:21	
Chloroform	ug/L	ND	0.50	12/24/16 10:21	
Chloromethane	ug/L	ND	0.50	12/24/16 10:21	
cis-1,2-Dichloroethene	ug/L	ND	0.50	12/24/16 10:21	
cis-1,3-Dichloropropene	ug/L	ND	0.50	12/24/16 10:21	
Dibromochloromethane	ug/L	ND	0.50	12/24/16 10:21	
Methylene Chloride	ug/L	ND	5.0	12/24/16 10:21	
Tetrachloroethene	ug/L	ND	0.50	12/24/16 10:21	
trans-1,2-Dichloroethene	ug/L	ND	0.50	12/24/16 10:21	
trans-1,3-Dichloropropene	ug/L	ND	0.50	12/24/16 10:21	
Trichloroethene	ug/L	ND	0.50	12/24/16 10:21	
Trichlorofluoromethane	ug/L	ND	0.50	12/24/16 10:21	
Vinyl chloride	ug/L	ND	0.50	12/24/16 10:21	
1,2-Dichloroethane-d4 (S)	%	102	70-130	12/24/16 10:21	
4-Bromofluorobenzene (S)	%	100	70-130	12/24/16 10:21	
Toluene-d8 (S)	%	101	70-130	12/24/16 10:21	

LABORATORY CONTROL SAMPLE: 408732

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	37.4	94	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	37.7	94	75-125	
1,1,2-Trichloroethane	ug/L	40	37.4	93	75-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

LABORATORY CONTROL SAMPLE: 408732

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethane	ug/L	40	37.2	93	71-131	
1,1-Dichloroethene	ug/L	40	37.5	94	74-126	
1,2-Dichlorobenzene	ug/L	40	34.4	86	75-125	
1,2-Dichloroethane	ug/L	40	39.4	99	64-141	
1,2-Dichloropropane	ug/L	40	37.6	94	73-127	
1,3-Dichlorobenzene	ug/L	40	34.3	86	75-125	
1,4-Dichlorobenzene	ug/L	40	33.4	83	75-125	
Bromodichloromethane	ug/L	40	37.9	95	70-134	
Bromoform	ug/L	40	37.7	94	68-130	
Bromomethane	ug/L	40	44.1	110	30-150	
Carbon tetrachloride	ug/L	40	36.4	91	66-135	
Chlorobenzene	ug/L	40	36.6	91	75-125	
Chloroethane	ug/L	40	37.6	94	55-150	
Chloroform	ug/L	40	38.1	95	72-131	
Chloromethane	ug/L	40	32.6	82	54-132	
cis-1,2-Dichloroethene	ug/L	40	38.2	96	75-125	
cis-1,3-Dichloropropene	ug/L	40	37.4	94	74-130	
Dibromochloromethane	ug/L	40	37.4	93	70-132	
Methylene Chloride	ug/L	40	37.4	93	68-125	
Tetrachloroethene	ug/L	40	34.2	86	75-130	
trans-1,2-Dichloroethene	ug/L	40	37.6	94	75-125	
trans-1,3-Dichloropropene	ug/L	40	37.0	92	69-137	
Trichloroethene	ug/L	40	37.5	94	75-125	
Trichlorofluoromethane	ug/L	40	38.7	97	59-140	
Vinyl chloride	ug/L	40	37.8	95	68-132	
1,2-Dichloroethane-d4 (S)	%			101	70-130	
4-Bromofluorobenzene (S)	%			102	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408733 408734

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		1280767002 Result	Spike Conc.	Spike Conc.	Result								
1,1,1-Trichloroethane	ug/L	ND	40	40	37.6	38.1	94	95	63-142	1	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	36.6	37.4	92	94	75-125	2	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	37.4	37.6	93	94	75-132	1	30		
1,1-Dichloroethane	ug/L	ND	40	40	37.4	37.9	93	94	75-126	1	30		
1,1-Dichloroethene	ug/L	ND	40	40	37.7	38.4	94	96	75-125	2	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	37.0	37.7	92	94	75-125	2	30		
1,2-Dichloroethane	ug/L	ND	40	40	39.4	39.7	98	99	75-137	1	30		
1,2-Dichloropropane	ug/L	ND	40	40	37.3	37.6	93	94	74-131	1	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	37.5	38.4	94	96	75-126	2	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	36.6	37.1	91	92	73-125	1	30		
Bromodichloromethane	ug/L	ND	40	40	37.6	38.4	94	96	65-137	2	30		
Bromoform	ug/L	ND	40	40	37.2	37.6	93	94	60-147	1	30		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408733		408734		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1280767002 Result	MS Spike Conc.	MSD Spike Conc.									
Bromomethane	ug/L	ND	40	40	42.5	45.2	106	113	30-150	6	30		
Carbon tetrachloride	ug/L	ND	40	40	37.3	38.0	93	95	45-150	2	30		
Chlorobenzene	ug/L	ND	40	40	37.4	37.3	94	93	75-125	0	30		
Chloroethane	ug/L	ND	40	40	37.3	37.5	93	94	66-145	1	30		
Chloroform	ug/L	ND	40	40	38.0	38.4	95	96	74-128	1	30		
Chloromethane	ug/L	ND	40	40	32.3	32.6	81	81	51-150	1	30		
cis-1,2-Dichloroethene	ug/L	7.2	40	40	45.2	45.9	95	97	75-125	2	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	37.2	37.1	93	93	75-129	0	30		
Dibromochloromethane	ug/L	ND	40	40	37.1	37.7	93	94	66-141	2	30		
Methylene Chloride	ug/L	ND	40	40	37.4	38.1	94	95	74-125	2	30		
Tetrachloroethene	ug/L	1.5	40	40	39.0	39.3	94	95	75-135	1	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	37.8	38.5	94	96	75-125	2	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	36.1	37.0	90	93	67-139	2	30		
Trichloroethene	ug/L	ND	40	40	38.2	38.5	95	96	75-130	1	30		
Trichlorofluoromethane	ug/L	ND	40	40	39.7	40.4	99	101	57-144	2	30		
Vinyl chloride	ug/L	ND	40	40	37.3	37.9	93	95	70-136	2	30		
1,2-Dichloroethane-d4 (S)	%.						100	100	70-130				
4-Bromofluorobenzene (S)	%.						102	104	70-130				
Toluene-d8 (S)	%.						100	101	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver  
Pace Project No.: 1280701

QC Batch: 102852 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1280701023, 1280701024, 1280701025, 1280701026, 1280701033, 1280701034

METHOD BLANK: 408735 Matrix: Water  
Associated Lab Samples: 1280701023, 1280701024, 1280701025, 1280701026, 1280701033, 1280701034

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	12/26/16 12:36	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	12/26/16 12:36	
1,1,2-Trichloroethane	ug/L	ND	0.50	12/26/16 12:36	
1,1-Dichloroethane	ug/L	ND	0.50	12/26/16 12:36	
1,1-Dichloroethene	ug/L	ND	0.50	12/26/16 12:36	
1,2-Dichlorobenzene	ug/L	ND	0.50	12/26/16 12:36	
1,2-Dichloroethane	ug/L	ND	0.50	12/26/16 12:36	
1,2-Dichloropropane	ug/L	ND	0.50	12/26/16 12:36	
1,3-Dichlorobenzene	ug/L	ND	0.50	12/26/16 12:36	
1,4-Dichlorobenzene	ug/L	ND	0.50	12/26/16 12:36	
Bromodichloromethane	ug/L	ND	0.50	12/26/16 12:36	
Bromoform	ug/L	ND	0.50	12/26/16 12:36	
Bromomethane	ug/L	ND	20.0	12/26/16 12:36	
Carbon tetrachloride	ug/L	ND	0.50	12/26/16 12:36	
Chlorobenzene	ug/L	ND	0.50	12/26/16 12:36	
Chloroethane	ug/L	ND	2.0	12/26/16 12:36	
Chloroform	ug/L	ND	0.50	12/26/16 12:36	
Chloromethane	ug/L	ND	0.50	12/26/16 12:36	
cis-1,2-Dichloroethene	ug/L	ND	0.50	12/26/16 12:36	
cis-1,3-Dichloropropene	ug/L	ND	0.50	12/26/16 12:36	
Dibromochloromethane	ug/L	ND	0.50	12/26/16 12:36	
Methylene Chloride	ug/L	ND	5.0	12/26/16 12:36	
Tetrachloroethene	ug/L	ND	0.50	12/26/16 12:36	
trans-1,2-Dichloroethene	ug/L	ND	0.50	12/26/16 12:36	
trans-1,3-Dichloropropene	ug/L	ND	0.50	12/26/16 12:36	
Trichloroethene	ug/L	ND	0.50	12/26/16 12:36	
Trichlorofluoromethane	ug/L	ND	0.50	12/26/16 12:36	
Vinyl chloride	ug/L	ND	0.50	12/26/16 12:36	
1,2-Dichloroethane-d4 (S)	%	102	70-130	12/26/16 12:36	
4-Bromofluorobenzene (S)	%	100	70-130	12/26/16 12:36	
Toluene-d8 (S)	%	101	70-130	12/26/16 12:36	

LABORATORY CONTROL SAMPLE: 408736

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	36.2	91	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	36.6	91	75-125	
1,1,2-Trichloroethane	ug/L	40	36.6	91	75-126	
1,1-Dichloroethane	ug/L	40	36.7	92	71-131	
1,1-Dichloroethene	ug/L	40	36.8	92	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

LABORATORY CONTROL SAMPLE: 408736

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	35.5	89	75-125	
1,2-Dichloroethane	ug/L	40	38.0	95	64-141	
1,2-Dichloropropane	ug/L	40	37.3	93	73-127	
1,3-Dichlorobenzene	ug/L	40	35.6	89	75-125	
1,4-Dichlorobenzene	ug/L	40	34.9	87	75-125	
Bromodichloromethane	ug/L	40	37.4	93	70-134	
Bromoform	ug/L	40	37.3	93	68-130	
Bromomethane	ug/L	40	42.4	106	30-150	
Carbon tetrachloride	ug/L	40	36.1	90	66-135	
Chlorobenzene	ug/L	40	36.4	91	75-125	
Chloroethane	ug/L	40	38.4	96	55-150	
Chloroform	ug/L	40	37.3	93	72-131	
Chloromethane	ug/L	40	32.2	81	54-132	
cis-1,2-Dichloroethene	ug/L	40	37.0	92	75-125	
cis-1,3-Dichloropropene	ug/L	40	36.2	90	74-130	
Dibromochloromethane	ug/L	40	36.4	91	70-132	
Methylene Chloride	ug/L	40	36.6	91	68-125	
Tetrachloroethene	ug/L	40	35.1	88	75-130	
trans-1,2-Dichloroethene	ug/L	40	37.4	94	75-125	
trans-1,3-Dichloropropene	ug/L	40	35.5	89	69-137	
Trichloroethene	ug/L	40	37.1	93	75-125	
Trichlorofluoromethane	ug/L	40	37.6	94	59-140	
Vinyl chloride	ug/L	40	36.9	92	68-132	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408737 408738

Parameter	Units	MS 1280773002		MSD 408738		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result								
1,1,1-Trichloroethane	ug/L	ND	40	40	37.9	36.6	95	91	63-142	4	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	38.1	37.6	95	94	75-125	1	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	39.0	37.7	97	94	75-132	3	30		
1,1-Dichloroethane	ug/L	ND	40	40	38.6	36.6	96	91	75-126	5	30		
1,1-Dichloroethene	ug/L	ND	40	40	38.6	37.1	96	93	75-125	4	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	38.6	37.1	96	93	75-125	4	30		
1,2-Dichloroethane	ug/L	ND	40	40	40.3	39.3	101	98	75-137	3	30		
1,2-Dichloropropane	ug/L	ND	40	40	38.9	37.3	97	93	74-131	4	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	39.6	37.9	99	95	75-126	4	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	38.0	36.3	95	91	73-125	5	30		
Bromodichloromethane	ug/L	ND	40	40	38.7	37.3	97	93	65-137	4	30		
Bromoform	ug/L	ND	40	40	38.4	37.9	96	95	60-147	1	30		
Bromomethane	ug/L	ND	40	40	44.4	43.6	111	109	30-150	2	30		
Carbon tetrachloride	ug/L	ND	40	40	37.7	36.8	94	92	45-150	3	30		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

Parameter	Units	1280773002		408737		408738		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Chlorobenzene	ug/L	ND	40	40	38.2	36.8	95	92	75-125	4	30		
Chloroethane	ug/L	ND	40	40	39.7	38.0	99	95	66-145	4	30		
Chloroform	ug/L	ND	40	40	39.7	37.9	99	94	74-128	5	30		
Chloromethane	ug/L	ND	40	40	33.8	32.3	84	81	51-150	4	30		
cis-1,2-Dichloroethene	ug/L	ND	40	40	39.5	37.6	98	94	75-125	5	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	37.5	36.1	94	90	75-129	4	30		
Dibromochloromethane	ug/L	ND	40	40	38.2	36.8	95	92	66-141	4	30		
Methylene Chloride	ug/L	ND	40	40	39.2	36.9	98	92	74-125	6	30		
Tetrachloroethene	ug/L	0.51	40	40	38.9	37.7	96	93	75-135	3	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	39.6	36.8	99	92	75-125	7	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	36.5	36.1	91	90	67-139	1	30		
Trichloroethene	ug/L	ND	40	40	39.1	36.9	98	92	75-130	6	30		
Trichlorofluoromethane	ug/L	ND	40	40	41.2	39.4	103	99	57-144	4	30		
Vinyl chloride	ug/L	ND	40	40	39.1	37.6	98	94	70-136	4	30		
1,2-Dichloroethane-d4 (S)	%						101	100	70-130				
4-Bromofluorobenzene (S)	%						102	103	70-130				
Toluene-d8 (S)	%						101	101	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver  
Pace Project No.: 1280701

QC Batch: 102884 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1280701024, 1280701025

METHOD BLANK: 408860 Matrix: Water  
Associated Lab Samples: 1280701024, 1280701025

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	12/27/16 10:33	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	12/27/16 10:33	
1,1,2-Trichloroethane	ug/L	ND	0.50	12/27/16 10:33	
1,1-Dichloroethane	ug/L	ND	0.50	12/27/16 10:33	
1,1-Dichloroethene	ug/L	ND	0.50	12/27/16 10:33	
1,2-Dichlorobenzene	ug/L	ND	0.50	12/27/16 10:33	
1,2-Dichloroethane	ug/L	ND	0.50	12/27/16 10:33	
1,2-Dichloropropane	ug/L	ND	0.50	12/27/16 10:33	
1,3-Dichlorobenzene	ug/L	ND	0.50	12/27/16 10:33	
1,4-Dichlorobenzene	ug/L	ND	0.50	12/27/16 10:33	
Bromodichloromethane	ug/L	ND	0.50	12/27/16 10:33	
Bromoform	ug/L	ND	0.50	12/27/16 10:33	
Bromomethane	ug/L	ND	20.0	12/27/16 10:33	
Carbon tetrachloride	ug/L	ND	0.50	12/27/16 10:33	
Chlorobenzene	ug/L	ND	0.50	12/27/16 10:33	
Chloroethane	ug/L	ND	2.0	12/27/16 10:33	
Chloroform	ug/L	ND	0.50	12/27/16 10:33	
Chloromethane	ug/L	ND	0.50	12/27/16 10:33	
cis-1,2-Dichloroethene	ug/L	ND	0.50	12/27/16 10:33	
cis-1,3-Dichloropropene	ug/L	ND	0.50	12/27/16 10:33	
Dibromochloromethane	ug/L	ND	0.50	12/27/16 10:33	
Methylene Chloride	ug/L	ND	5.0	12/27/16 10:33	
Tetrachloroethene	ug/L	ND	0.50	12/27/16 10:33	
trans-1,2-Dichloroethene	ug/L	ND	0.50	12/27/16 10:33	
trans-1,3-Dichloropropene	ug/L	ND	0.50	12/27/16 10:33	
Trichloroethene	ug/L	ND	0.50	12/27/16 10:33	
Trichlorofluoromethane	ug/L	ND	0.50	12/27/16 10:33	
Vinyl chloride	ug/L	ND	0.50	12/27/16 10:33	
1,2-Dichloroethane-d4 (S)	%	103	70-130	12/27/16 10:33	
4-Bromofluorobenzene (S)	%	96	70-130	12/27/16 10:33	
Toluene-d8 (S)	%	101	70-130	12/27/16 10:33	

LABORATORY CONTROL SAMPLE: 408861

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	37.6	94	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	37.8	94	75-125	
1,1,2-Trichloroethane	ug/L	40	38.5	96	75-126	
1,1-Dichloroethane	ug/L	40	38.6	96	71-131	
1,1-Dichloroethene	ug/L	40	38.4	96	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

LABORATORY CONTROL SAMPLE: 408861

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	35.3	88	75-125	
1,2-Dichloroethane	ug/L	40	40.0	100	64-141	
1,2-Dichloropropane	ug/L	40	39.0	97	73-127	
1,3-Dichlorobenzene	ug/L	40	34.4	86	75-125	
1,4-Dichlorobenzene	ug/L	40	33.8	85	75-125	
Bromodichloromethane	ug/L	40	38.7	97	70-134	
Bromoform	ug/L	40	37.7	94	68-130	
Bromomethane	ug/L	40	44.0	110	30-150	
Carbon tetrachloride	ug/L	40	37.3	93	66-135	
Chlorobenzene	ug/L	40	37.6	94	75-125	
Chloroethane	ug/L	40	39.8	99	55-150	
Chloroform	ug/L	40	38.7	97	72-131	
Chloromethane	ug/L	40	33.0	82	54-132	
cis-1,2-Dichloroethene	ug/L	40	38.7	97	75-125	
cis-1,3-Dichloropropene	ug/L	40	37.7	94	74-130	
Dibromochloromethane	ug/L	40	37.9	95	70-132	
Methylene Chloride	ug/L	40	38.2	96	68-125	
Tetrachloroethene	ug/L	40	34.8	87	75-130	
trans-1,2-Dichloroethene	ug/L	40	38.6	96	75-125	
trans-1,3-Dichloropropene	ug/L	40	37.2	93	69-137	
Trichloroethene	ug/L	40	38.0	95	75-125	
Trichlorofluoromethane	ug/L	40	39.4	99	59-140	
Vinyl chloride	ug/L	40	38.2	96	68-132	
1,2-Dichloroethane-d4 (S)	%			100	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408862 408863

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		1280773007	Spike Conc.	Spike Conc.	Result								
1,1,1-Trichloroethane	ug/L	ND	40	40	38.3	37.6	96	94	63-142	2	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	39.7	39.6	99	99	75-125	0	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	39.3	39.1	98	98	75-132	0	30		
1,1-Dichloroethane	ug/L	ND	40	40	39.4	38.1	99	95	75-126	3	30		
1,1-Dichloroethene	ug/L	ND	40	40	39.3	37.7	98	94	75-125	4	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	35.0	37.9	87	95	75-125	8	30		
1,2-Dichloroethane	ug/L	ND	40	40	40.6	40.1	101	100	75-137	1	30		
1,2-Dichloropropane	ug/L	ND	40	40	39.5	38.3	99	96	74-131	3	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	34.2	37.6	85	94	75-126	10	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	34.0	36.9	85	92	73-125	8	30		
Bromodichloromethane	ug/L	ND	40	40	39.1	38.4	98	96	65-137	2	30		
Bromoform	ug/L	ND	40	40	38.2	38.3	95	96	60-147	0	30		
Bromomethane	ug/L	ND	40	40	33.1	33.4	83	83	30-150	1	30		
Carbon tetrachloride	ug/L	ND	40	40	37.9	37.4	95	94	45-150	1	30		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 408862		408863		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1280773007 Result	MS Spike Conc.	MSD Spike Conc.									
Chlorobenzene	ug/L	ND	40	40	38.3	37.6	96	94	75-125	2	30		
Chloroethane	ug/L	ND	40	40	39.1	41.3	98	103	66-145	5	30		
Chloroform	ug/L	ND	40	40	39.6	38.5	99	96	74-128	3	30		
Chloromethane	ug/L	ND	40	40	32.6	30.2	81	75	51-150	8	30		
cis-1,2-Dichloroethene	ug/L	1.8	40	40	40.9	40.4	98	96	75-125	1	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	38.0	37.3	95	93	75-129	2	30		
Dibromochloromethane	ug/L	ND	40	40	38.4	37.8	96	94	66-141	2	30		
Methylene Chloride	ug/L	ND	40	40	40.0	37.9	100	95	74-125	5	30		
Tetrachloroethene	ug/L	0.93	40	40	36.9	38.7	90	94	75-135	5	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	39.4	38.0	99	95	75-125	4	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	37.3	37.1	93	93	67-139	0	30		
Trichloroethene	ug/L	ND	40	40	39.2	38.3	97	95	75-130	2	30		
Trichlorofluoromethane	ug/L	ND	40	40	42.2	41.0	105	102	57-144	3	30		
Vinyl chloride	ug/L	ND	40	40	39.6	37.7	99	94	70-136	5	30		
1,2-Dichloroethane-d4 (S)	%						100	101	70-130				
4-Bromofluorobenzene (S)	%						100	102	70-130				
Toluene-d8 (S)	%						101	101	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver  
Pace Project No.: 1280701

QC Batch: 102927 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1280701007, 1280701008, 1280701020

METHOD BLANK: 409013 Matrix: Water  
Associated Lab Samples: 1280701007, 1280701008, 1280701020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	12/28/16 11:27	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	12/28/16 11:27	
1,1,2-Trichloroethane	ug/L	ND	0.50	12/28/16 11:27	
1,1-Dichloroethane	ug/L	ND	0.50	12/28/16 11:27	
1,1-Dichloroethene	ug/L	ND	0.50	12/28/16 11:27	
1,2-Dichlorobenzene	ug/L	ND	0.50	12/28/16 11:27	
1,2-Dichloroethane	ug/L	ND	0.50	12/28/16 11:27	
1,2-Dichloropropane	ug/L	ND	0.50	12/28/16 11:27	
1,3-Dichlorobenzene	ug/L	ND	0.50	12/28/16 11:27	
1,4-Dichlorobenzene	ug/L	ND	0.50	12/28/16 11:27	
Bromodichloromethane	ug/L	ND	0.50	12/28/16 11:27	
Bromoform	ug/L	ND	0.50	12/28/16 11:27	
Bromomethane	ug/L	ND	20.0	12/28/16 11:27	
Carbon tetrachloride	ug/L	ND	0.50	12/28/16 11:27	
Chlorobenzene	ug/L	ND	0.50	12/28/16 11:27	
Chloroethane	ug/L	ND	2.0	12/28/16 11:27	
Chloroform	ug/L	ND	0.50	12/28/16 11:27	
Chloromethane	ug/L	ND	2.0	12/28/16 11:27	
cis-1,2-Dichloroethene	ug/L	ND	0.50	12/28/16 11:27	
cis-1,3-Dichloropropene	ug/L	ND	0.50	12/28/16 11:27	
Dibromochloromethane	ug/L	ND	0.50	12/28/16 11:27	
Methylene Chloride	ug/L	ND	5.0	12/28/16 11:27	
Tetrachloroethene	ug/L	ND	0.50	12/28/16 11:27	
trans-1,2-Dichloroethene	ug/L	ND	0.50	12/28/16 11:27	
trans-1,3-Dichloropropene	ug/L	ND	0.50	12/28/16 11:27	
Trichloroethene	ug/L	ND	0.50	12/28/16 11:27	
Trichlorofluoromethane	ug/L	ND	0.50	12/28/16 11:27	
Vinyl chloride	ug/L	ND	0.50	12/28/16 11:27	
1,2-Dichloroethane-d4 (S)	%	107	70-130	12/28/16 11:27	
4-Bromofluorobenzene (S)	%	92	70-130	12/28/16 11:27	
Toluene-d8 (S)	%	103	70-130	12/28/16 11:27	

LABORATORY CONTROL SAMPLE: 409014

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	43.7	109	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	39.4	98	75-125	
1,1,2-Trichloroethane	ug/L	40	42.6	106	75-126	
1,1-Dichloroethane	ug/L	40	44.2	111	71-131	
1,1-Dichloroethene	ug/L	40	42.1	105	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

LABORATORY CONTROL SAMPLE: 409014

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	40.2	101	75-125	
1,2-Dichloroethane	ug/L	40	45.3	113	64-141	
1,2-Dichloropropane	ug/L	40	44.7	112	73-127	
1,3-Dichlorobenzene	ug/L	40	37.8	95	75-125	
1,4-Dichlorobenzene	ug/L	40	39.9	100	75-125	
Bromodichloromethane	ug/L	40	43.5	109	70-134	
Bromoform	ug/L	40	38.0	95	68-130	
Bromomethane	ug/L	40	14.4J	36	30-150	
Carbon tetrachloride	ug/L	40	43.3	108	66-135	
Chlorobenzene	ug/L	40	39.2	98	75-125	
Chloroethane	ug/L	40	39.2	98	55-150	
Chloroform	ug/L	40	44.7	112	72-131	
Chloromethane	ug/L	40	34.5	86	54-132	
cis-1,2-Dichloroethene	ug/L	40	42.5	106	75-125	
cis-1,3-Dichloropropene	ug/L	40	44.0	110	74-130	
Dibromochloromethane	ug/L	40	42.7	107	70-132	
Methylene Chloride	ug/L	40	41.8	104	68-125	
Tetrachloroethene	ug/L	40	41.8	105	75-130	
trans-1,2-Dichloroethene	ug/L	40	43.1	108	75-125	
trans-1,3-Dichloropropene	ug/L	40	44.2	110	69-137	
Trichloroethene	ug/L	40	42.4	106	75-125	
Trichlorofluoromethane	ug/L	40	42.7	107	59-140	
Vinyl chloride	ug/L	40	39.1	98	68-132	
1,2-Dichloroethane-d4 (S)	%			108	70-130	
4-Bromofluorobenzene (S)	%			95	70-130	
Toluene-d8 (S)	%			104	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 409024 409025

Parameter	Units	1280875002		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	Result	MSD Result	% Rec	% Rec					
1,1,1-Trichloroethane	ug/L	ND	40	40	40.3	40.2	101	101	63-142	0	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	40	40	34.0	35.5	85	89	75-125	4	30		
1,1,2-Trichloroethane	ug/L	ND	40	40	36.2	37.7	90	94	75-132	4	30		
1,1-Dichloroethane	ug/L	ND	40	40	38.9	40.1	97	100	75-126	3	30		
1,1-Dichloroethene	ug/L	ND	40	40	39.9	40.2	100	101	75-125	1	30		
1,2-Dichlorobenzene	ug/L	ND	40	40	33.1	33.1	83	83	75-125	0	30		
1,2-Dichloroethane	ug/L	ND	40	40	38.8	40.6	97	101	75-137	4	30		
1,2-Dichloropropane	ug/L	ND	40	40	37.7	39.7	94	99	74-131	5	30		
1,3-Dichlorobenzene	ug/L	ND	40	40	32.3	31.5	81	79	75-126	3	30		
1,4-Dichlorobenzene	ug/L	ND	40	40	32.4	32.2	81	80	73-125	1	30		
Bromodichloromethane	ug/L	ND	40	40	36.5	38.1	91	95	65-137	4	30		
Bromoform	ug/L	ND	40	40	31.4	32.7	78	82	60-147	4	30		
Bromomethane	ug/L	ND	40	40	13.6J	16.5J	34	41	30-150		30		
Carbon tetrachloride	ug/L	ND	40	40	40.8	40.7	102	102	45-150	0	30		

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 409024		409025		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		1280875002 Result	MS Spike Conc.	MSD Spike Conc.									
Chlorobenzene	ug/L	ND	40	40	33.5	34.2	84	86	75-125	2	30		
Chloroethane	ug/L	ND	40	40	31.5	34.9	79	87	66-145	10	30		
Chloroform	ug/L	ND	40	40	38.3	39.7	96	99	74-128	4	30		
Chloromethane	ug/L	ND	40	40	31.6	32.8	79	82	51-150	4	30		
cis-1,2-Dichloroethene	ug/L	ND	40	40	37.2	38.2	93	96	75-125	3	30		
cis-1,3-Dichloropropene	ug/L	ND	40	40	36.8	38.6	92	96	75-129	5	30		
Dibromochloromethane	ug/L	ND	40	40	35.8	37.5	90	94	66-141	5	30		
Methylene Chloride	ug/L	ND	40	40	35.4	36.7	88	92	74-125	4	30		
Tetrachloroethene	ug/L	ND	40	40	38.5	37.6	96	94	75-135	2	30		
trans-1,2-Dichloroethene	ug/L	ND	40	40	38.2	38.8	95	97	75-125	2	30		
trans-1,3-Dichloropropene	ug/L	ND	40	40	36.6	38.5	92	96	67-139	5	30		
Trichloroethene	ug/L	ND	40	40	37.9	38.7	95	97	75-130	2	30		
Trichlorofluoromethane	ug/L	ND	40	40	38.7	40.1	97	100	57-144	4	30		
Vinyl chloride	ug/L	ND	40	40	37.5	37.8	94	94	70-136	1	30		
1,2-Dichloroethane-d4 (S)	%						115	114	70-130				
4-Bromofluorobenzene (S)	%						96	95	70-130				
Toluene-d8 (S)	%						105	105	70-130				

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### QUALITY CONTROL DATA

Project: NuStar Vancouver  
Pace Project No.: 1280701

QC Batch: 102974 Analysis Method: EPA 8260B  
QC Batch Method: EPA 8260B Analysis Description: 8260 MSV Med Water  
Associated Lab Samples: 1280701003

METHOD BLANK: 409211 Matrix: Water  
Associated Lab Samples: 1280701003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	ND	0.50	12/28/16 10:58	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	12/28/16 10:58	
1,1,2-Trichloroethane	ug/L	ND	0.50	12/28/16 10:58	
1,1-Dichloroethane	ug/L	ND	0.50	12/28/16 10:58	
1,1-Dichloroethene	ug/L	ND	0.50	12/28/16 10:58	
1,2-Dichlorobenzene	ug/L	ND	0.50	12/28/16 10:58	
1,2-Dichloroethane	ug/L	ND	0.50	12/28/16 10:58	
1,2-Dichloropropane	ug/L	ND	0.50	12/28/16 10:58	
1,3-Dichlorobenzene	ug/L	ND	0.50	12/28/16 10:58	
1,4-Dichlorobenzene	ug/L	ND	0.50	12/28/16 10:58	
Bromodichloromethane	ug/L	ND	0.50	12/28/16 10:58	
Bromoform	ug/L	ND	0.50	12/28/16 10:58	
Bromomethane	ug/L	ND	20.0	12/28/16 10:58	
Carbon tetrachloride	ug/L	ND	0.50	12/28/16 10:58	
Chlorobenzene	ug/L	ND	0.50	12/28/16 10:58	
Chloroethane	ug/L	ND	2.0	12/28/16 10:58	
Chloroform	ug/L	ND	0.50	12/28/16 10:58	
Chloromethane	ug/L	ND	0.50	12/28/16 10:58	
cis-1,2-Dichloroethene	ug/L	ND	0.50	12/28/16 10:58	
cis-1,3-Dichloropropene	ug/L	ND	0.50	12/28/16 10:58	
Dibromochloromethane	ug/L	ND	0.50	12/28/16 10:58	
Methylene Chloride	ug/L	ND	5.0	12/28/16 10:58	
Tetrachloroethene	ug/L	ND	0.50	12/28/16 10:58	
trans-1,2-Dichloroethene	ug/L	ND	0.50	12/28/16 10:58	
trans-1,3-Dichloropropene	ug/L	ND	0.50	12/28/16 10:58	
Trichloroethene	ug/L	ND	0.50	12/28/16 10:58	
Trichlorofluoromethane	ug/L	ND	0.50	12/28/16 10:58	
Vinyl chloride	ug/L	ND	0.50	12/28/16 10:58	
1,2-Dichloroethane-d4 (S)	%	101	70-130	12/28/16 10:58	
4-Bromofluorobenzene (S)	%	95	70-130	12/28/16 10:58	
Toluene-d8 (S)	%	101	70-130	12/28/16 10:58	

LABORATORY CONTROL SAMPLE: 409212

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	36.1	90	67-138	
1,1,2,2-Tetrachloroethane	ug/L	40	37.8	94	75-125	
1,1,2-Trichloroethane	ug/L	40	38.4	96	75-126	
1,1-Dichloroethane	ug/L	40	37.6	94	71-131	
1,1-Dichloroethene	ug/L	40	37.1	93	74-126	

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### QUALITY CONTROL DATA

Project: NuStar Vancouver  
Pace Project No.: 1280701

LABORATORY CONTROL SAMPLE: 409212

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	40	35.1	88	75-125	
1,2-Dichloroethane	ug/L	40	39.3	98	64-141	
1,2-Dichloropropane	ug/L	40	38.6	96	73-127	
1,3-Dichlorobenzene	ug/L	40	34.3	86	75-125	
1,4-Dichlorobenzene	ug/L	40	33.7	84	75-125	
Bromodichloromethane	ug/L	40	37.9	95	70-134	
Bromoform	ug/L	40	37.2	93	68-130	
Bromomethane	ug/L	40	43.3	108	30-150	
Carbon tetrachloride	ug/L	40	35.6	89	66-135	
Chlorobenzene	ug/L	40	36.3	91	75-125	
Chloroethane	ug/L	40	39.7	99	55-150	
Chloroform	ug/L	40	37.9	95	72-131	
Chloromethane	ug/L	40	32.0	80	54-132	
cis-1,2-Dichloroethene	ug/L	40	37.5	94	75-125	
cis-1,3-Dichloropropene	ug/L	40	36.9	92	74-130	
Dibromochloromethane	ug/L	40	37.3	93	70-132	
Methylene Chloride	ug/L	40	37.5	94	68-125	
Tetrachloroethene	ug/L	40	33.4	83	75-130	
trans-1,2-Dichloroethene	ug/L	40	37.8	94	75-125	
trans-1,3-Dichloropropene	ug/L	40	36.7	92	69-137	
Trichloroethene	ug/L	40	36.7	92	75-125	
Trichlorofluoromethane	ug/L	40	37.9	95	59-140	
Vinyl chloride	ug/L	40	37.8	94	68-132	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 409242 409243

Parameter	Units	1280887002		409243		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
1,1,1-Trichloroethane	ug/L	40	40	34.9	36.8	87	92	63-142	5	30	
1,1,2,2-Tetrachloroethane	ug/L	40	40	36.0	39.3	90	98	75-125	9	30	
1,1,2-Trichloroethane	ug/L	40	40	36.6	39.3	92	98	75-132	7	30	
1,1-Dichloroethane	ug/L	40	40	36.2	37.9	90	95	75-126	5	30	
1,1-Dichloroethene	ug/L	40	40	35.8	37.1	89	93	75-125	4	30	
1,2-Dichlorobenzene	ug/L	40	40	36.4	35.5	91	89	75-125	2	30	
1,2-Dichloroethane	ug/L	40	40	38.4	40.2	96	101	75-137	5	30	
1,2-Dichloropropane	ug/L	40	40	37.2	38.8	93	97	74-131	4	30	
1,3-Dichlorobenzene	ug/L	40	40	37.3	35.2	93	88	75-126	6	30	
1,4-Dichlorobenzene	ug/L	40	40	35.8	34.5	89	86	73-125	4	30	
Bromodichloromethane	ug/L	40	40	36.1	38.4	90	96	65-137	6	30	
Bromoform	ug/L	40	40	35.1	38.1	88	95	60-147	8	30	
Bromomethane	ug/L	40	40	42.1	44.8	105	112	30-150	6	30	
Carbon tetrachloride	ug/L	40	40	35.1	36.4	88	91	45-150	4	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		409242		409243		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		1280887002	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Chlorobenzene	ug/L		40	40	35.9	37.2	90	93	75-125	3	30		
Chloroethane	ug/L		40	40	38.0	39.8	95	99	66-145	5	30		
Chloroform	ug/L		40	40	36.7	38.3	92	96	74-128	4	30		
Chloromethane	ug/L		40	40	31.2	32.6	78	82	51-150	4	30		
cis-1,2-Dichloroethene	ug/L		40	40	36.3	37.7	91	94	75-125	4	30		
cis-1,3-Dichloropropene	ug/L		40	40	35.3	37.3	88	93	75-129	5	30		
Dibromochloromethane	ug/L		40	40	35.4	37.7	88	94	66-141	6	30		
Methylene Chloride	ug/L		40	40	36.2	37.6	91	94	74-125	4	30		
Tetrachloroethene	ug/L		40	40	35.9	35.2	90	88	75-135	2	30		
trans-1,2-Dichloroethene	ug/L		40	40	36.2	38.0	91	95	75-125	5	30		
trans-1,3-Dichloropropene	ug/L		40	40	34.6	37.3	87	93	67-139	7	30		
Trichloroethene	ug/L		40	40	36.0	37.4	90	93	75-130	4	30		
Trichlorofluoromethane	ug/L		40	40	38.1	38.8	95	97	57-144	2	30		
Vinyl chloride	ug/L		40	40	36.7	37.9	92	95	70-136	3	30		
1,2-Dichloroethane-d4 (S)	%						101	101	70-130				
4-Bromofluorobenzene (S)	%						101	100	70-130				
Toluene-d8 (S)	%						101	101	70-130				

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: NuStar Vancouver

Pace Project No.: 1280701

QC Batch: 70924

Analysis Method: SM 5310B

QC Batch Method: SM 5310B

Analysis Description: 5310B TOC

Associated Lab Samples: 1280701007, 1280701008, 1280701009, 1280701021, 1280701023, 1280701025, 1280701026, 1280701032, 1280701034

METHOD BLANK: 296727

Matrix: Water

Associated Lab Samples: 1280701007, 1280701008, 1280701009, 1280701021, 1280701023, 1280701025, 1280701026, 1280701032, 1280701034

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	12/29/16 09:30	

LABORATORY CONTROL SAMPLE: 296728

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	31.6	31.4	99	90-110	

MATRIX SPIKE SAMPLE: 297170

Parameter	Units	1280701007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	1930	500	2700	153	75-125	M6

SAMPLE DUPLICATE: 297169

Parameter	Units	1280701007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Organic Carbon	mg/L	1930	2380	21	20	D6

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: NuStar Vancouver  
Pace Project No.: 1280701

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-DAV Pace Analytical Services - Davis  
PASI-M Pace Analytical Services - Minneapolis  
PASI-N Pace Analytical Services - New Orleans

### BATCH QUALIFIERS

Batch: 102751

[1] Dichlorodifluoromethane and Hexachloro-1,3-butadiene exceeded secondary source verification criteria for the initial calibration. The reported Dichlorodifluoromethane and Hexachloro-1,3-butadiene results should be considered as estimated values.

[2] The continuing calibration for Hexachloro-1,3-butadiene is outside of Pace Analytical acceptance limits. The Hexachloro-1,3-butadiene results may be biased.

Batch: 102804

[1] The initial calibrations for Dichlorodifluoromethane and Hexachloro-1,3-butadiene were outside of method control limits. These results are estimated.

Batch: 102817

[1] The initial calibrations for Dichlorodifluoromethane and Hexachloro-1,3-butadiene were outside of method control limits. These results are estimated.

Batch: 102845

[1] The continuing calibration for Bromomethane is outside of Pace Analytical acceptance limits. The Bromomethane results may be biased low.

Batch: 102850

[1] The initial calibrations for Dichlorodifluoromethane and Hexachloro-1,3-butadiene were outside of method control limits. These results are estimated.

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: NuStar Vancouver

Pace Project No.: 1280701

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### BATCH QUALIFIERS

Batch: 102852

- [1] The initial calibrations for Dichlorodifluoromethane and Hexachloro-1,3-butadiene were outside of method control limits. These results are estimated.

Batch: 102884

- [1] Dichlorodifluoromethane and Hexachloro-1,3-butadiene exceeded secondary source verification criteria for the initial calibration. The reported Dichlorodifluoromethane and Hexachloro-1,3-butadiene results should be considered an estimated value.

Batch: 102974

- [1] The initial calibrations for Dichlorodifluoromethane and Hexachloro-1,3-butadiene were outside of method control limits. These results are estimated.

### ANALYTE QUALIFIERS

- D6 The precision between the sample and sample duplicate exceeded laboratory control limits.  
H1 Analysis conducted outside the recognized method holding time.  
M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NuStar Vancouver  
Pace Project No.: 1280701

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1280701007	MW-12	RSK 175	453342		
1280701008	MW-13	RSK 175	453342		
1280701009	MW-14	RSK 175	453342		
1280701021	MW-19	RSK 175	453342		
1280701023	MGMS1-43	RSK 175	453342		
1280701025	MGMS3-40	RSK 175	453342		
1280701026	MP-1	RSK 175	453342		
1280701032	MW-24i	RSK 175	453342		
1280701034	MW-26	RSK 175	453342		
1280701001	MW-1	EPA 8260B	102845		
1280701002	MW-3	EPA 8260B	102845		
1280701003	MW-5	EPA 8260B	102845		
1280701003	MW-5	EPA 8260B	102974		
1280701004	MW-7	EPA 8260B	102845		
1280701005	MW-8	EPA 8260B	102845		
1280701006	MW-9	EPA 8260B	102845		
1280701007	MW-12	EPA 8260B	102845		
1280701007	MW-12	EPA 8260B	102927		
1280701008	MW-13	EPA 8260B	102845		
1280701008	MW-13	EPA 8260B	102927		
1280701009	MW-14	EPA 8260B	102817		
1280701010	MW-16	EPA 8260B	102845		
1280701011	S-1	EPA 8260B	102817		
1280701012	MW-18i	EPA 8260B	102845		
1280701013	MW-19i	EPA 8260B	102845		
1280701014	MW-20i	EPA 8260B	102804		
1280701015	MW-21i-40	EPA 8260B	102817		
1280701016	MW-22i	EPA 8260B	102817		
1280701017	MW-23i	EPA 8260B	102817		
1280701018	MW-21i-105	EPA 8260B	102817		
1280701019	MW-7 DUP	EPA 8260B	102804		
1280701020	MW-12 DUP	EPA 8260B	102927		
1280701021	MW-19	EPA 8260B	102751		
1280701021	MW-19	EPA 8260B	102850		
1280701022	MW-32S	EPA 8260B	102850		
1280701023	MGMS1-43	EPA 8260B	102852		
1280701024	MGMS2-40	EPA 8260B	102852		
1280701024	MGMS2-40	EPA 8260B	102884		
1280701025	MGMS3-40	EPA 8260B	102852		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NuStar Vancouver  
Pace Project No.: 1280701

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1280701025	MGMS3-40	EPA 8260B	102884		
1280701026	MP-1	EPA 8260B	102817		
1280701026	MP-1	EPA 8260B	102852		
1280701027	EX-1	EPA 8260B	102751		
1280701027	EX-1	EPA 8260B	102850		
1280701028	MGMS1-60	EPA 8260B	102850		
1280701029	MGMS2-60	EPA 8260B	102850		
1280701030	MGMS3-60	EPA 8260B	102850		
1280701031	MW-19 DUP	EPA 8260B	102751		
1280701031	MW-19 DUP	EPA 8260B	102850		
1280701032	MW-24i	EPA 8260B	102751		
1280701033	MW-25i	EPA 8260B	102817		
1280701033	MW-25i	EPA 8260B	102852		
1280701034	MW-26	EPA 8260B	102817		
1280701034	MW-26	EPA 8260B	102852		
1280701035	TRIP BLANK	EPA 8260B	102850		
1280701036	Field Blank	EPA 8260B	102751		
1280701037	Equipment Blank	EPA 8260B	102850		
1280701038	MW 24D	EPA 8260B	102751		
1280701039	S-2	EPA 8260B	102817		
1280701007	MW-12	SM 5310B	70924		
1280701008	MW-13	SM 5310B	70924		
1280701009	MW-14	SM 5310B	70924		
1280701021	MW-19	SM 5310B	70924		
1280701023	MGMS1-43	SM 5310B	70924		
1280701025	MGMS3-40	SM 5310B	70924		
1280701026	MP-1	SM 5310B	70924		
1280701032	MW-24i	SM 5310B	70924		
1280701034	MW-26	SM 5310B	70924		

### REPORT OF LABORATORY ANALYSIS

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**CHAIN-OF-CUSTODY / Analytical Request Document**  
 The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 2 of B4

**Section A**  
 Required Client Information:  
 Company: Apex Companies LLC  
 Address: 3015 SW 1st Ave  
 Email To: Portland.OR 97201  
 Phone: S.Salisbury@apex.com  
 Phone: 503-924-4704  
 Requested Due Date/TAT: 1/25

**Section B**  
 Required Project Information:  
 Report To: Stephanie Bosze - Salisbury  
 Copy To: \_\_\_\_\_  
 Project Name: Mustar Vaporcover  
 Project Number: 32000 1126-18  
 Purchase Order No.: \_\_\_\_\_

**Section C**  
 Invoice Information:  
 Attention: \_\_\_\_\_  
 Company Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Pace Quote Reference: \_\_\_\_\_  
 Pace Project Manager: \_\_\_\_\_  
 Pace Profile #: \_\_\_\_\_

**REGULATORY AGENCY**  
 NPDES \_\_\_\_\_  
 UST \_\_\_\_\_  
 Site Location STATE: \_\_\_\_\_  
 COUNTY: \_\_\_\_\_  
 GROUND WATER \_\_\_\_\_  
 RCRA \_\_\_\_\_  
 DRINKING WATER \_\_\_\_\_  
 OTHER \_\_\_\_\_

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW PRODUCT P SOIL/SOLID SL OIL OIL AIR AIR OTHER OT TISSUE TS	SAMPLE TYPE (S=GRAB C=COMP)	COLLECTED		# OF CONTAINERS	PRESERVATIVES							Analysis Test Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
			DATE	TIME		H2SO4	HNO3	HCl	NaOH	Na2S2O8	Methanol	Other				
S-1			12-13	0917	1350											1280701
MW-181			12-14	0447	0252											011
MW-191			12-14	1129	1238											012
MW-201			12-14	0902	1220											013
MW-211-40			12-13	1604	1427											014
MW-221			12-13	1347	1318											015
MW-231			12-13	1039	1428											016
MW-211-105			12-13	1444	1168											017
MW-7 DUP			12-14	1337	1463											018
MW-12 DUP			12-14	1512	1655											019

**ADDITIONAL COMMENTS**  
Ind my  
12/14/09  
Pace  
12/16/10 15  
1.4  
Y  
N  
N

**RELINQUISHED BY / AFFILIATION**  
 DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
 ACCEPTED BY / AFFILIATION: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER: Jake Munsey  
 SIGNATURE OF SAMPLER: Jake Munsey  
 DATE Signed (MM/DD/YY): 12/19/16

**Temp in C**  
 Received on Ice (Y/N)  
 Custody Sealed (Y/N)  
 Cooler (Y/N)  
 Samples Intact (Y/N)



# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

**Section A**  
 Required Client Information:  
 Company: Apex Companies, LLC  
 Address: 3015 SW 1st Ave  
 Email To: Stephanie.Bosze@apexco.com  
 Phone: 503-924-4704  
 Requested Due Date/TAT: 1925

**Section B**  
 Required Project Information:  
 Report To: Stephanie Bosze-Salisbury  
 Copy To: \_\_\_\_\_  
 Purchase Order No.: \_\_\_\_\_  
 Project Name: Justak Vancouver  
 Project Number: 32000 1126-18

**Section C**  
 Invoice Information:  
 Attention: \_\_\_\_\_  
 Company Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Pace Quote Reference: \_\_\_\_\_  
 Pace Project Manager: \_\_\_\_\_  
 Pace Profile #: \_\_\_\_\_

**REGULATORY AGENCY**  
 NPDES \_\_\_\_\_ GROUND WATER \_\_\_\_\_ DRINKING WATER \_\_\_\_\_  
 UST \_\_\_\_\_ RCRA \_\_\_\_\_ OTHER \_\_\_\_\_

**Site Location**  
 STATE: \_\_\_\_\_ COUNTY: \_\_\_\_\_

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW PRODUCT P SOIL/SOLID SL OIL OL WIPE WIP WATER WT OTHER OT TISSUE TS	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		# OF CONTAINERS	PRESERVATIVES								Analysis Test Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
			DATE	TIME		DATE	TIME	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>				
MW-19			12-12	1317	7	X	X	X	X	X	X	X	X	X	X	1280701	021 022
MW-325			12-14	1211	3	X	X	X	X	X	X	X	X	X	X		022 021
MGM S1-43			12-16	144	7	X	X	X	X	X	X	X	X	X	X		023 022
MGM S2-40			12-16	1254	3	X	X	X	X	X	X	X	X	X	X		024 023
MGM S3-40			12-16	1019	7	X	X	X	X	X	X	X	X	X	X		025 024
MP-1			12-13	0814	3	X	X	X	X	X	X	X	X	X	X		026 025
EX-1			12-12	1407	3	X	X	X	X	X	X	X	X	X	X		027 026
MGM S1-60			12-16	1214	3	X	X	X	X	X	X	X	X	X	X		028 027
MGM S2-60			12-16	1314	3	X	X	X	X	X	X	X	X	X	X		029 028
MGM S3-60			12-16	1044	3	X	X	X	X	X	X	X	X	X	X		030 029

**ADDITIONAL COMMENTS**  
Stephanie Bosze 12/16/16

**RELINQUISHED BY / AFFILIATION**  
Stephanie Bosze 12/16/16

**ACCEPTED BY / AFFILIATION**  
Stephanie Bosze 12/16/16

**DATE**  
12-16-2016

**TIME**  
10:15

**TEMP IN C**  
1.4

**RECEIVED ON ICE (Y/N)**  
Y

**CUSTODY SEALED (Y/N)**  
Y

**COOLER (Y/N)**  
Y

**SAMPLES INTACT (Y/N)**  
Y

**DATE SIGNED (MM/DD/YY)**  
12/16/16

**SIGNATURE OF SAMPLER:**  
Stephanie Bosze

**PRINT NAME OF SAMPLER:**  
Stephanie Bosze

**SIGNATURE OF SAMPLER:**  
Stephanie Bosze

**DATE SIGNED (MM/DD/YY):**  
12/16/16



**Sample Condition Upon Receipt**

Client Name: Apex Project #: \_\_\_\_\_

**WO#: 1280701**



1280701

Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  OnTrac  Other: \_\_\_\_\_

Tracking Number: 8107 8807 7803  
7779 8967 7290 - no seals

Custody Seal on Cooler/Box Present?  Yes  No Seals Intact?  Yes  No  
 Optional: Proj. Due Date: \_\_\_\_\_ Proj. Name: \_\_\_\_\_

Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_ Temp Blank?  Yes  No

Thermom. Used:  DA1434  DA2285 Type of Ice:  Wet  Blue  Dry Ice  None  Samples on ice, cooling process has begun

Cooler Temp Read(°C): 0.8/1.8 Cooler Temp Corrected(°C): 1.4/2.4 Biological Tissue Frozen?  Yes  No  N/A  
 Temp should be above freezing to 6°C Correction Factor: +0.6 Date and Initials of Person Examining Contents: [Signature] 12/20/16

Chain of Custody Present?	Yes	No	N/A	Comments:
Chain of Custody Filled Out?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. No sample containers labeled as (22016) 49
Chain of Custody Relinquished?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. MW-12 was received, SR will not 200 in this sample for now as SR
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. except page 4 of 4. will select 3 containers for MW-12
Samples Arrived within Hold Time?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Dup. All dates one time match the COC for both samples.
Short Hold Time Analysis (<72 hr)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.
Rush Turn Around Time Requested?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6.
Sufficient Volume?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. No TAT on COC
Correct Containers Used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. Sample -007 has 10 containers total.
-Pace Containers Used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. Sample -022 has 6 containers total. Sample -034 has 4 containers total.
Containers Intact?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10. Sample -024 was frozen and one container was broken at receipt.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	12. Sample 26 has "EX" on the labels. 13. Sample -03 has one container w/ no info. It was received in the same bag as sample -03.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>				
All containers needing acid/base preservation have been checked?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Initial when completed: _____ Lot # of added preservative: _____
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>12 Cyanide)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	14. 3 40ml vials (HCL) were received labeled as Field Blanks 1, 12/12/16, w/ time of 1330 - NOT on COC.
Trip Blank Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15. Sample -002 has a time of 1119
Trip Blank Custody Seals Present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pace Trip Blank Lot # (if purchased): _____				

**CLIENT NOTIFICATION/RESOLUTION**

Field Data Required?  Yes  No

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/Resolution: SR log corrected - SMF  
(11) Samples 1-6 will be logged in for HPLC until further clarification. The same for sample 10.

Project Manager Review: Scott Jones

Date: 12/21/16

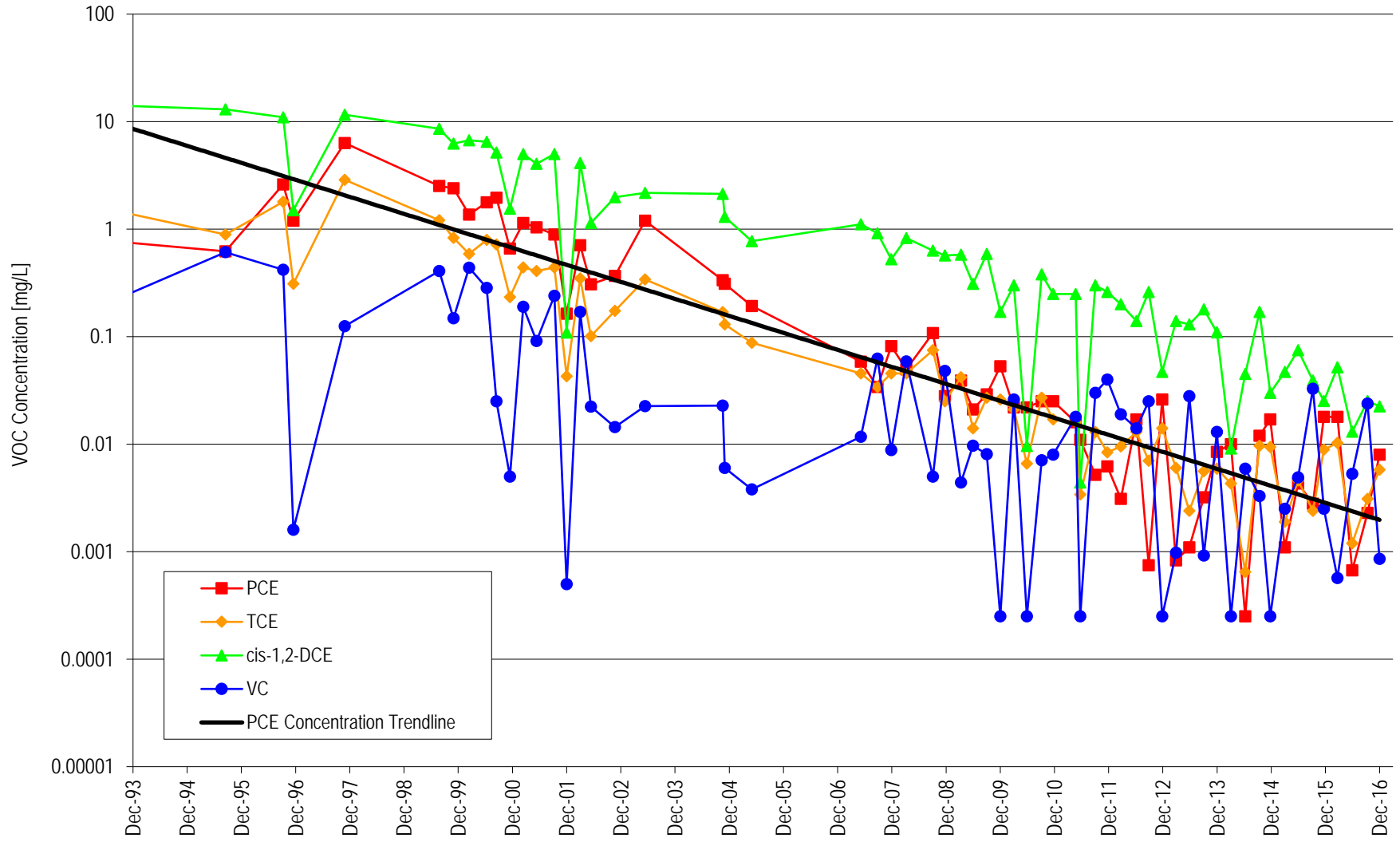
Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***Appendix D***

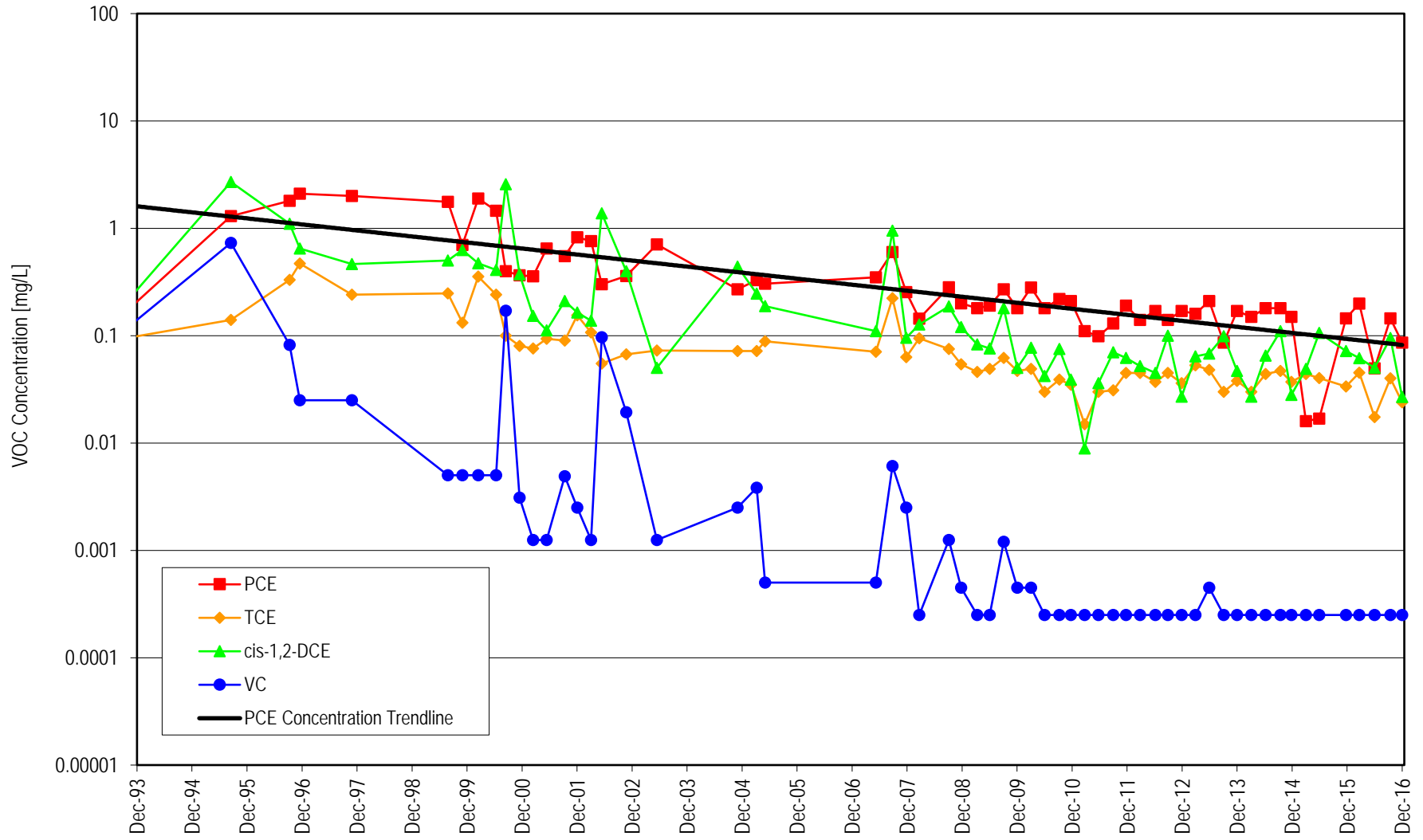
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**Concentration Trend Plots**

VOC Concentrations in MW-1

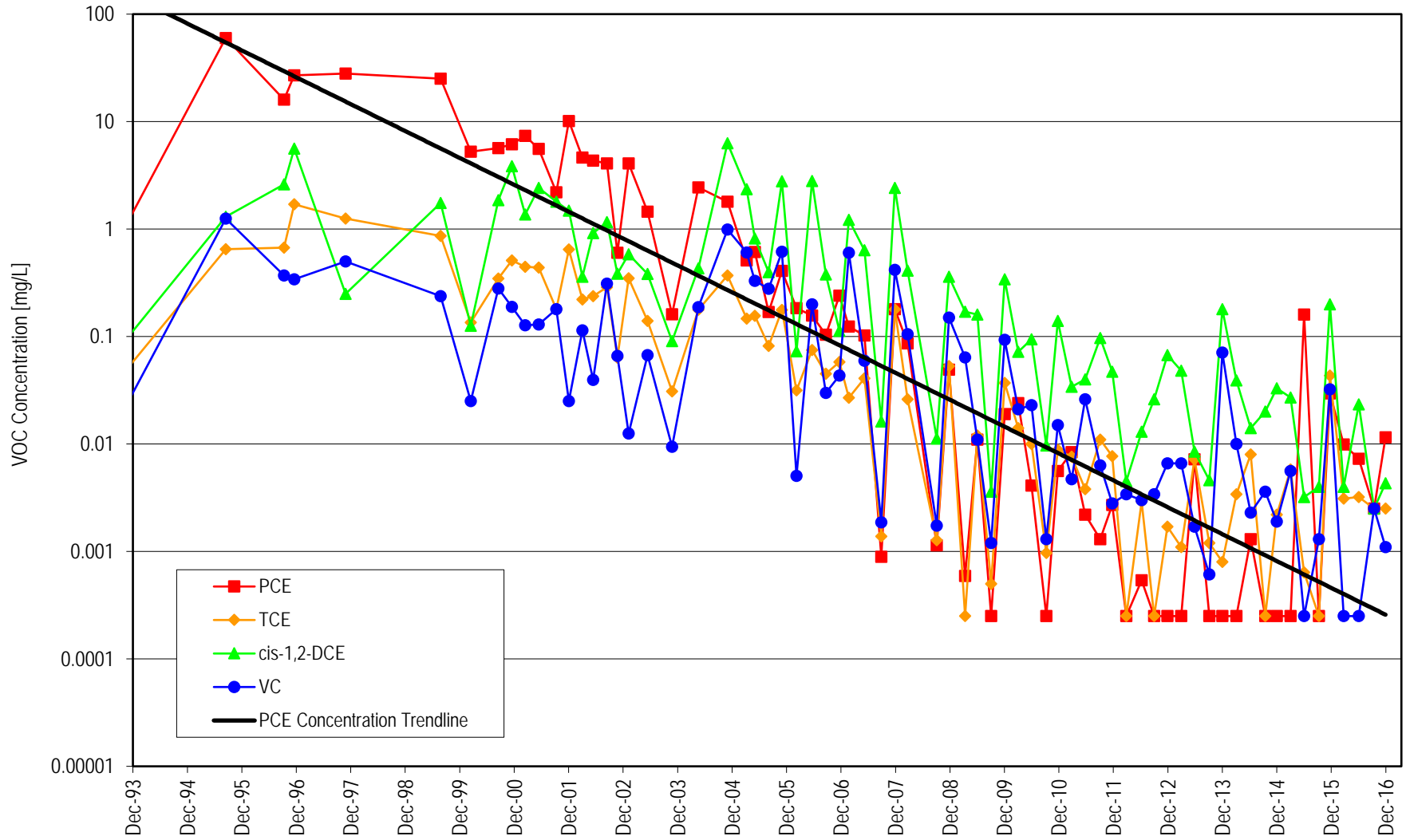


VOC Concentrations in MW-3

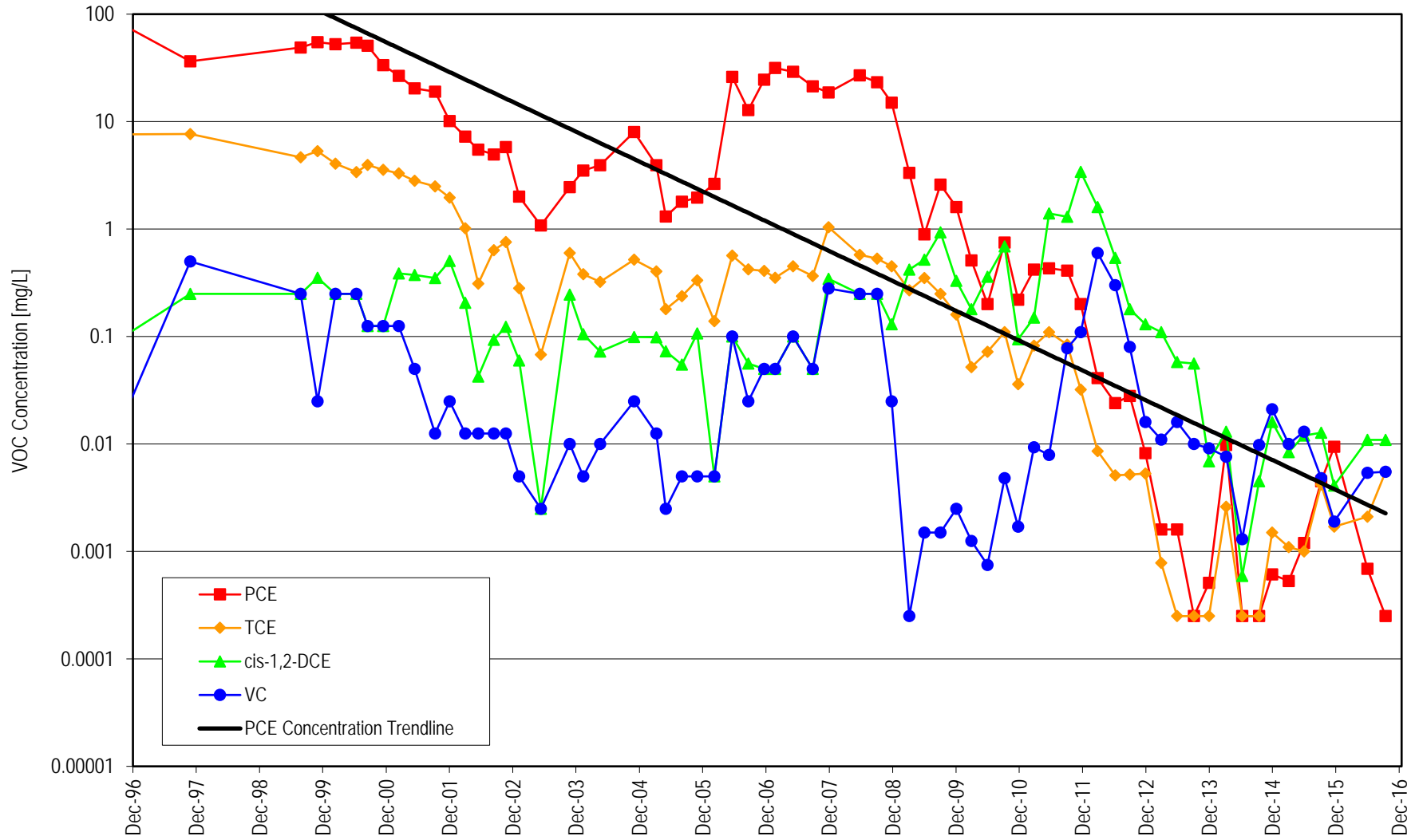




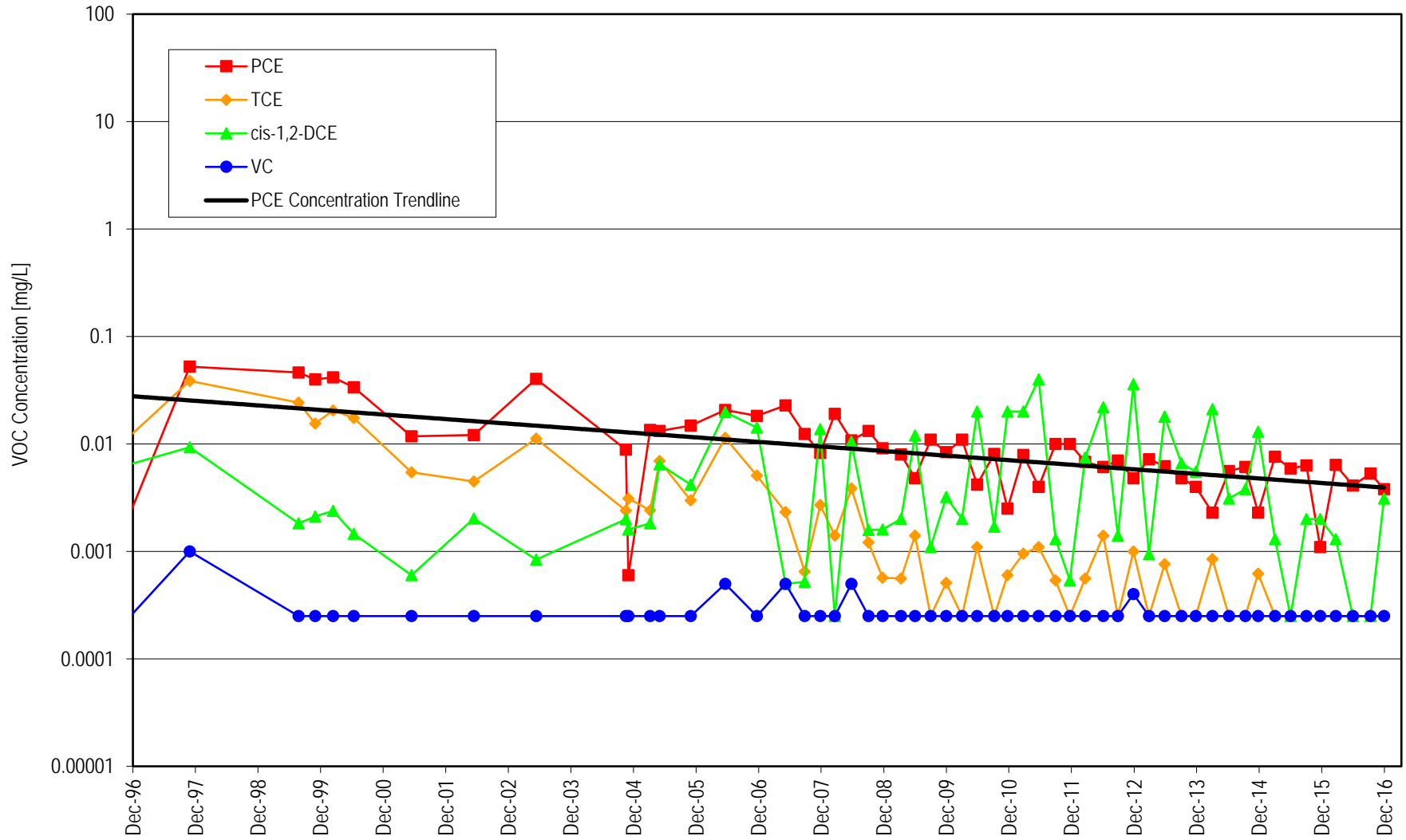
VOC Concentrations in MW-5



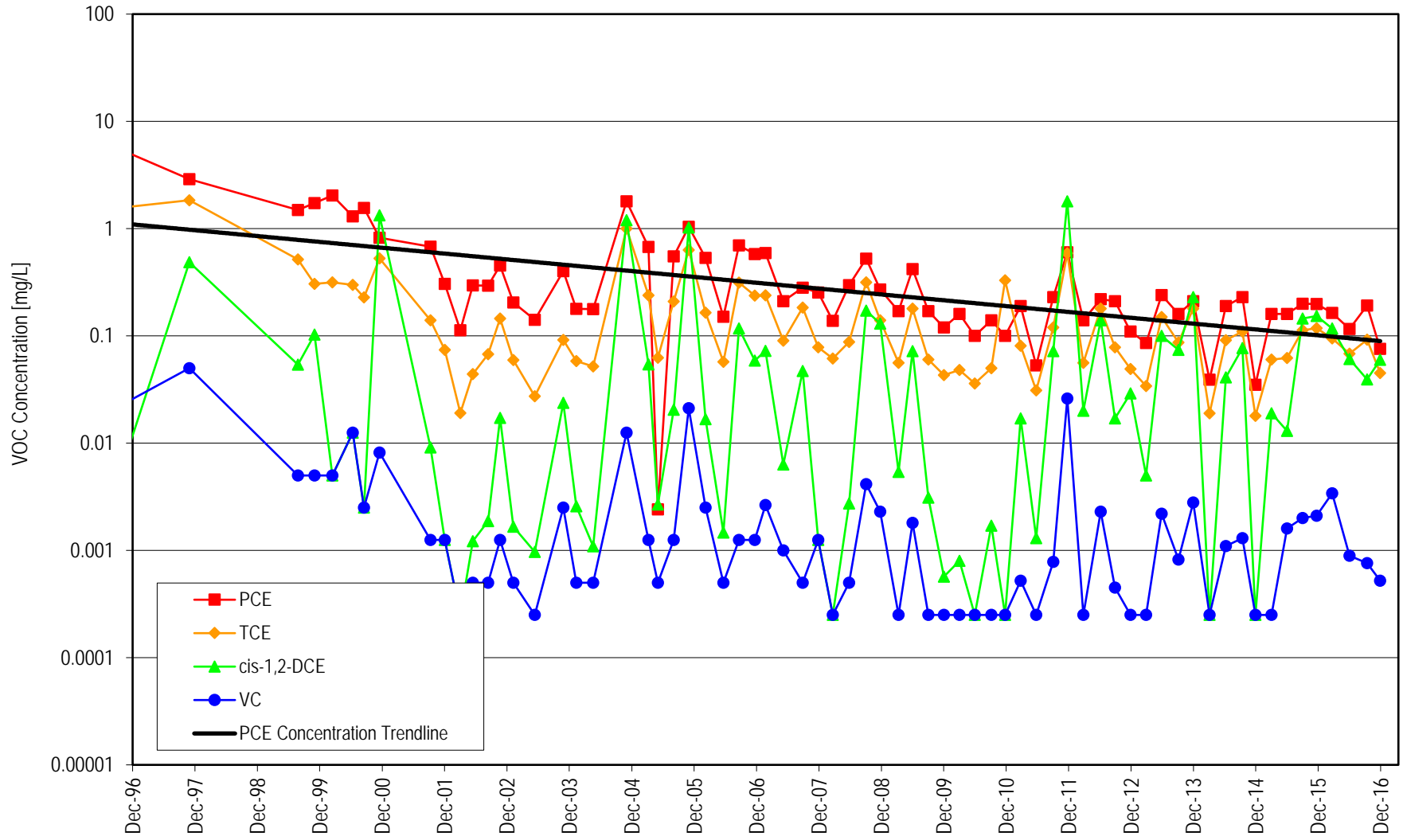
VOC Concentrations in MW-7



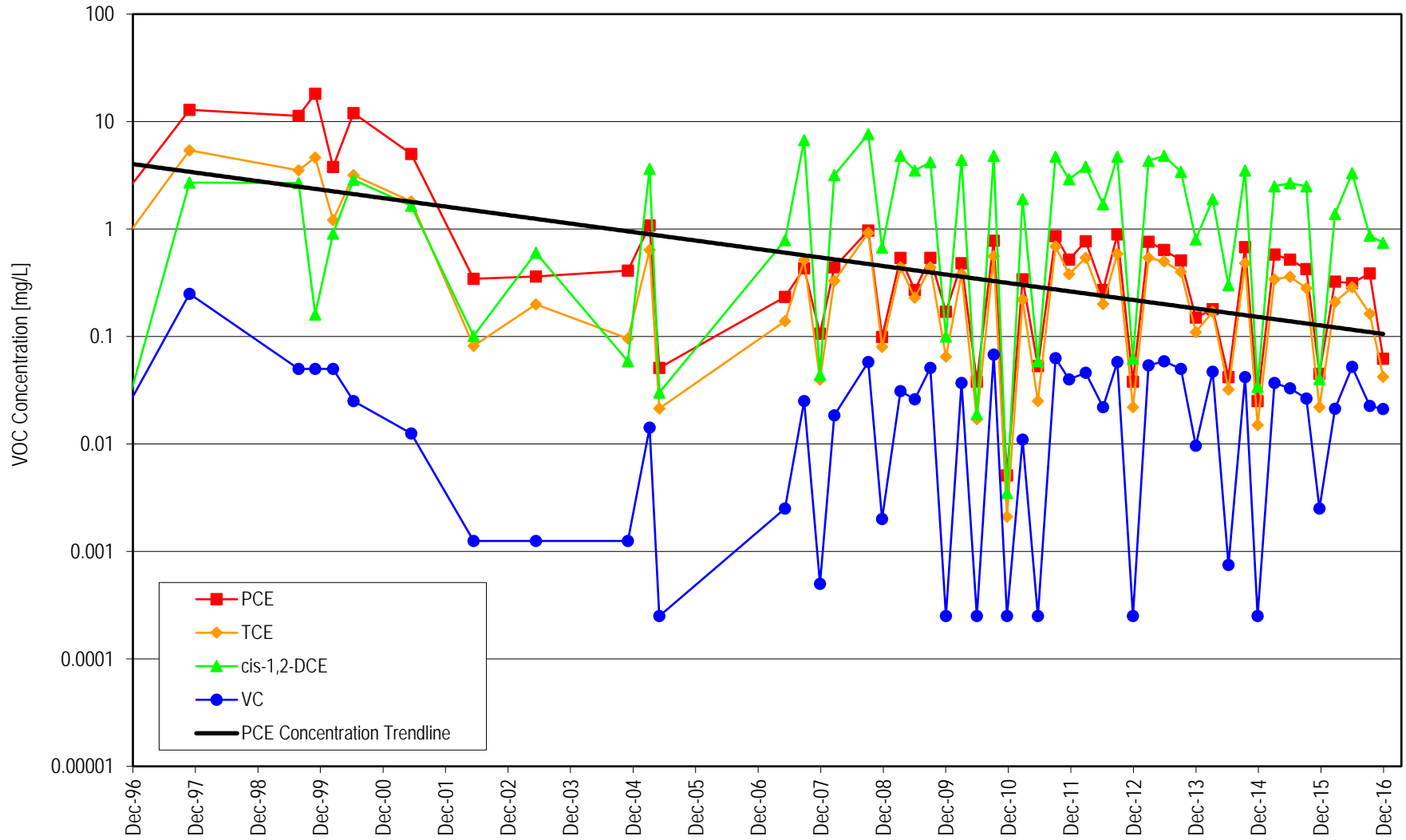
VOC Concentrations in MW-8



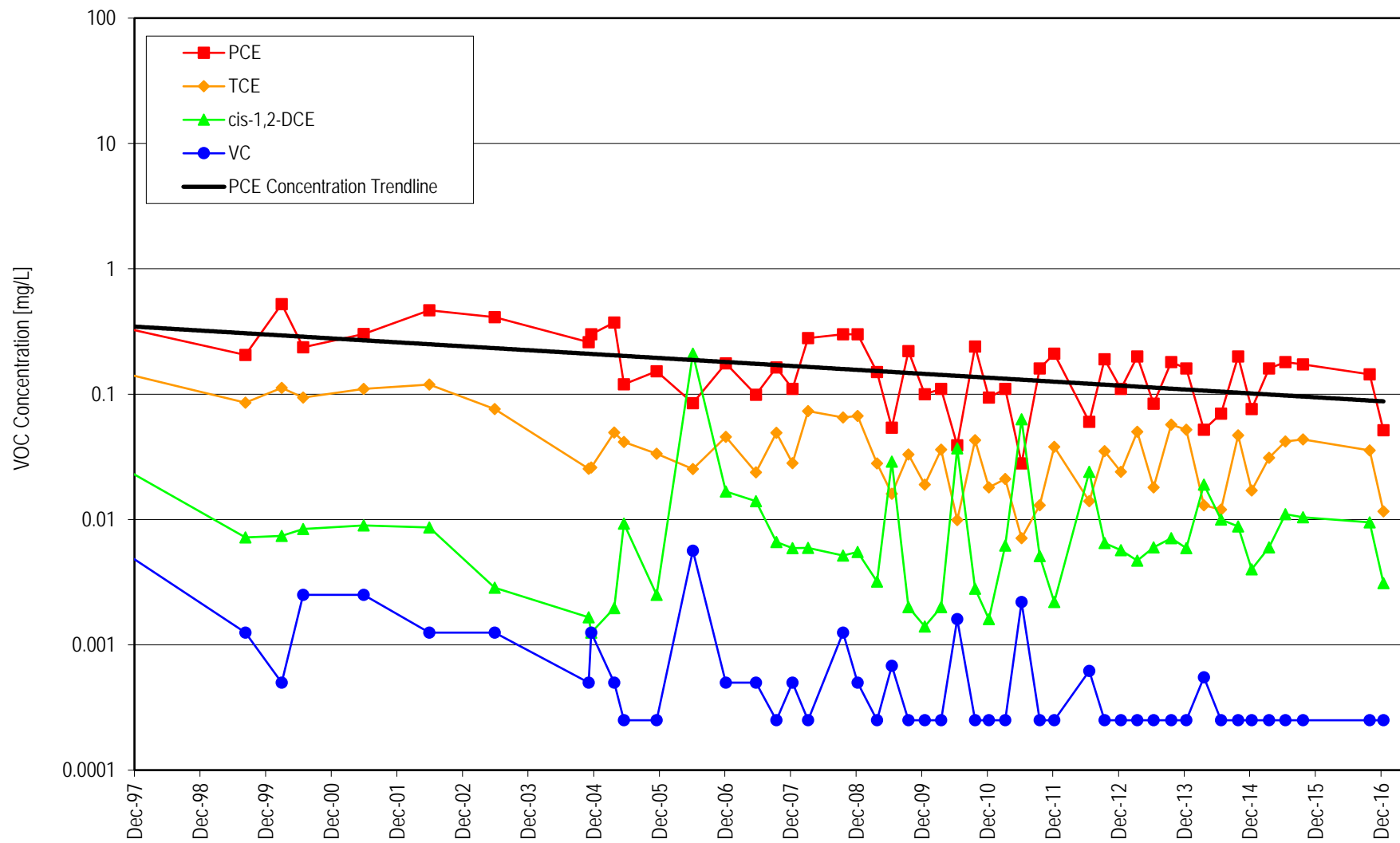
VOC Concentrations in MW-9



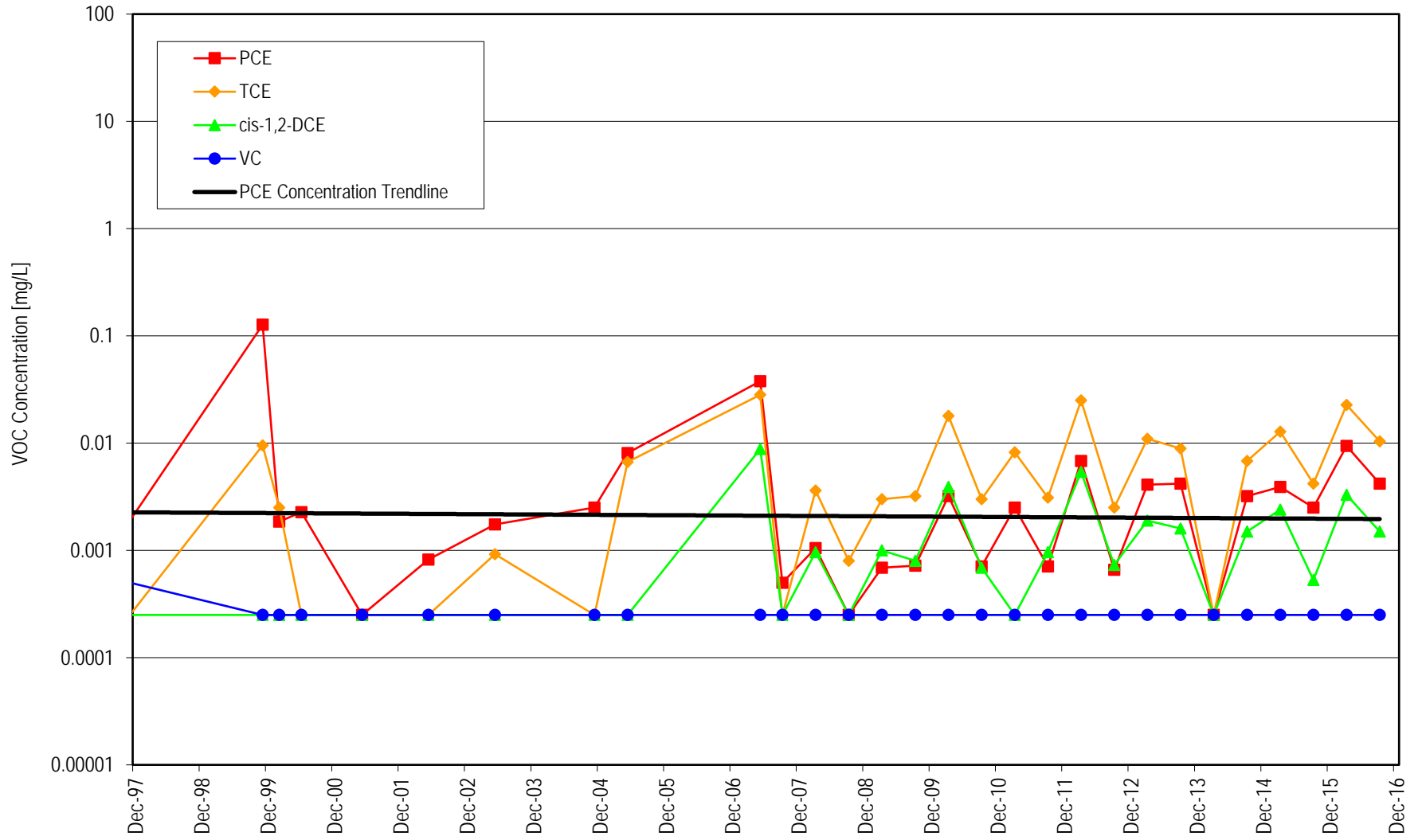
VOC Concentrations in MW-12



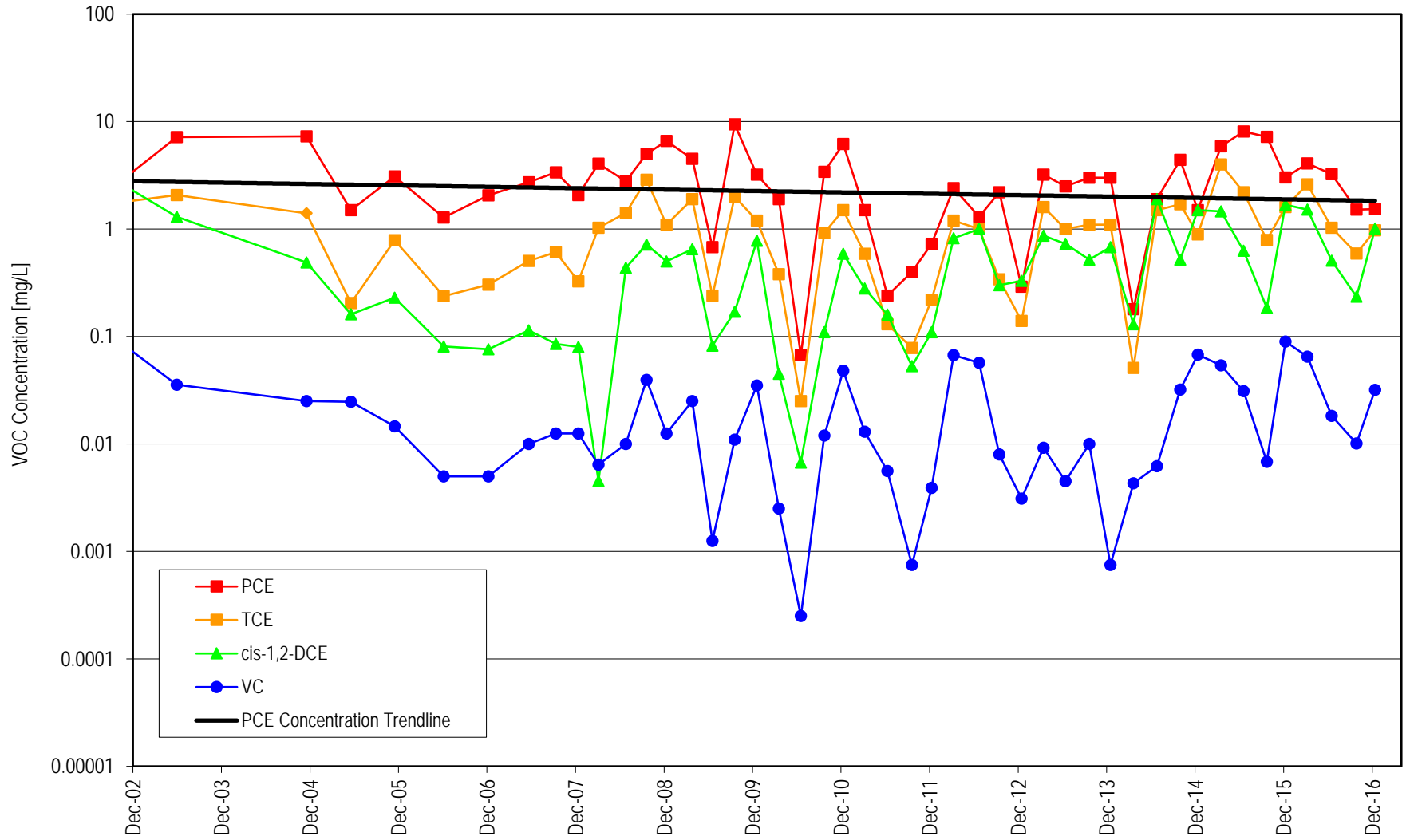
VOC Concentrations in MW-16



VOC Concentrations in MW-17

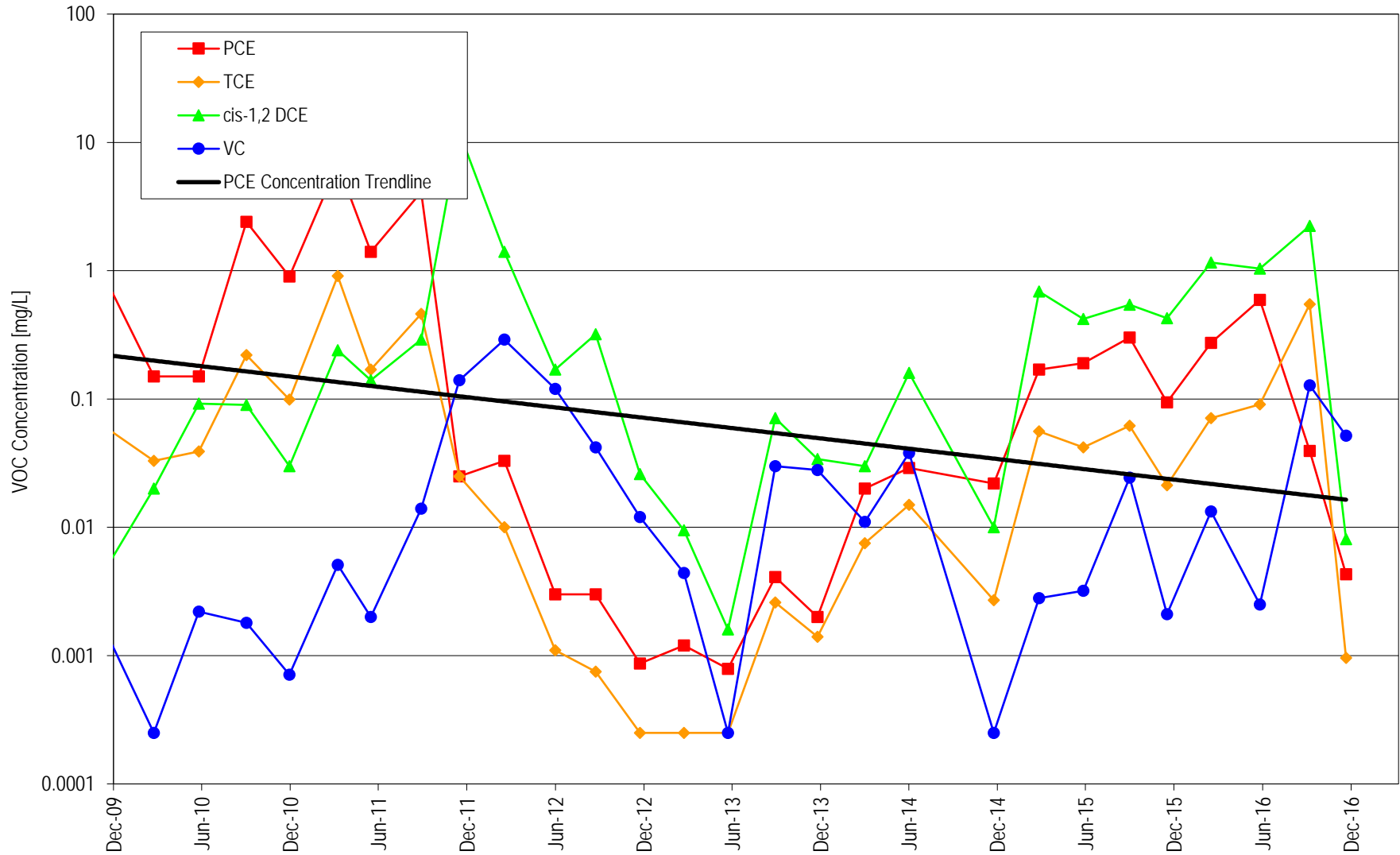


VOC Concentrations in MW-19

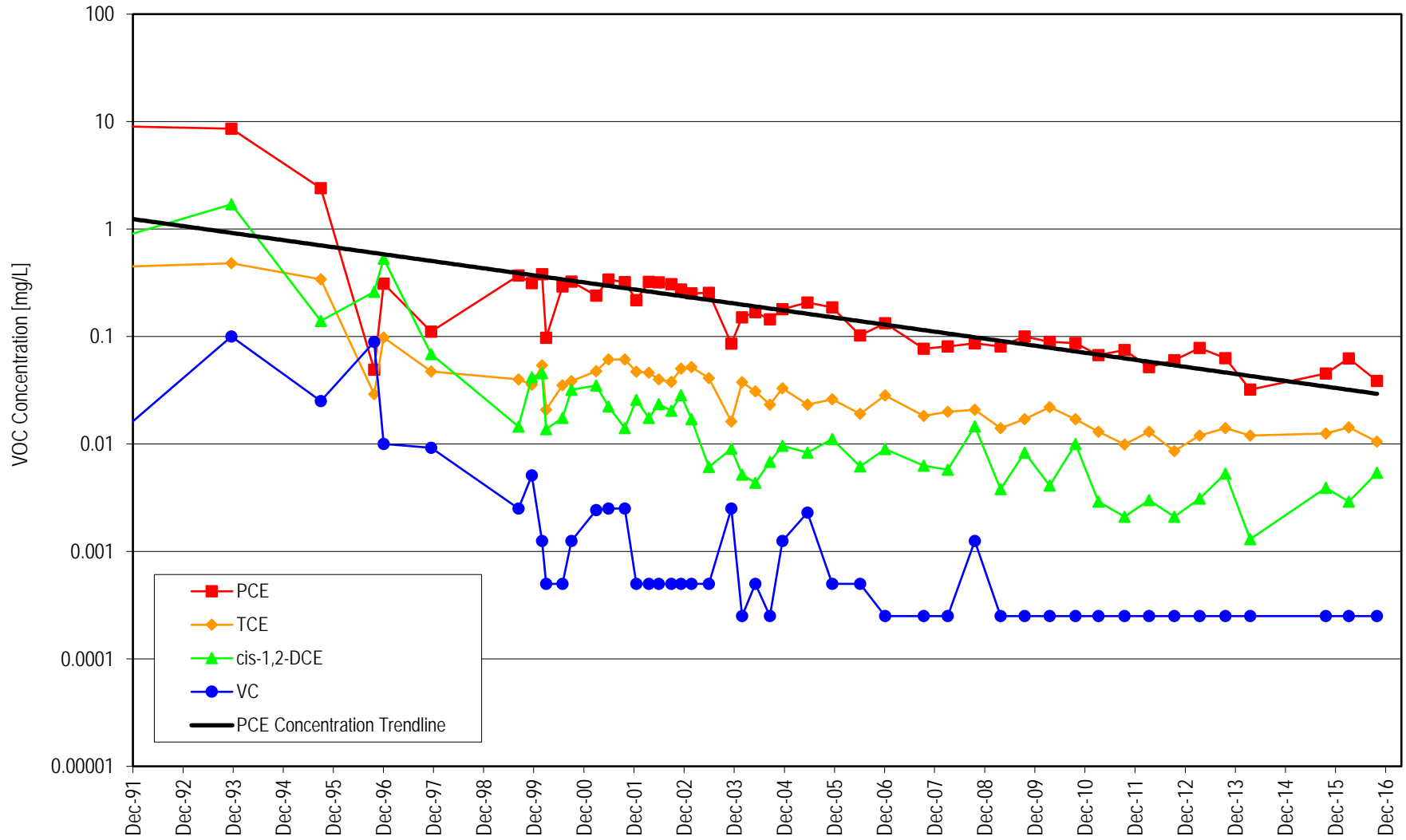




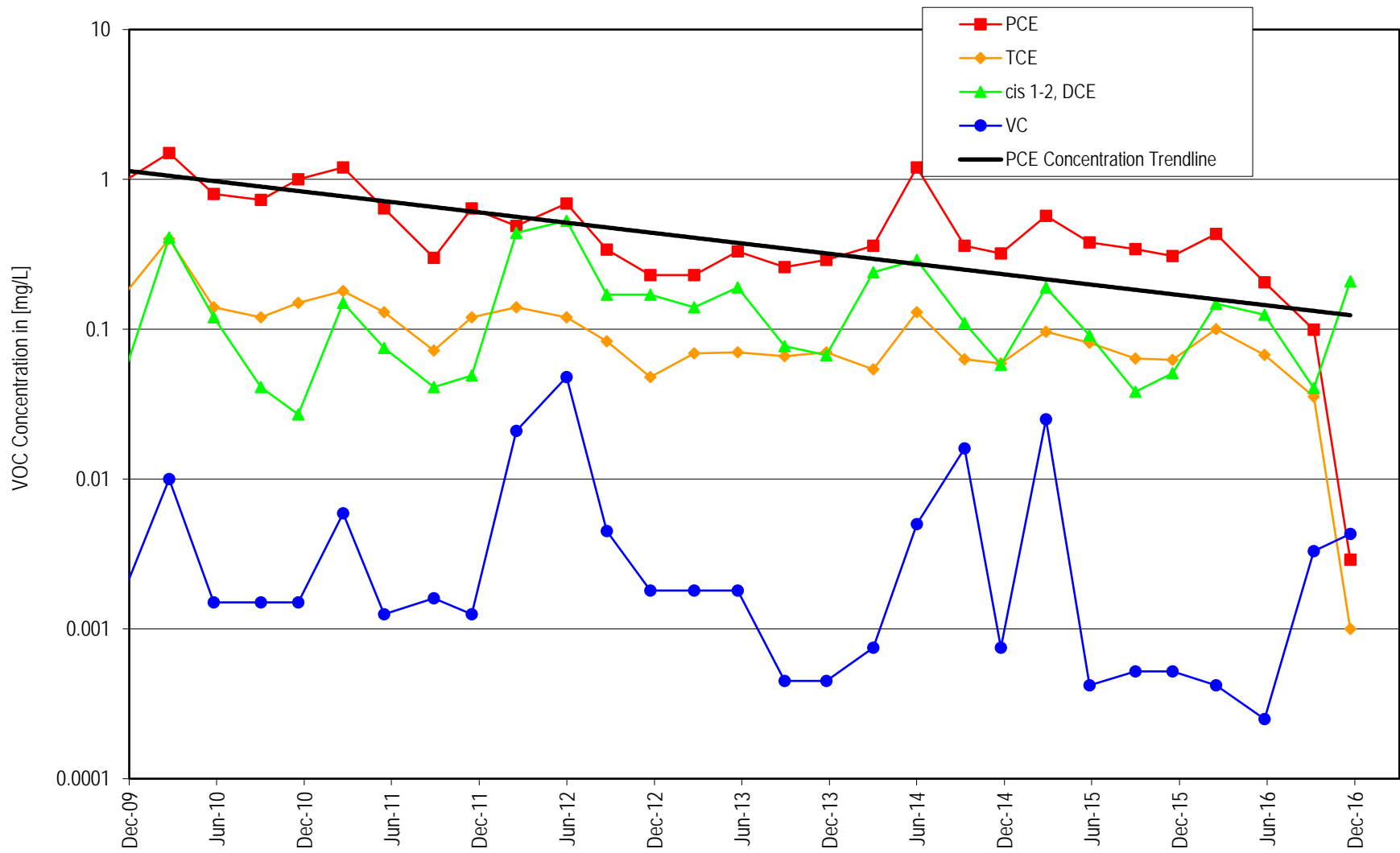
### VOC Concentrations in EX



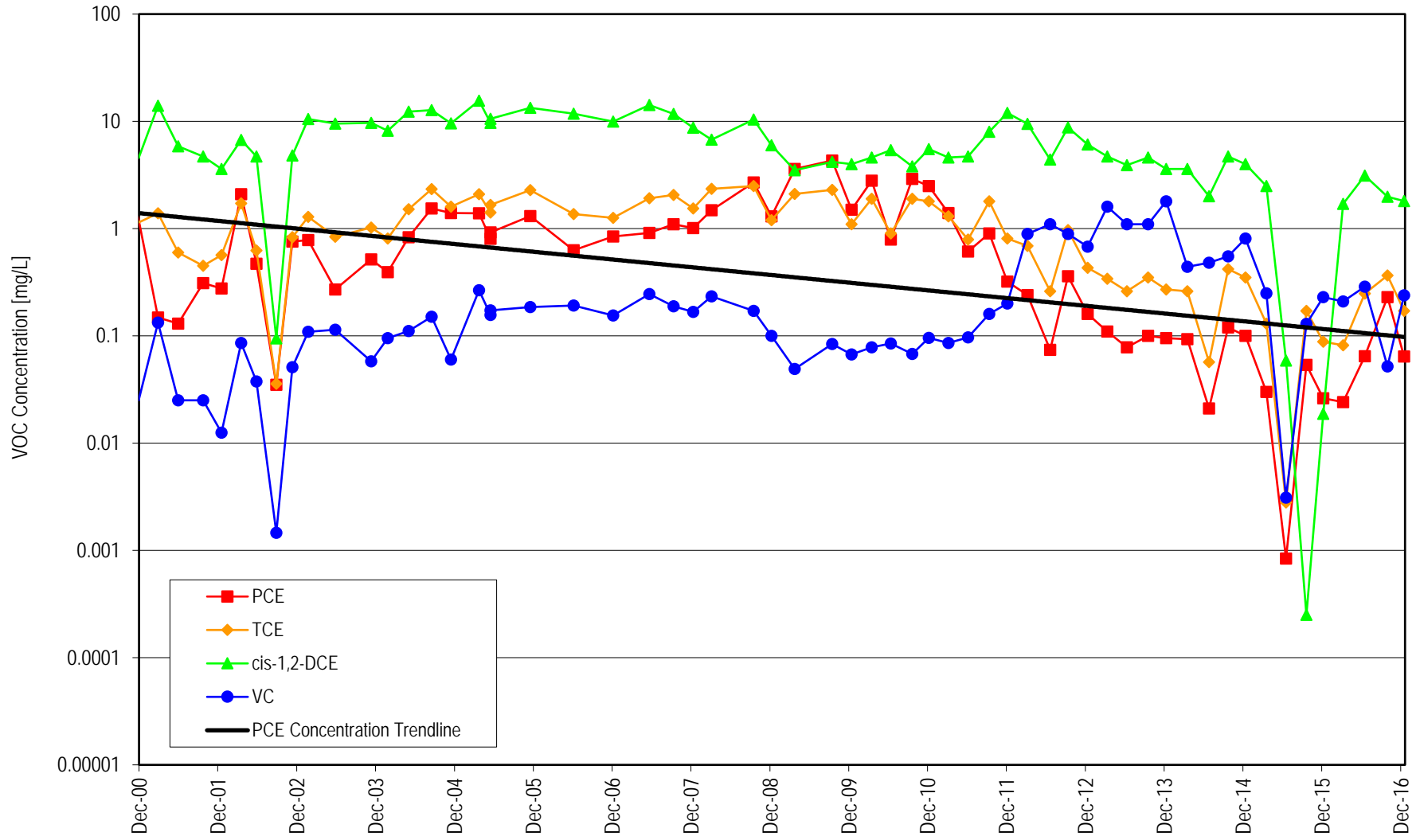
VOC Concentrations in EW-1



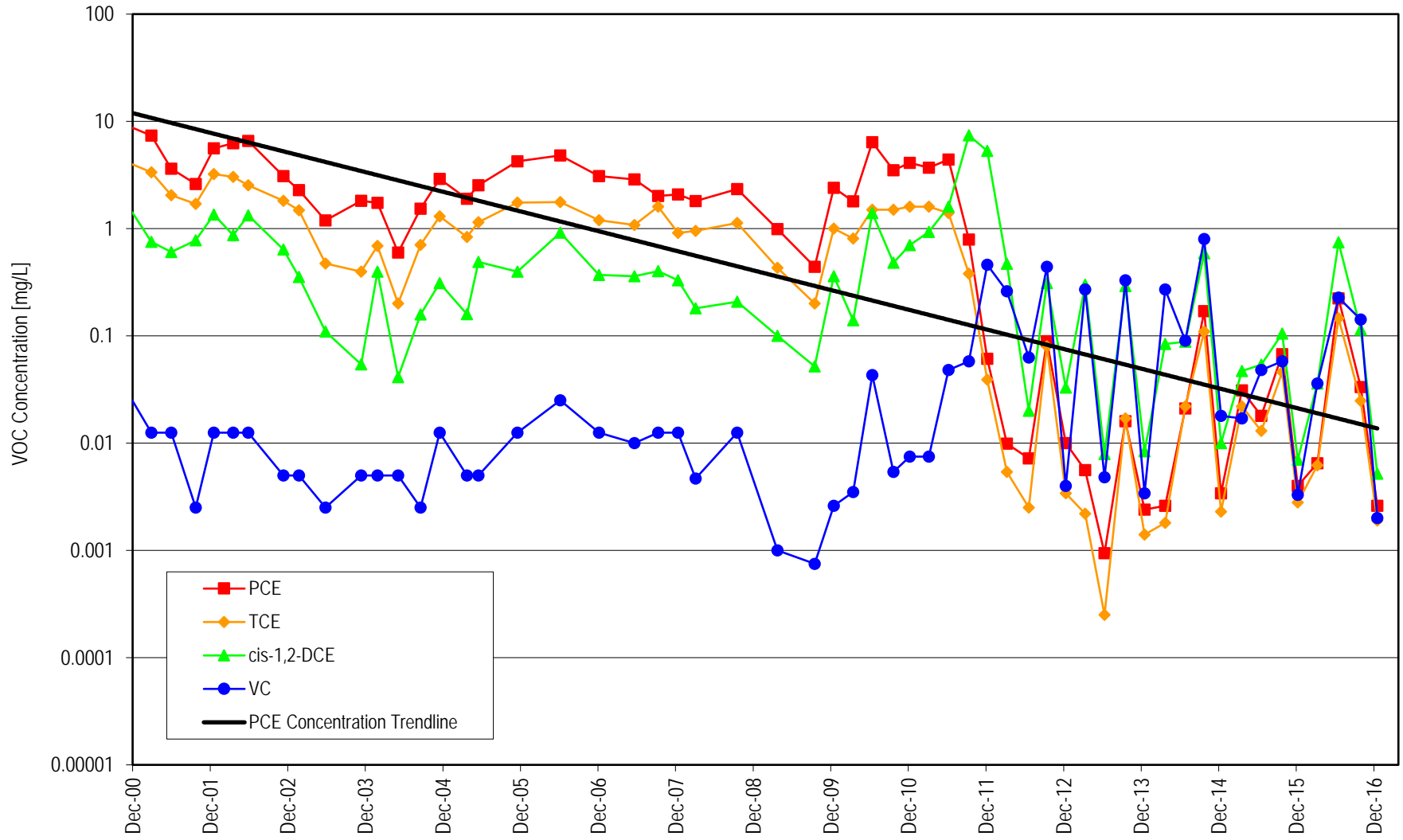
VOC Concentrations in MP-1



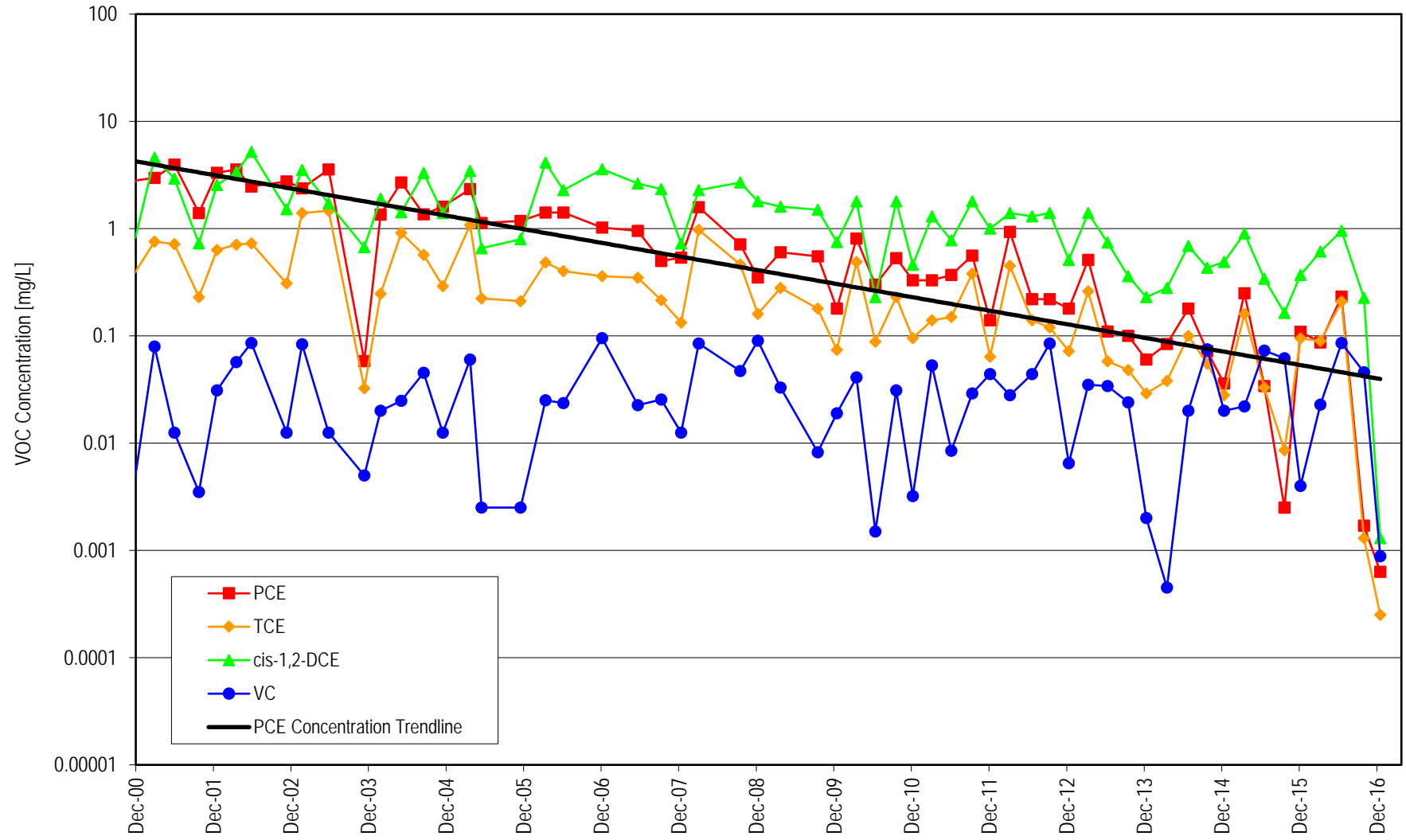
VOC Concentrations in MGMS1-43



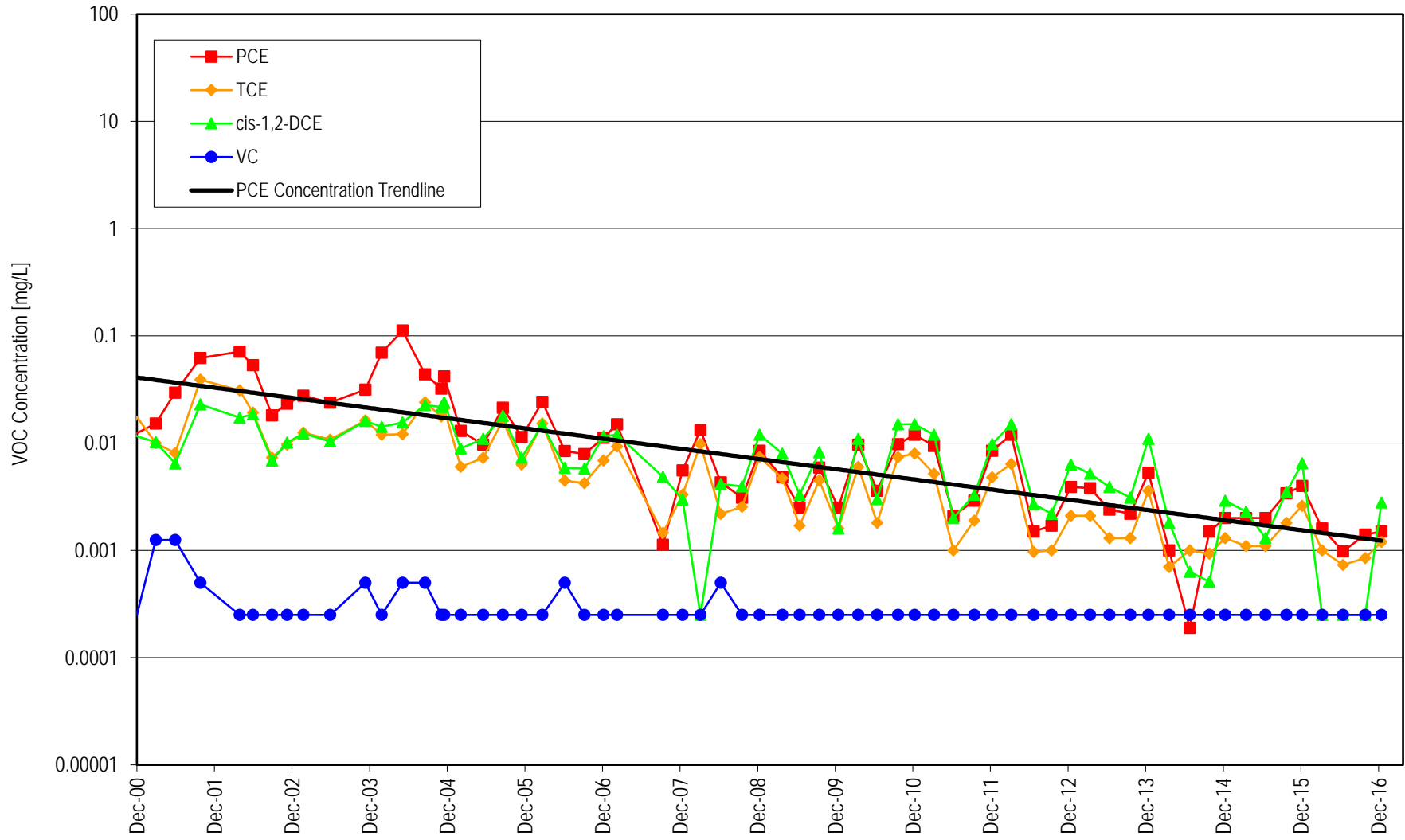
VOC Concentrations in MGMTS2-40



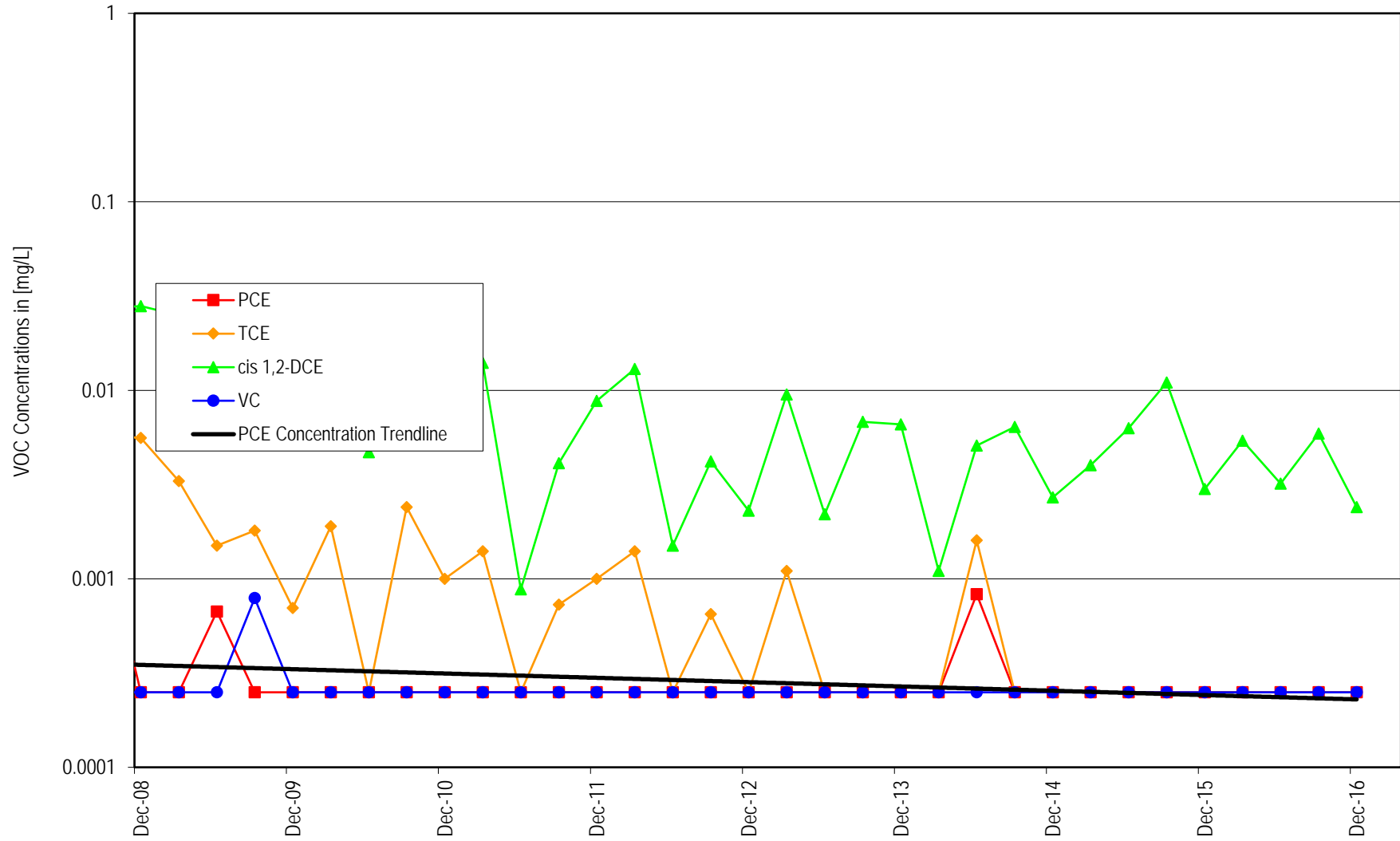
VOC Concentrations in MGMTS3-40



### VOC Concentrations in MW-18i

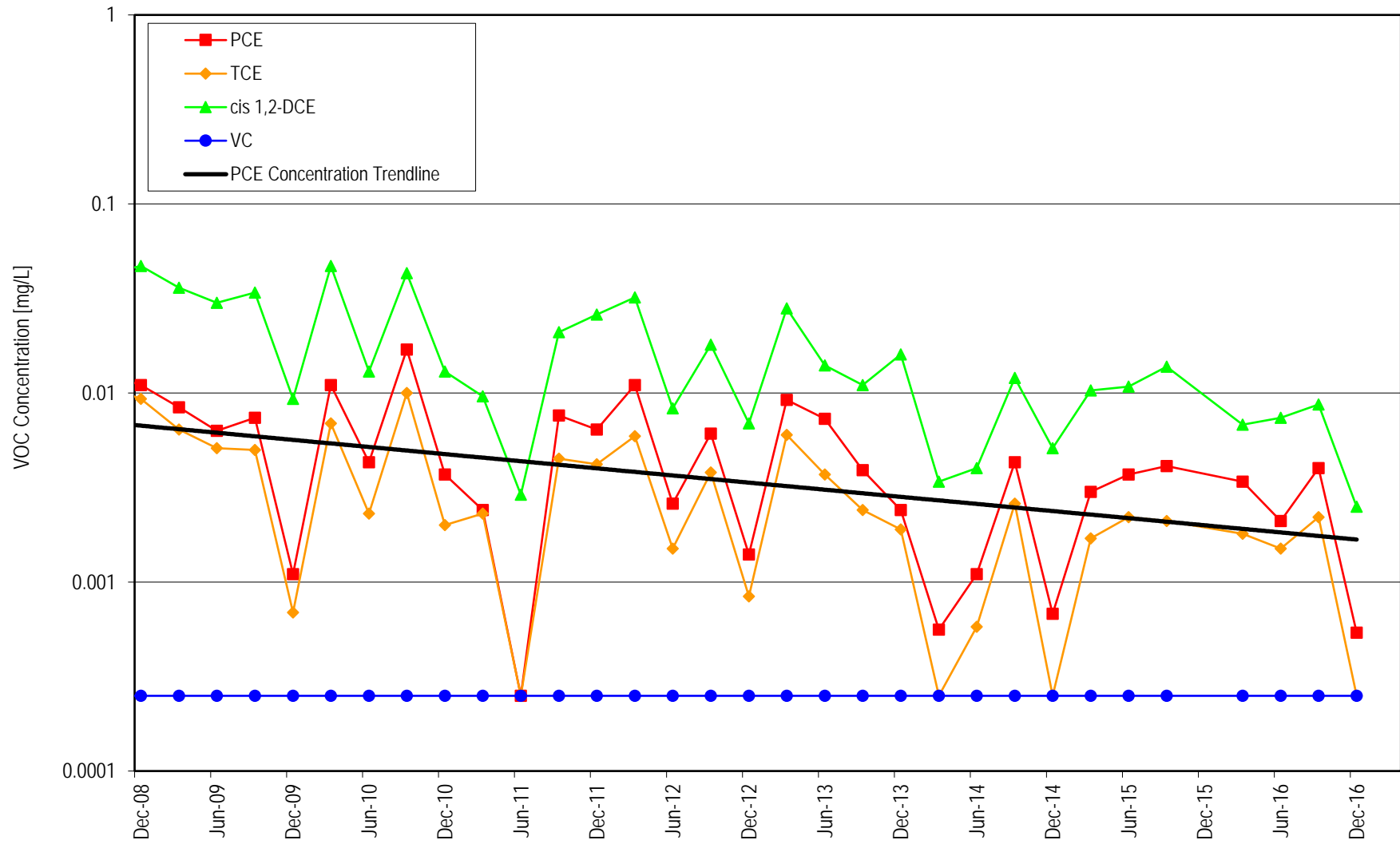


### VOC Concentrations in MW-19i

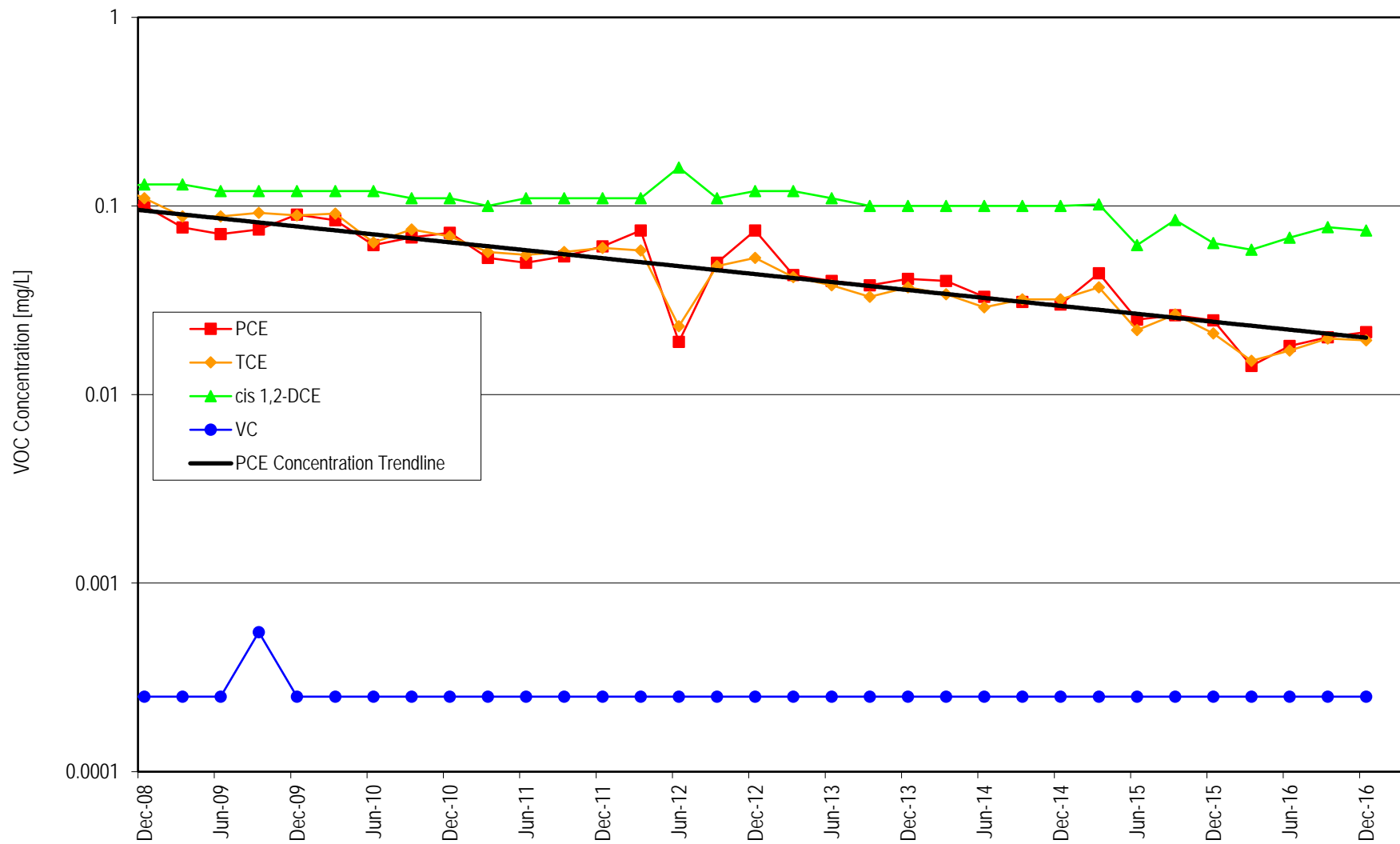




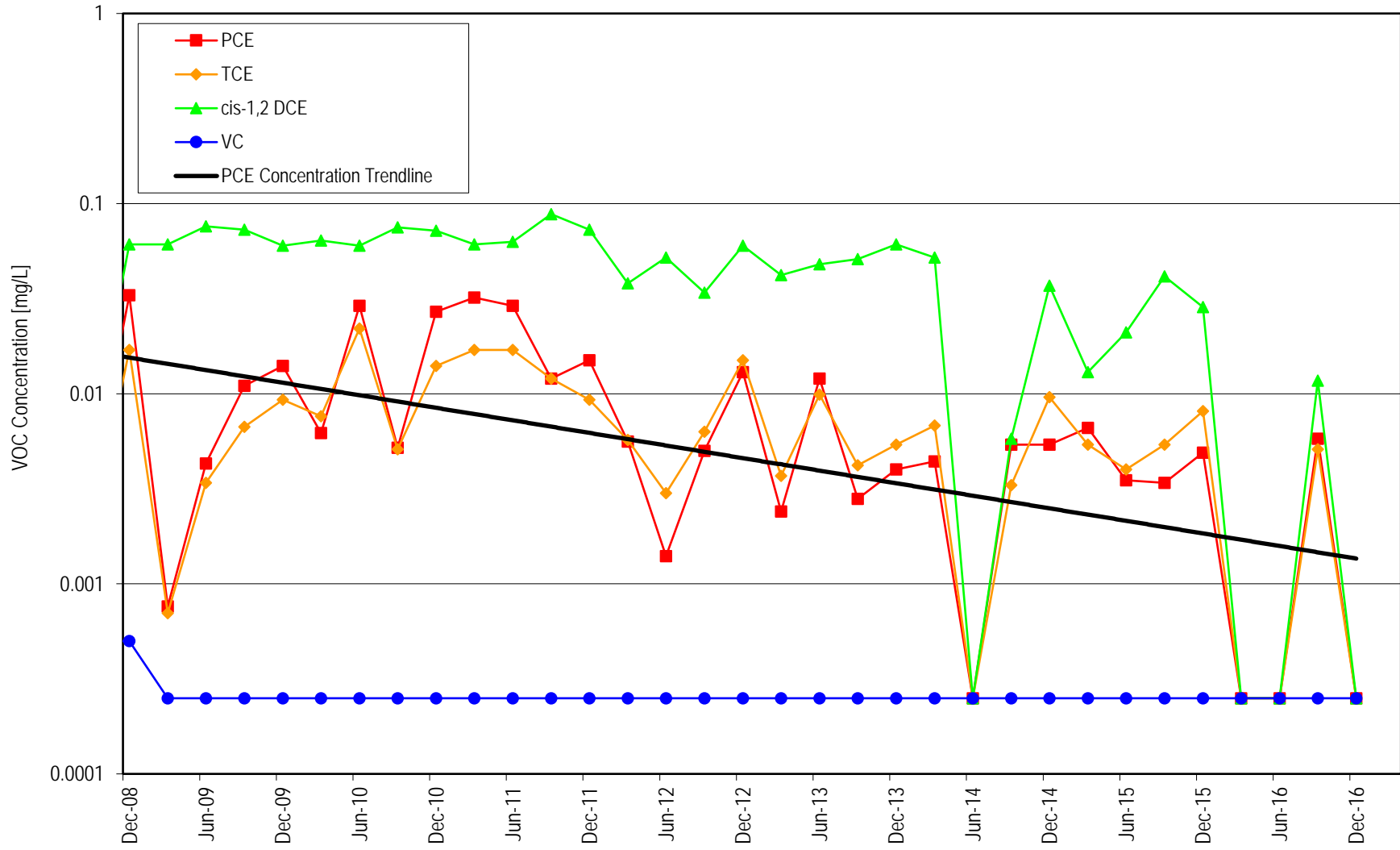
VOC Concentrations in MW-20i



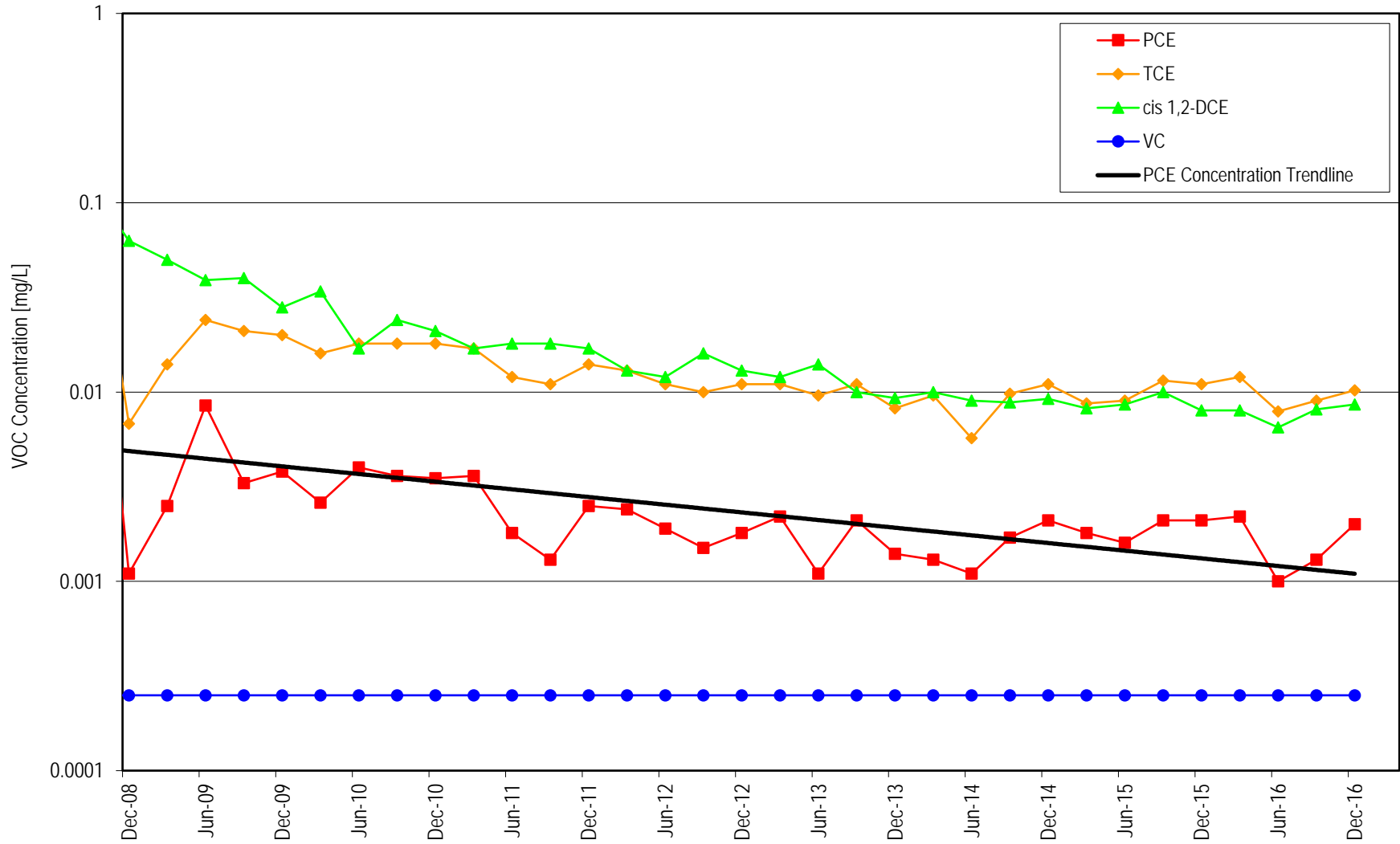
VOC Concentrations in MW-21i-40



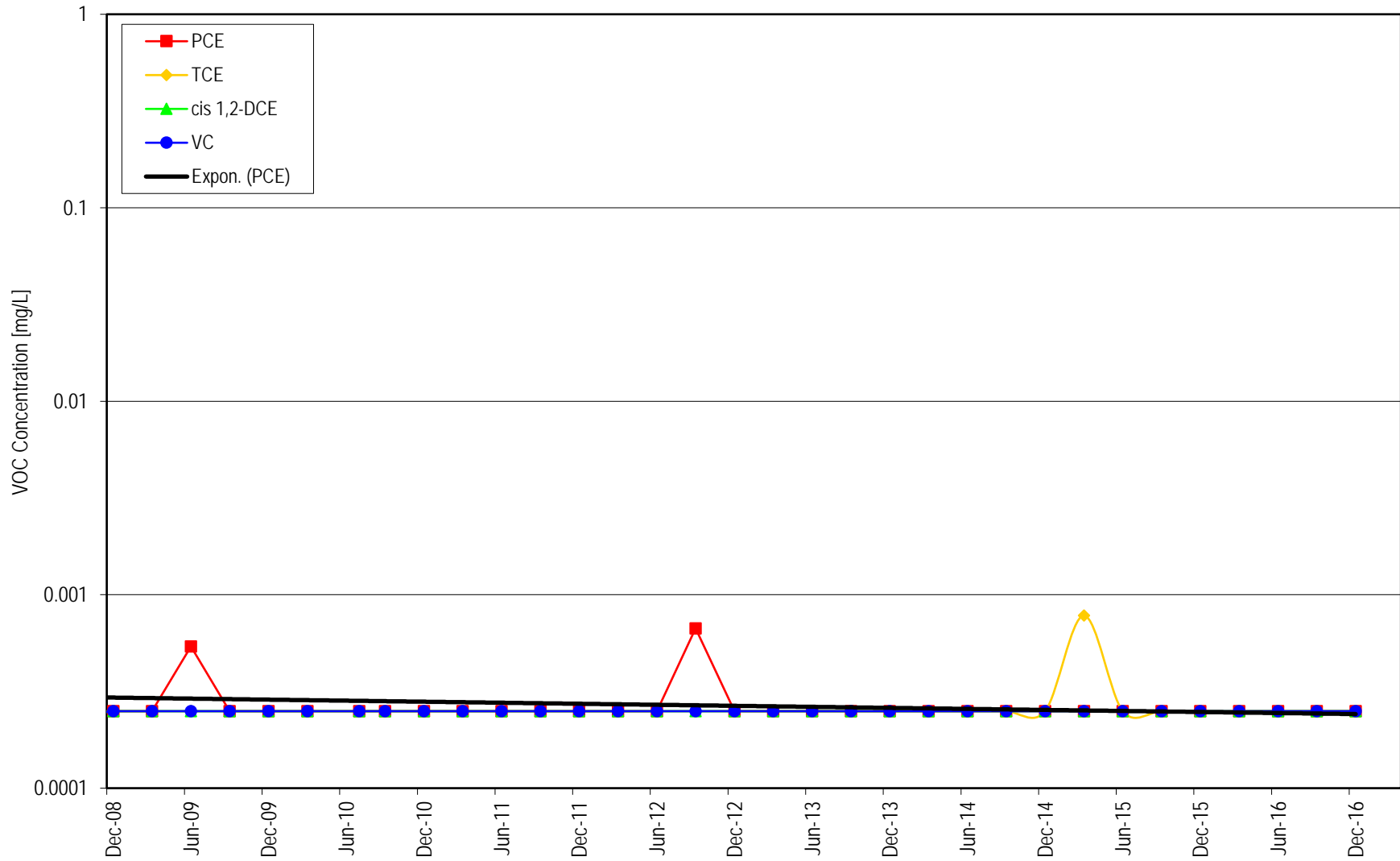
VOC Concentrations in MW-21i-105



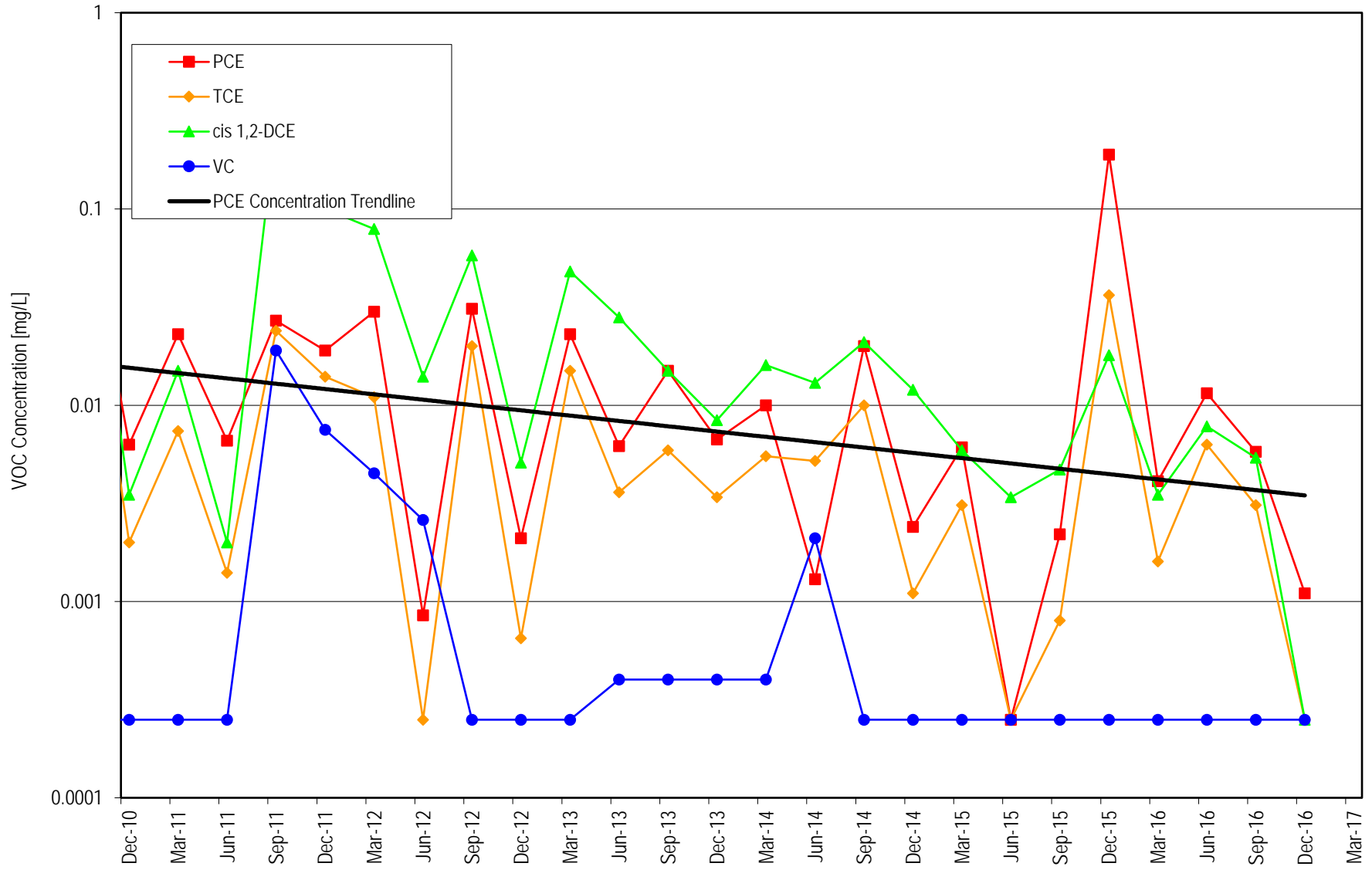
VOC Concentrations in MW-22i



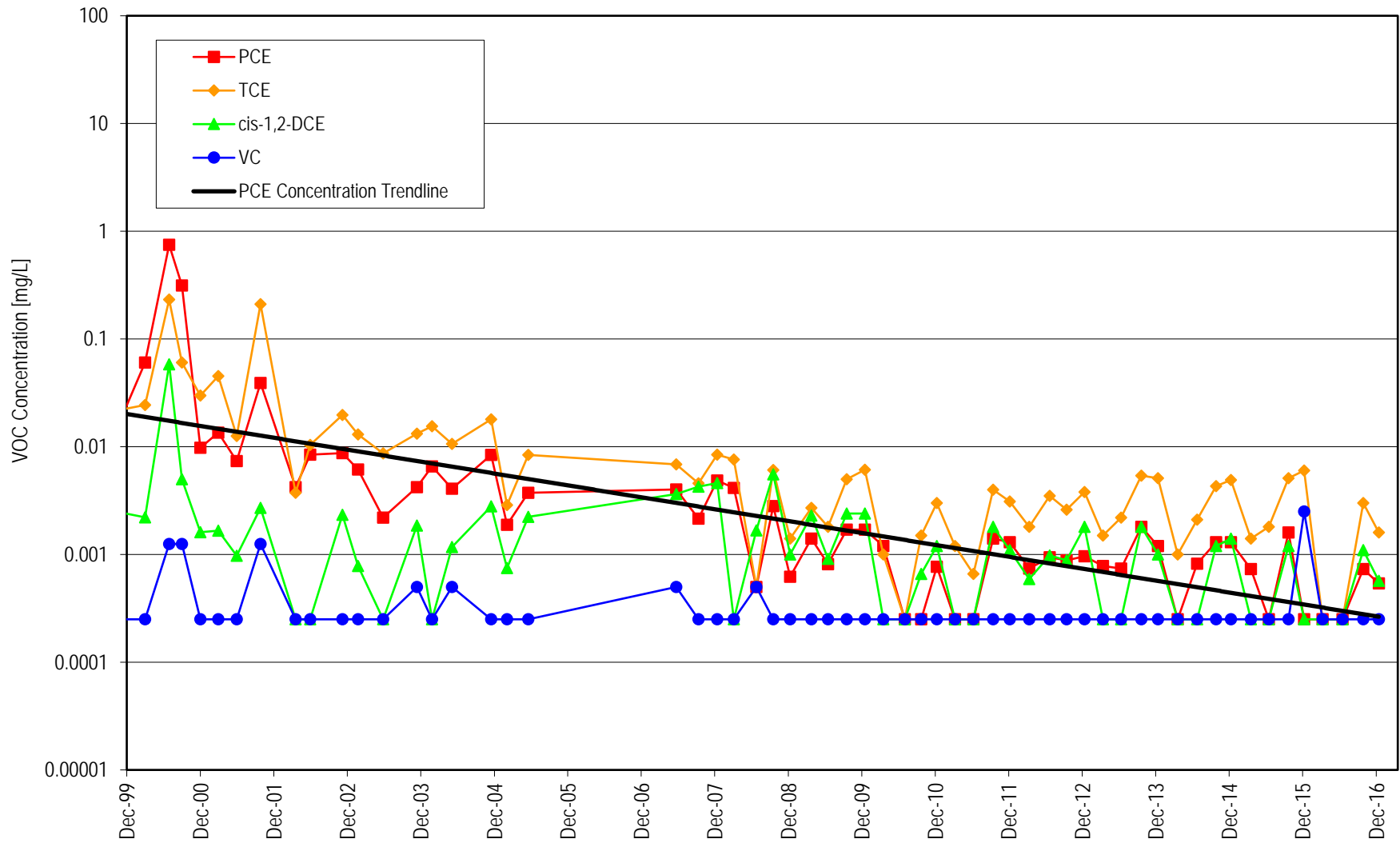
### VOC Concentrations in MW-23i



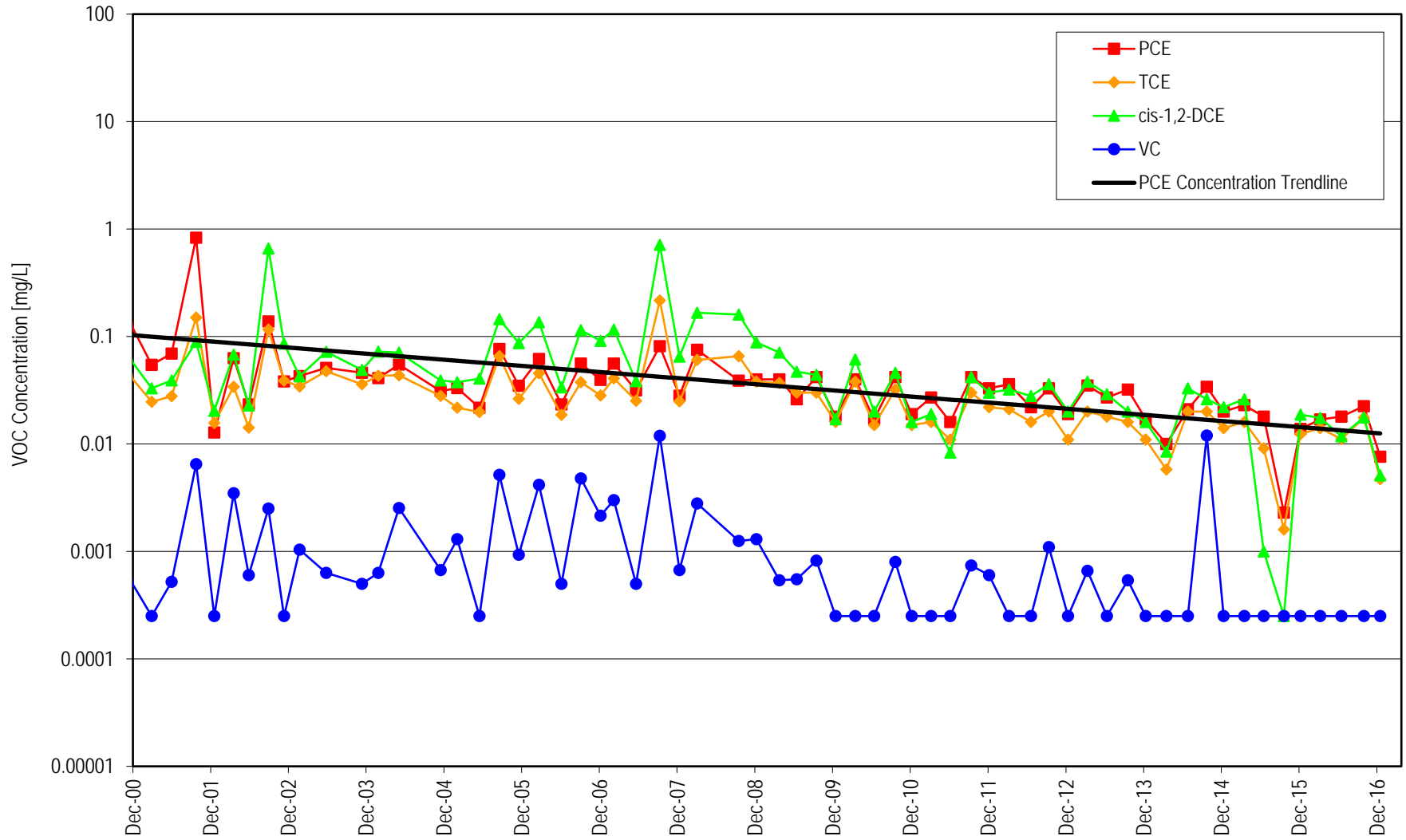
VOC Concentrations in MW-24i



VOC Concentrations in S-1

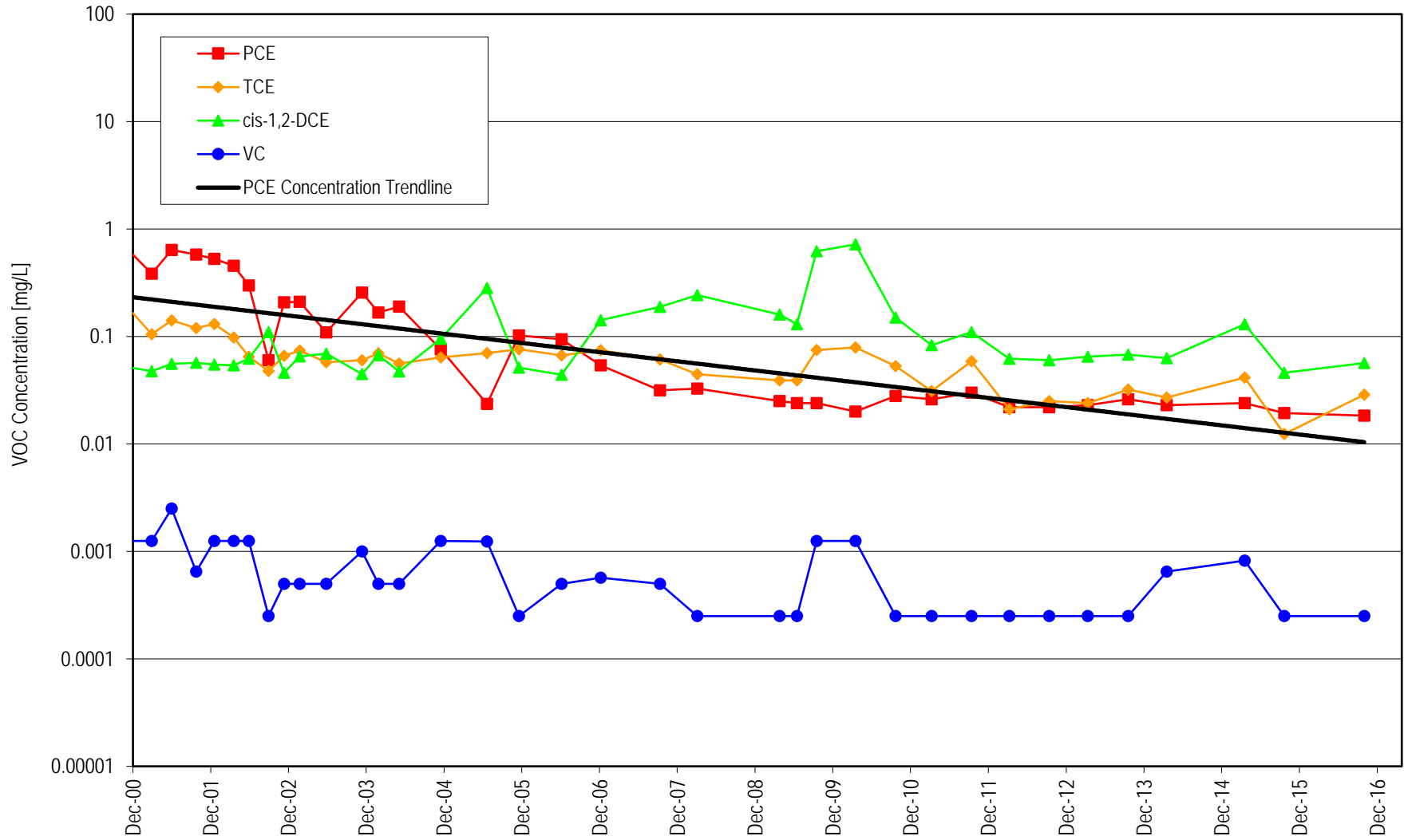


VOC Concentrations in MGMS1-60

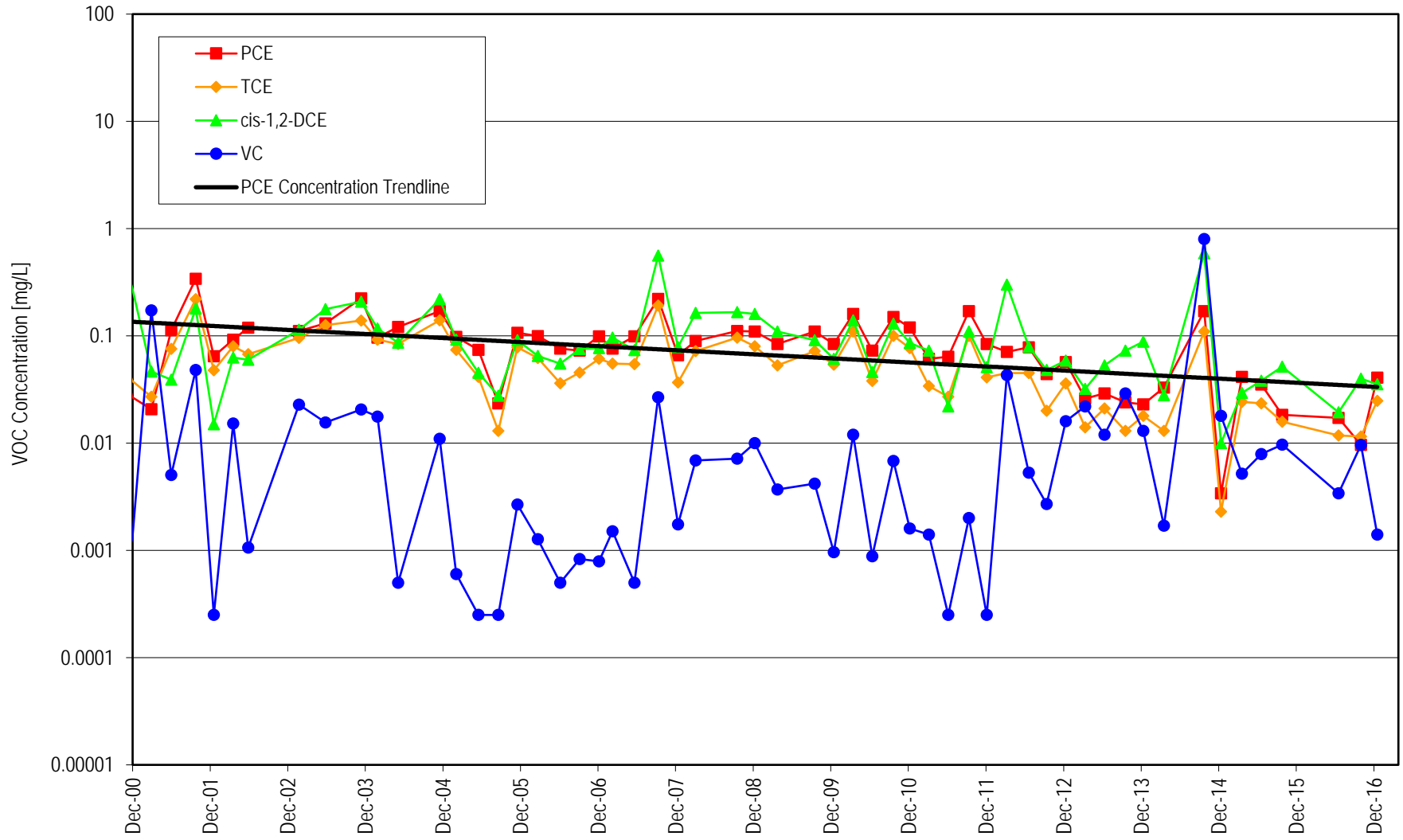




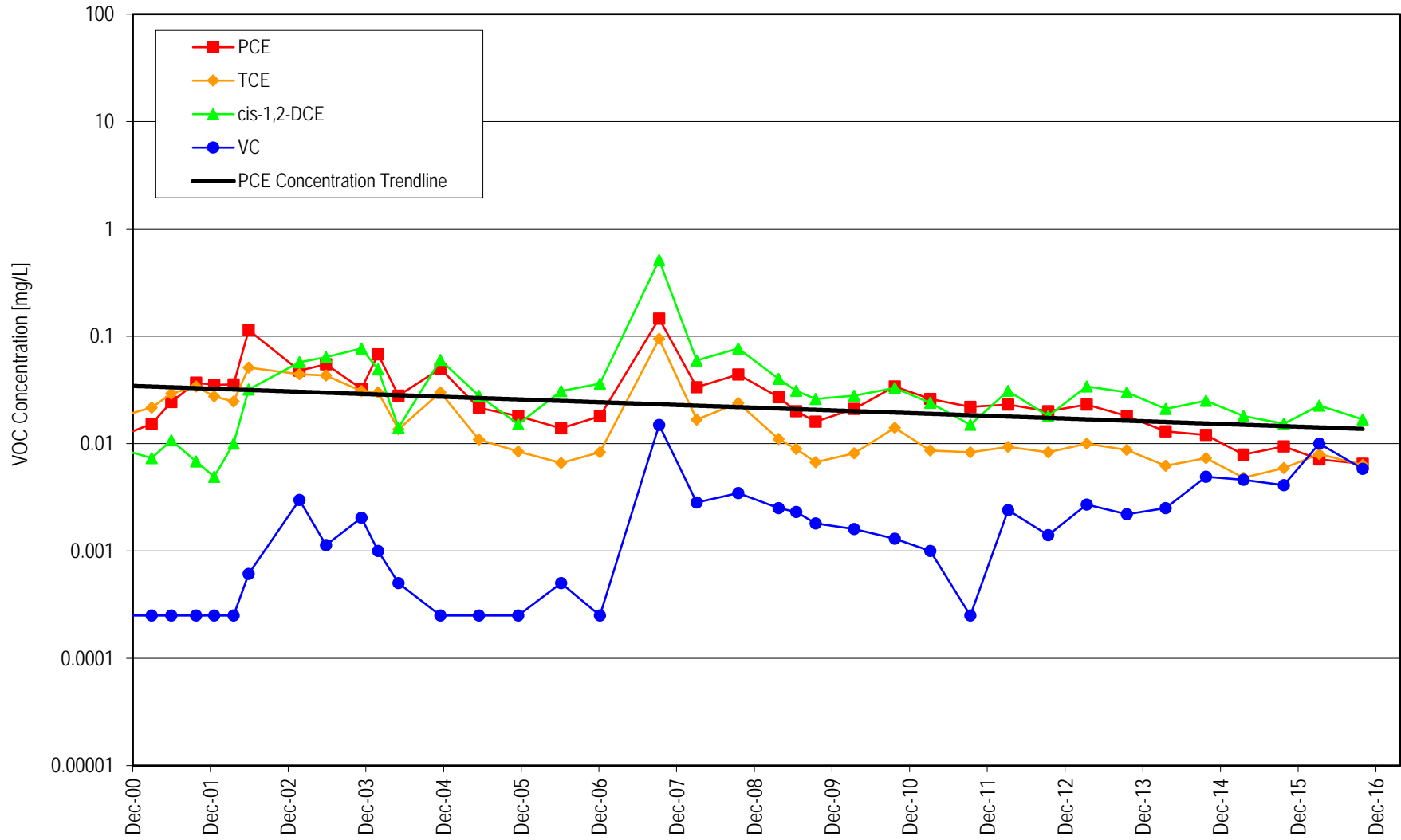
### VOC Concentrations in MGMS1-110



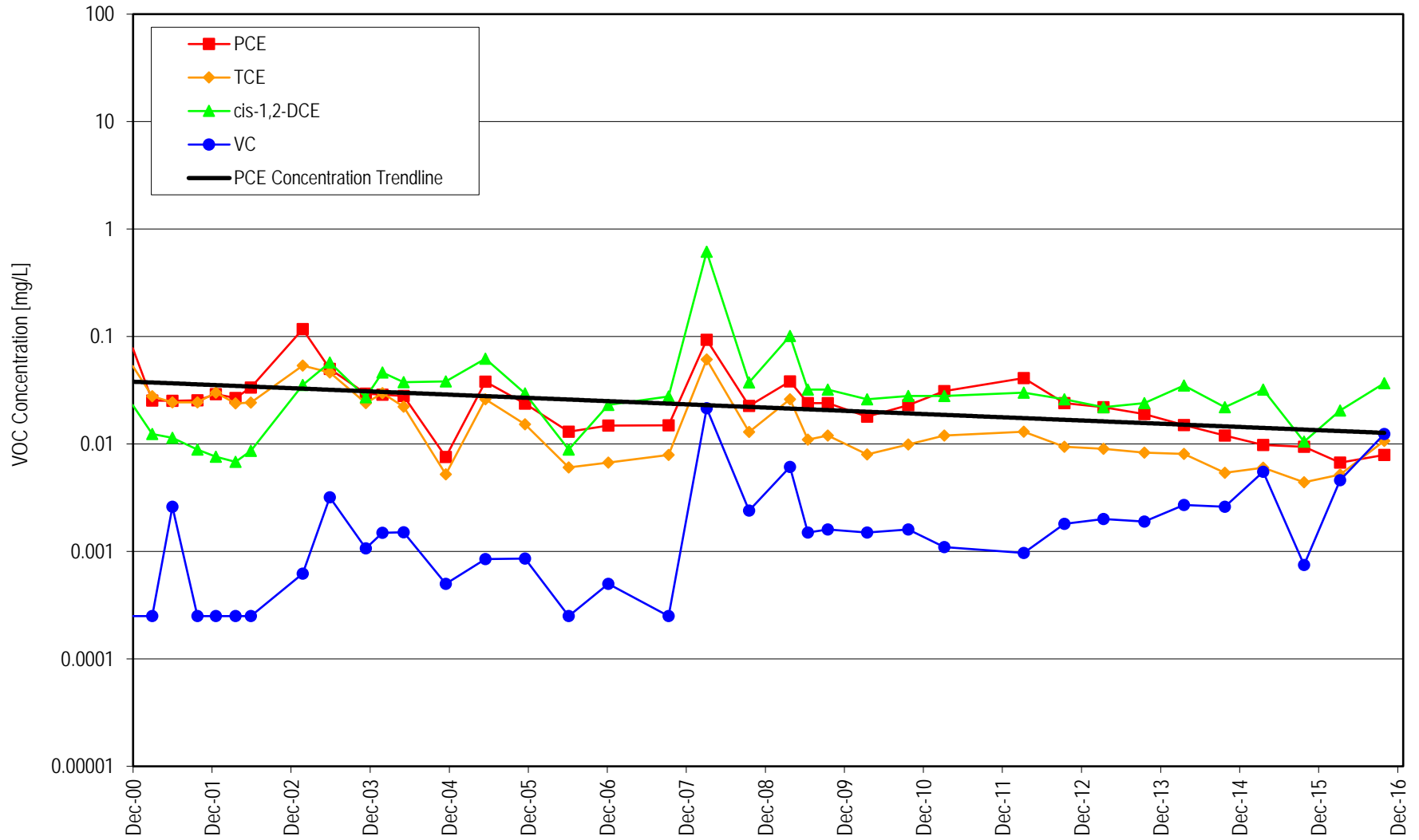
VOC Concentrations in MGMTS2-60



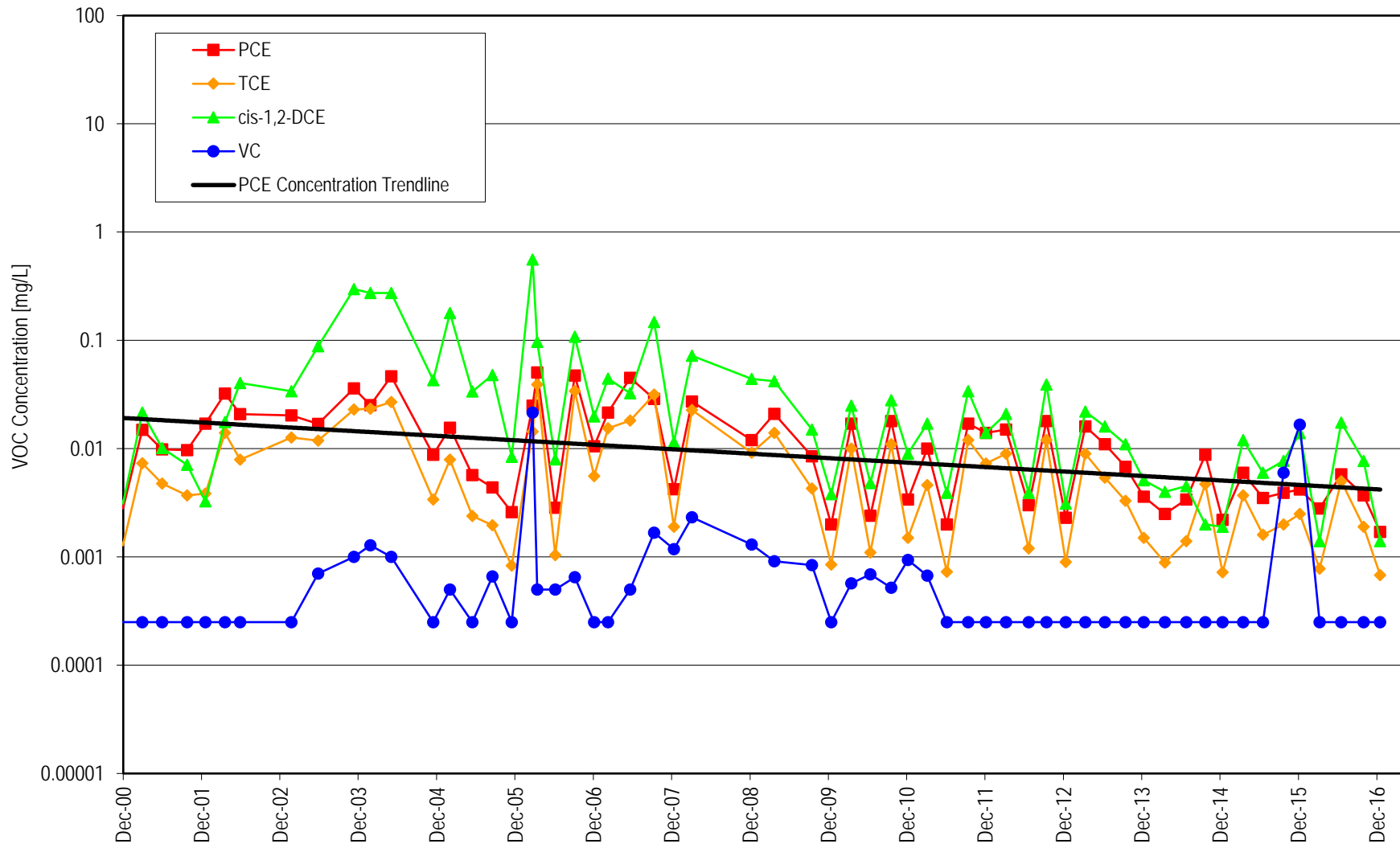
### VOC Concentrations in MGMS2-110



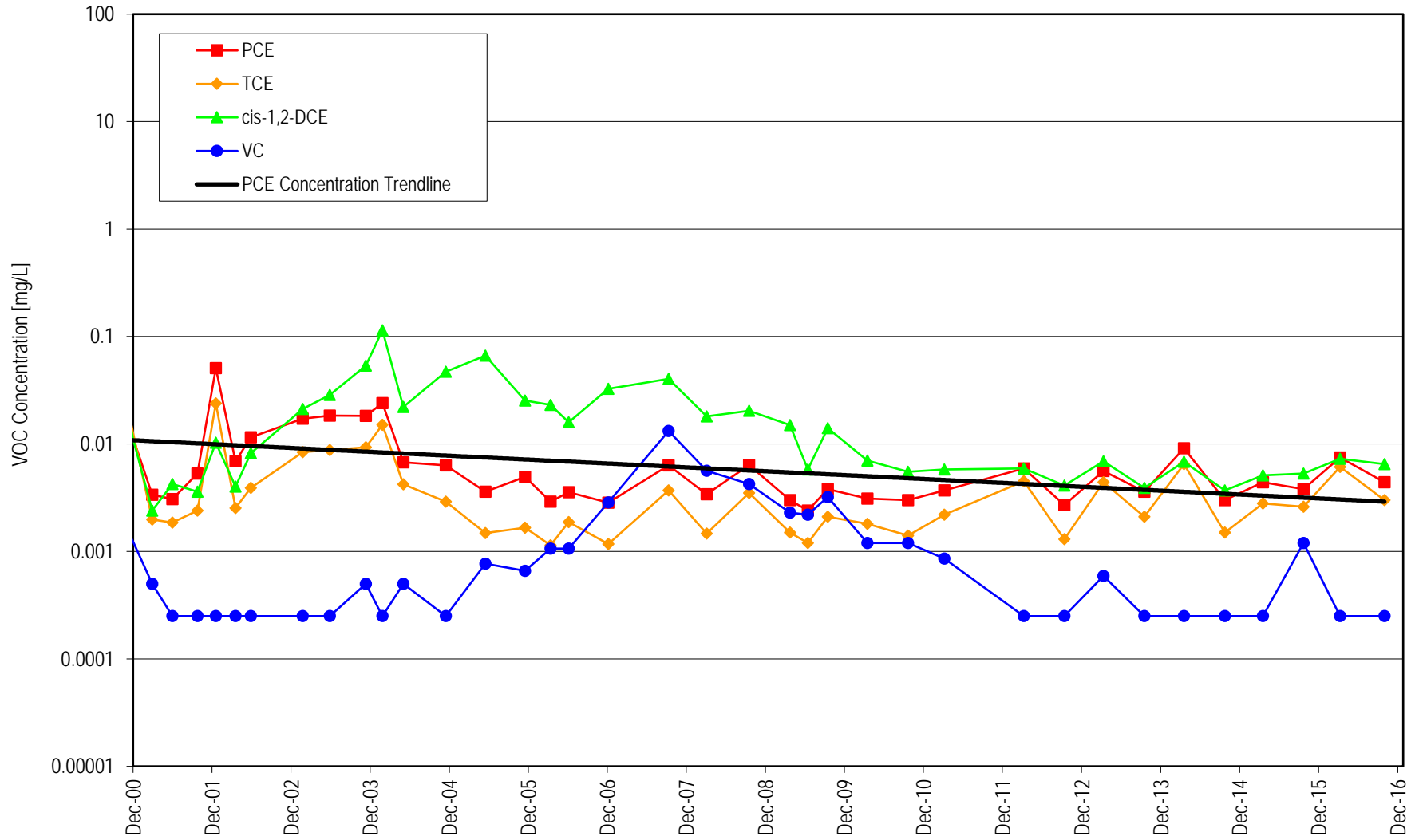
VOC Concentrations in MGMS2-132



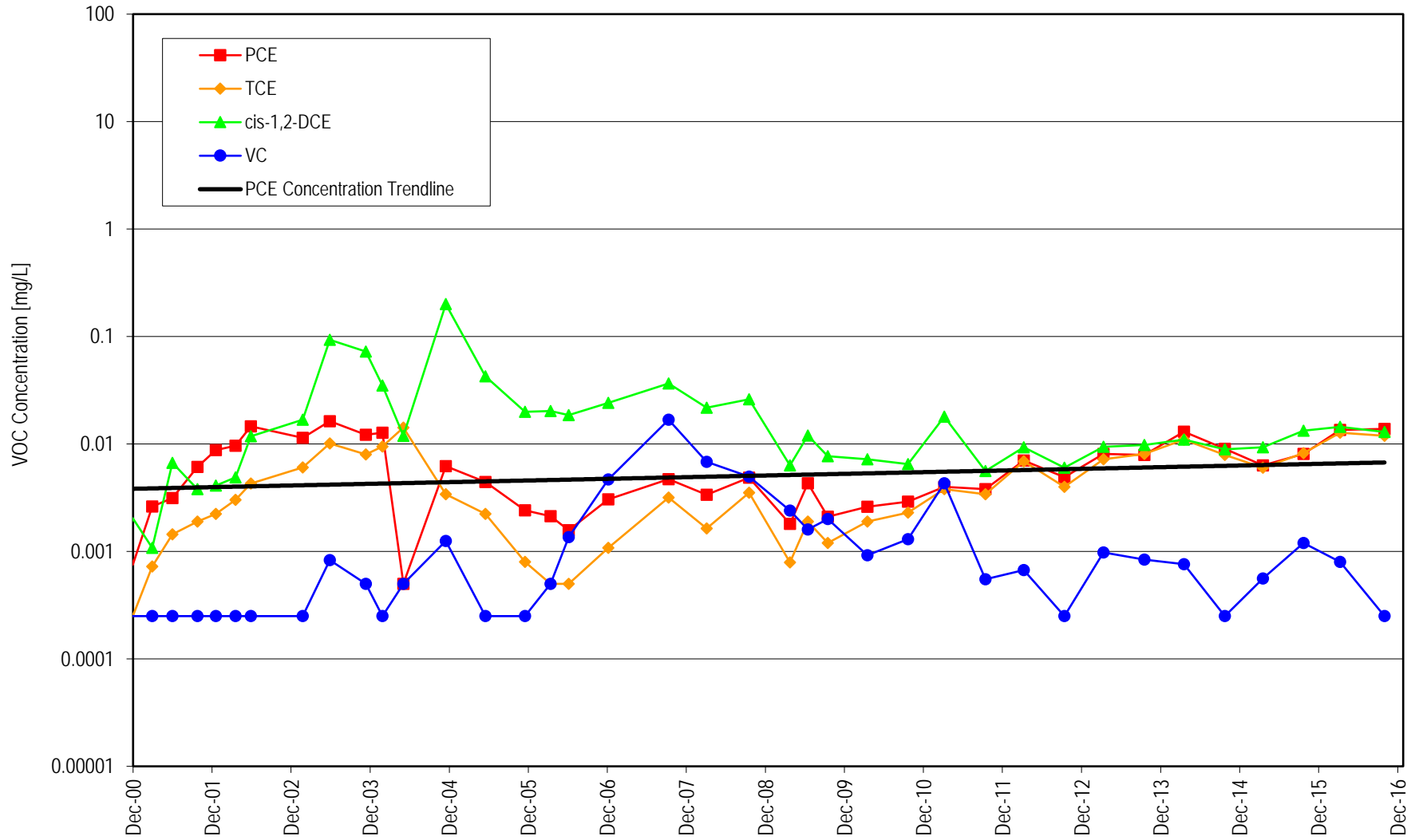
VOC Concentrations in MGMS3-60



VOC Concentrations in MGMS3-101



VOC Concentrations in MGMS3-132

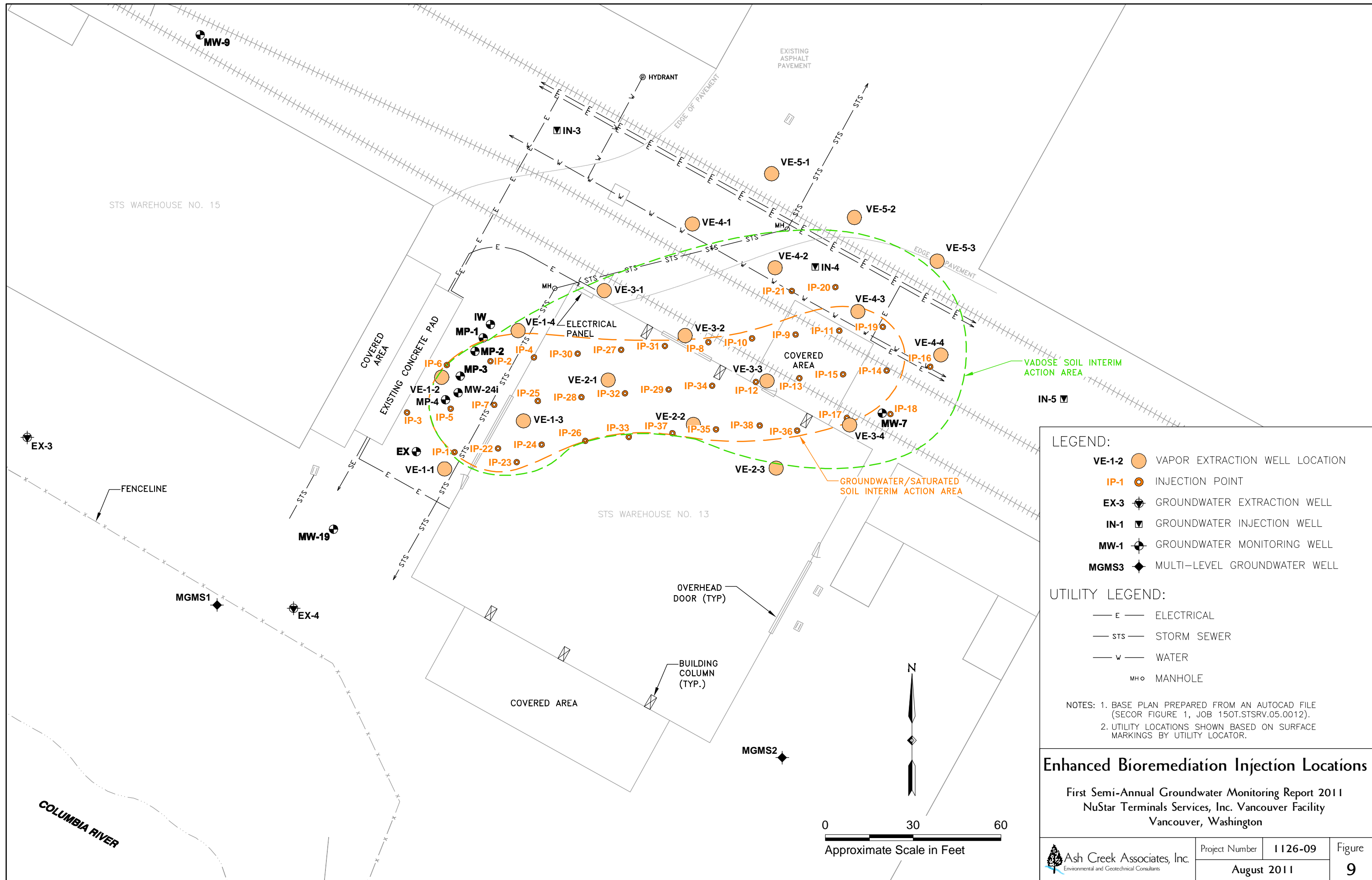


***Appendix E***

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**2008 – SVE and Bioremediation Injection Layout and  
Historical Monitoring Tables**





**LEGEND:**

- VE-1-2 ○ VAPOR EXTRACTION WELL LOCATION
- IP-1 ○ INJECTION POINT
- EX-3 ⊕ GROUNDWATER EXTRACTION WELL
- IN-1 ▽ GROUNDWATER INJECTION WELL
- MW-1 ⊕ GROUNDWATER MONITORING WELL
- MGMS3 ◆ MULTI-LEVEL GROUNDWATER WELL

**UTILITY LEGEND:**

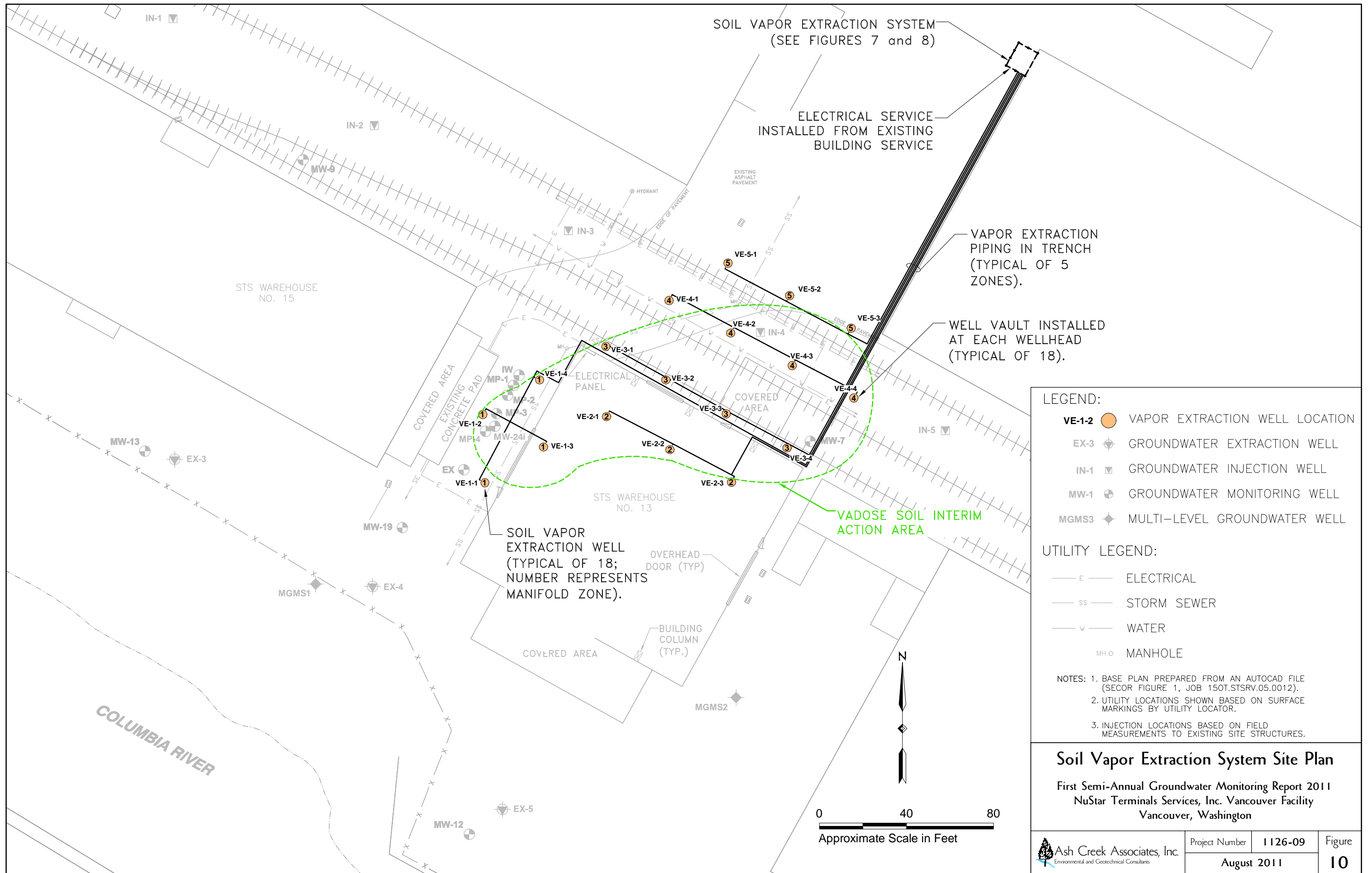
- E — ELECTRICAL
- STS — STORM SEWER
- W — WATER
- MH ⊕ MANHOLE

**NOTES:**

1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.

**Enhanced Bioremediation Injection Locations**

First Semi-Annual Groundwater Monitoring Report 2011  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington



**LEGEND:**

- VE-1-2** VAPOR EXTRACTION WELL LOCATION
- EX-3** GROUNDWATER EXTRACTION WELL
- IN-1** GROUNDWATER INJECTION WELL
- MW-1** GROUNDWATER MONITORING WELL
- MGMS3** MULTI-LEVEL GROUNDWATER WELL

**UTILITY LEGEND:**

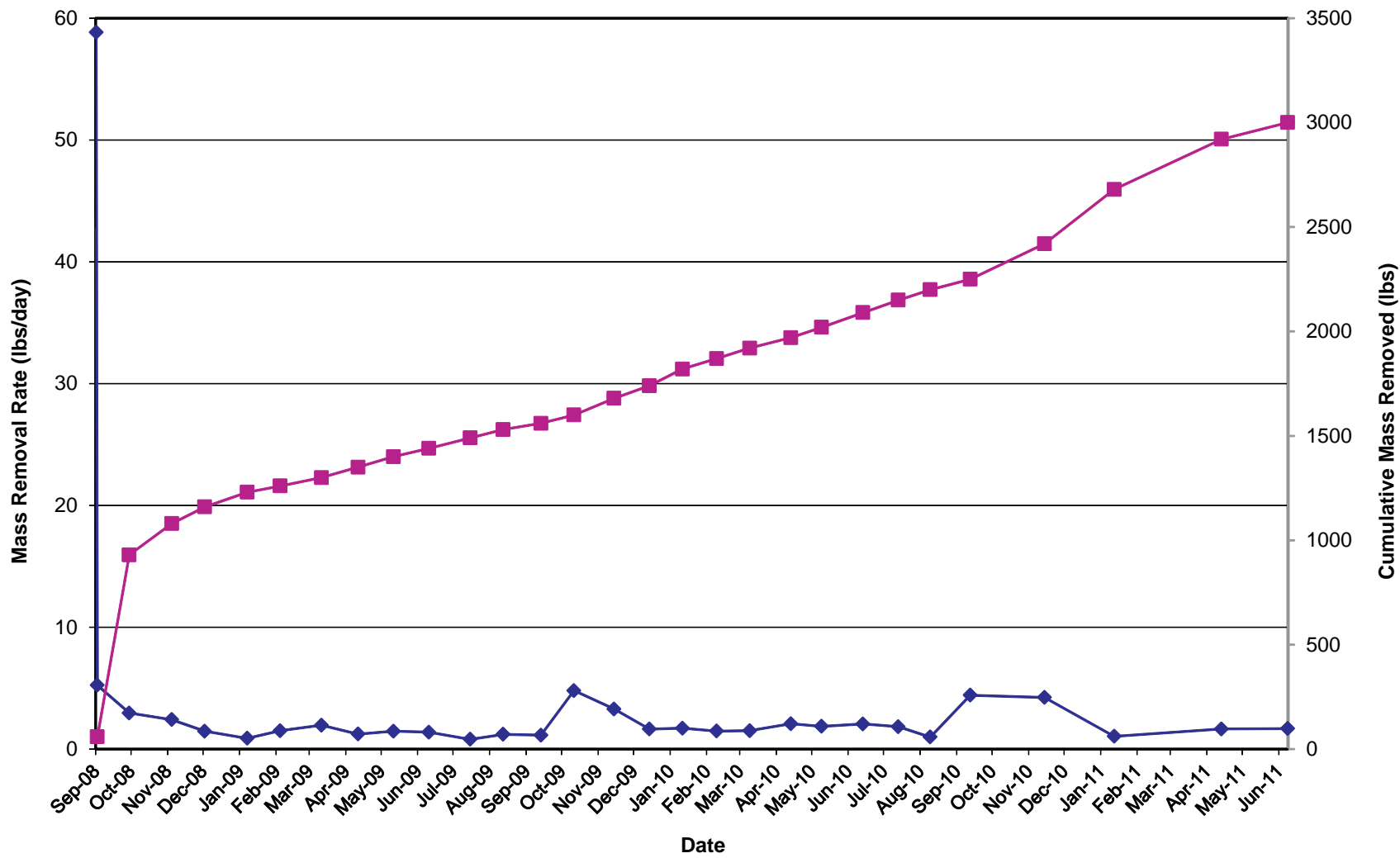
- ELECTRICAL
- STORM SEWER
- WATER
- MANHOLE

**NOTES:**

1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.
3. INJECTION LOCATIONS BASED ON FIELD MEASUREMENTS TO EXISTING SITE STRUCTURES.

### Soil Vapor Extraction System Site Plan

First Semi-Annual Groundwater Monitoring Report 2011  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington



**Legend:**

- ◆ Removal Rate (lbs/day)
- Cumulative Mass Removal

**2008 SVE System - VOC Mass Removal**

Second Semi-Annual Groundwater Monitoring Report 2011  
 NuStar Terminals Services, Inc. Vancouver Facility  
 Vancouver, Washington



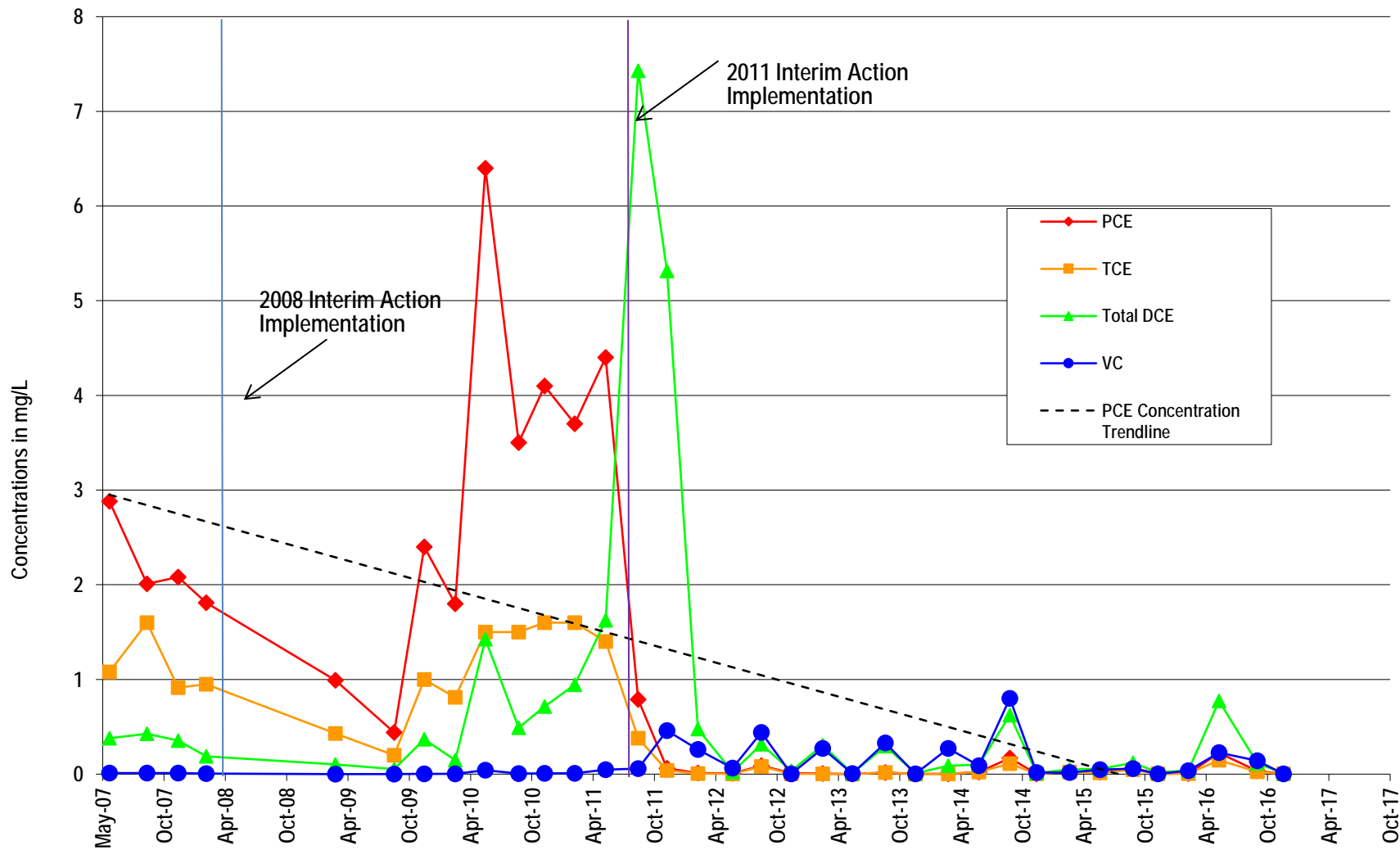
Project Number	1126-09	Figure <b>11</b>
January 2012		

***Appendix F***

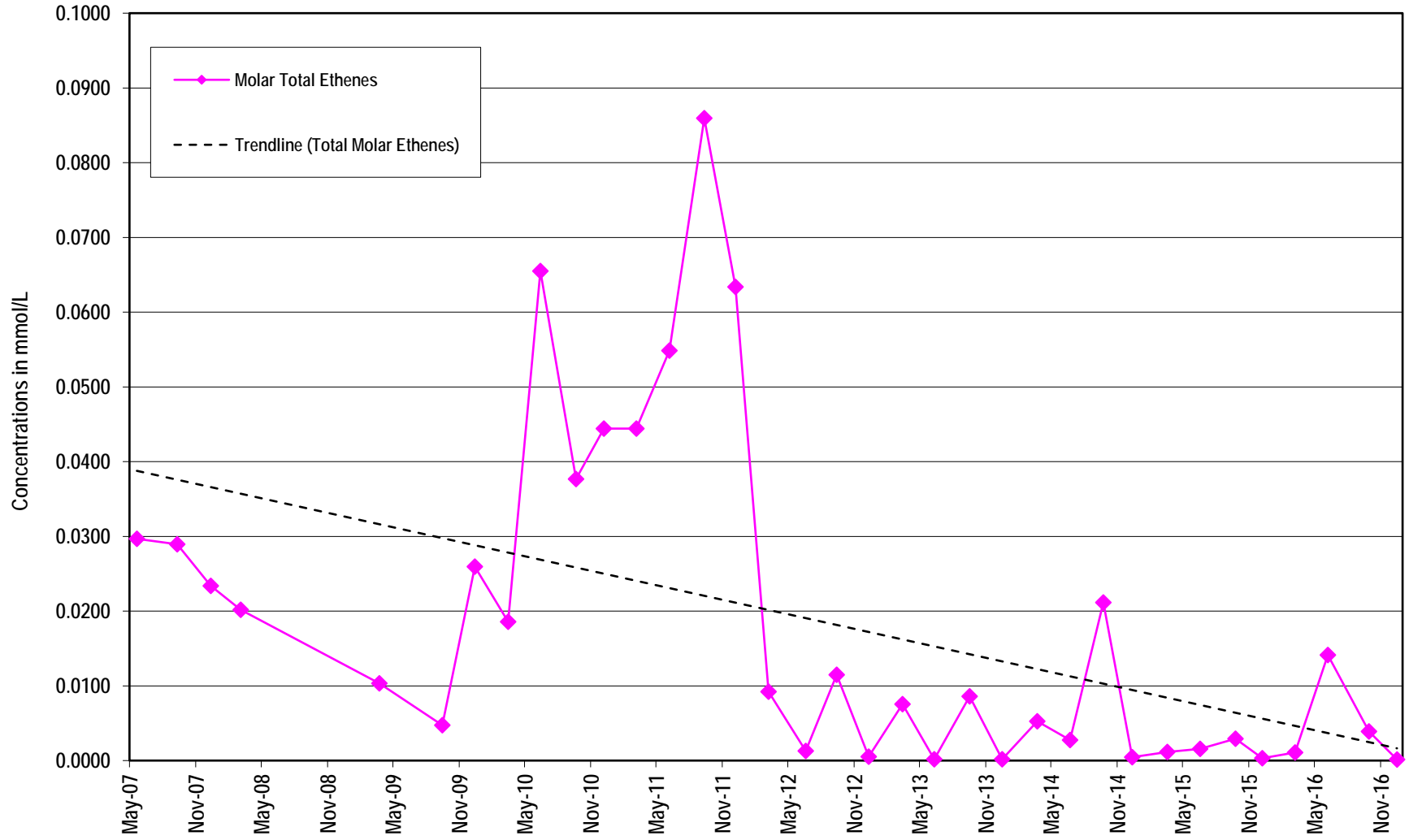
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**Molar Concentration Trend Plots – Interim Action Wells**

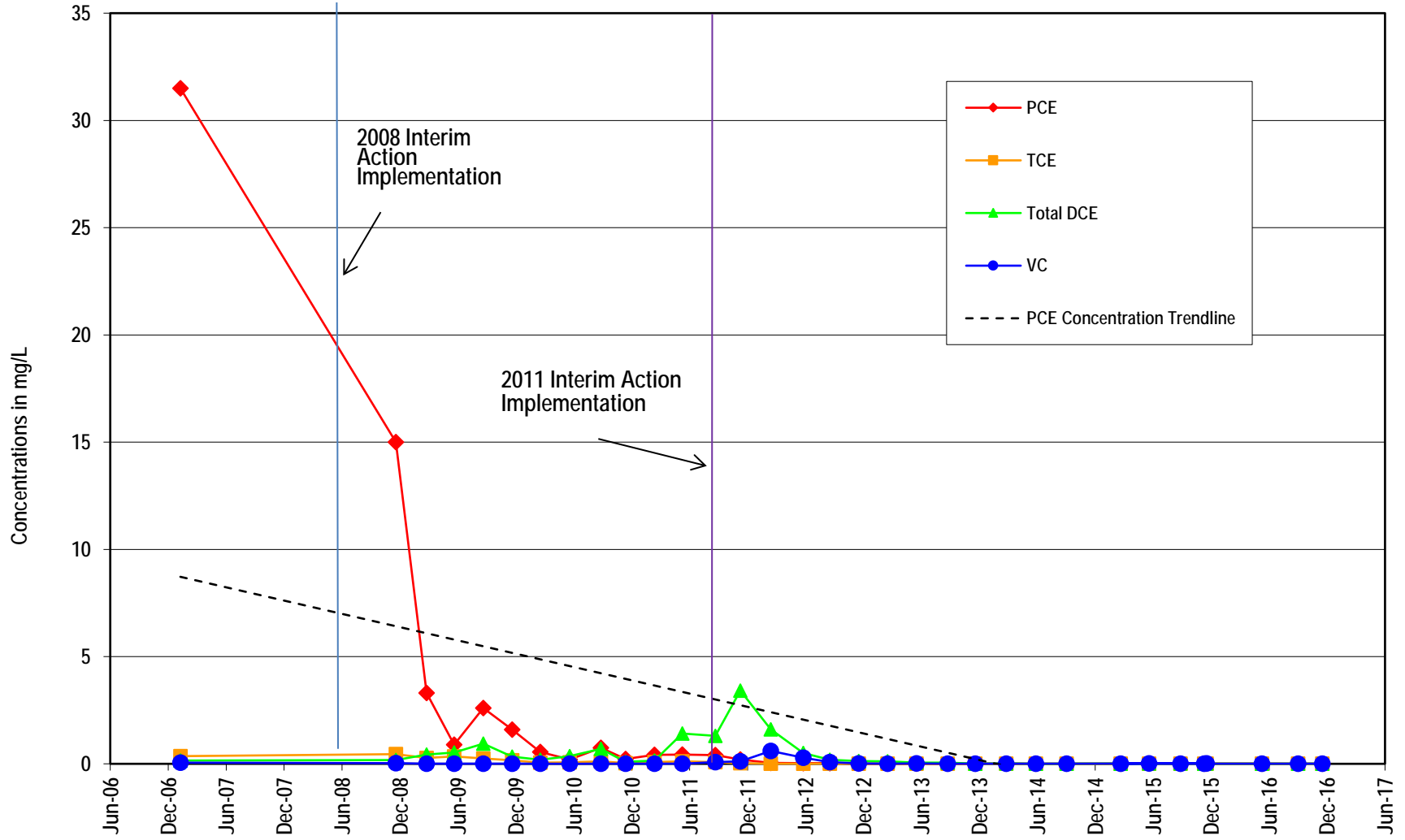
### Interim Action Area - VOC Trends: MGMS2-40



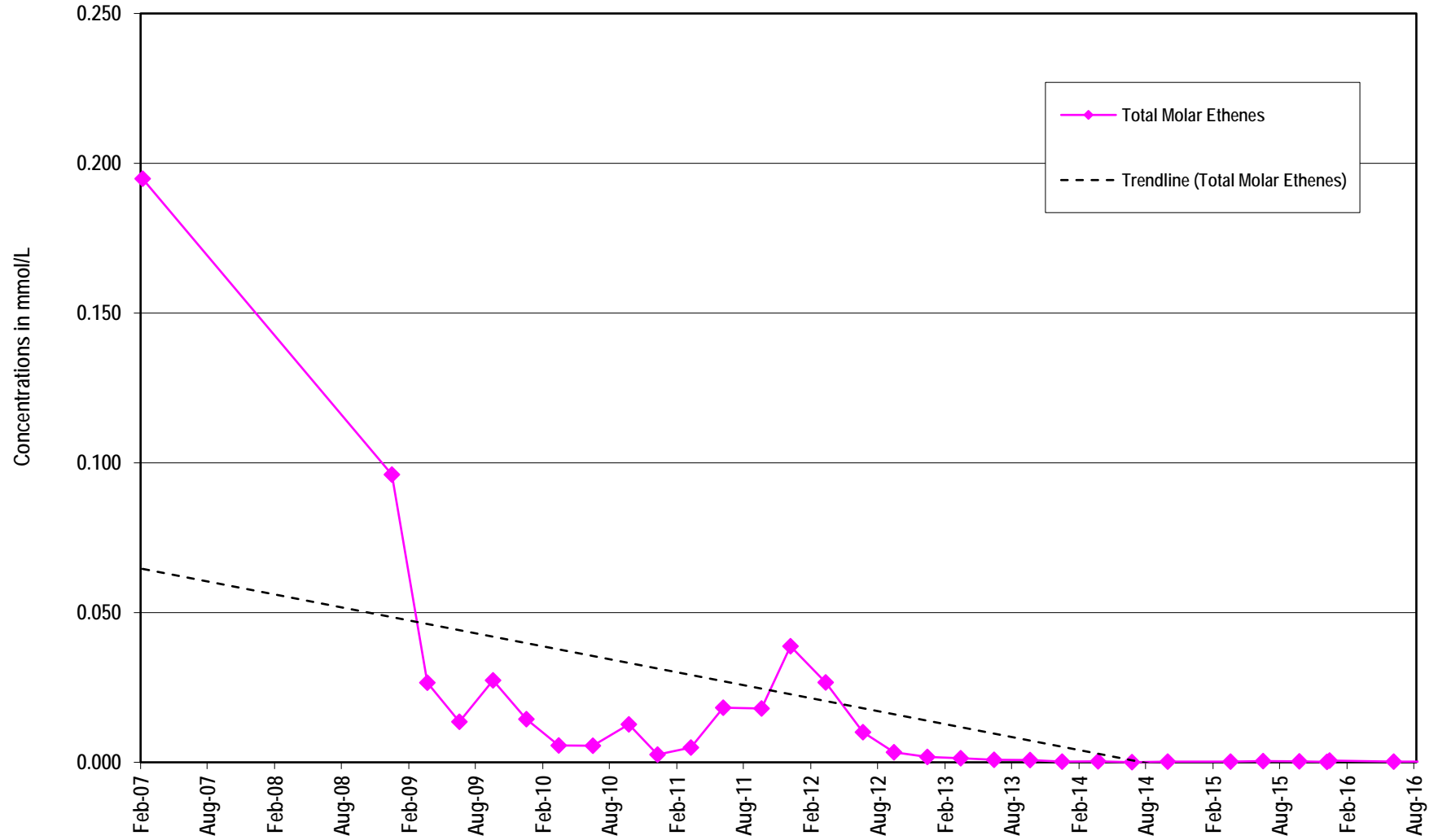
Total Molar Ethenes in MGMS2-40



### Interim Action Area - VOC Trends: MW-7

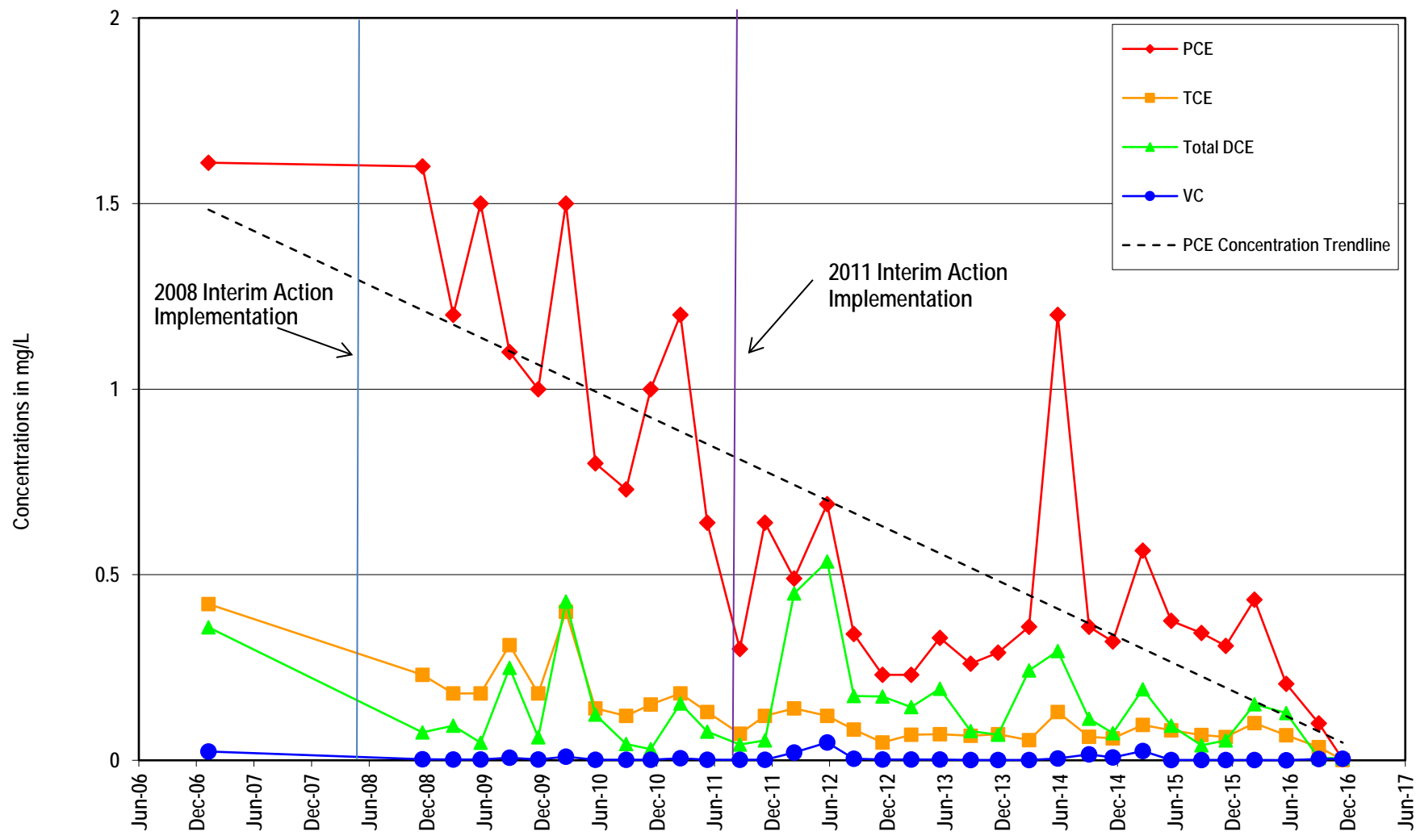


Total Molar Ethenes in MW-7

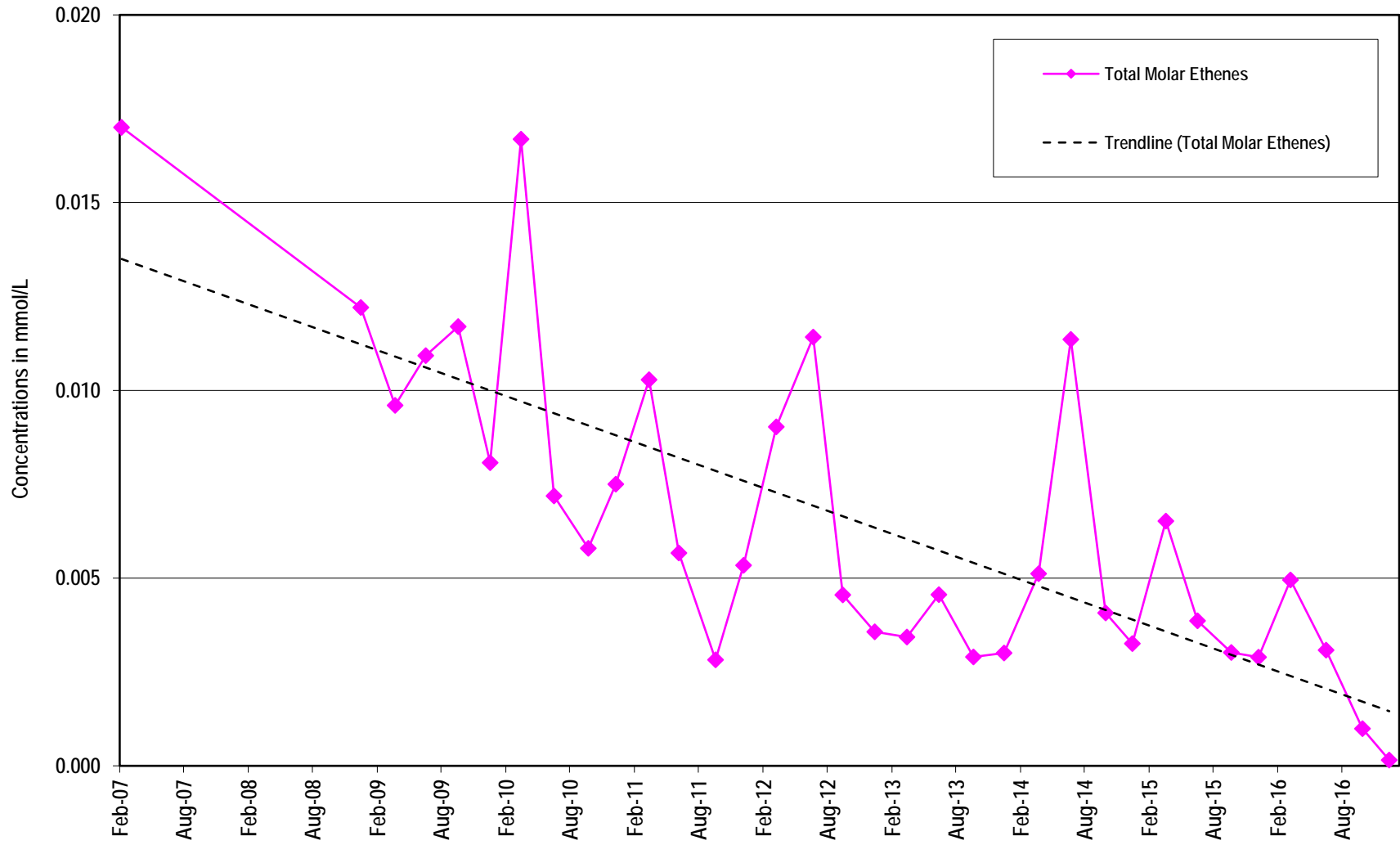




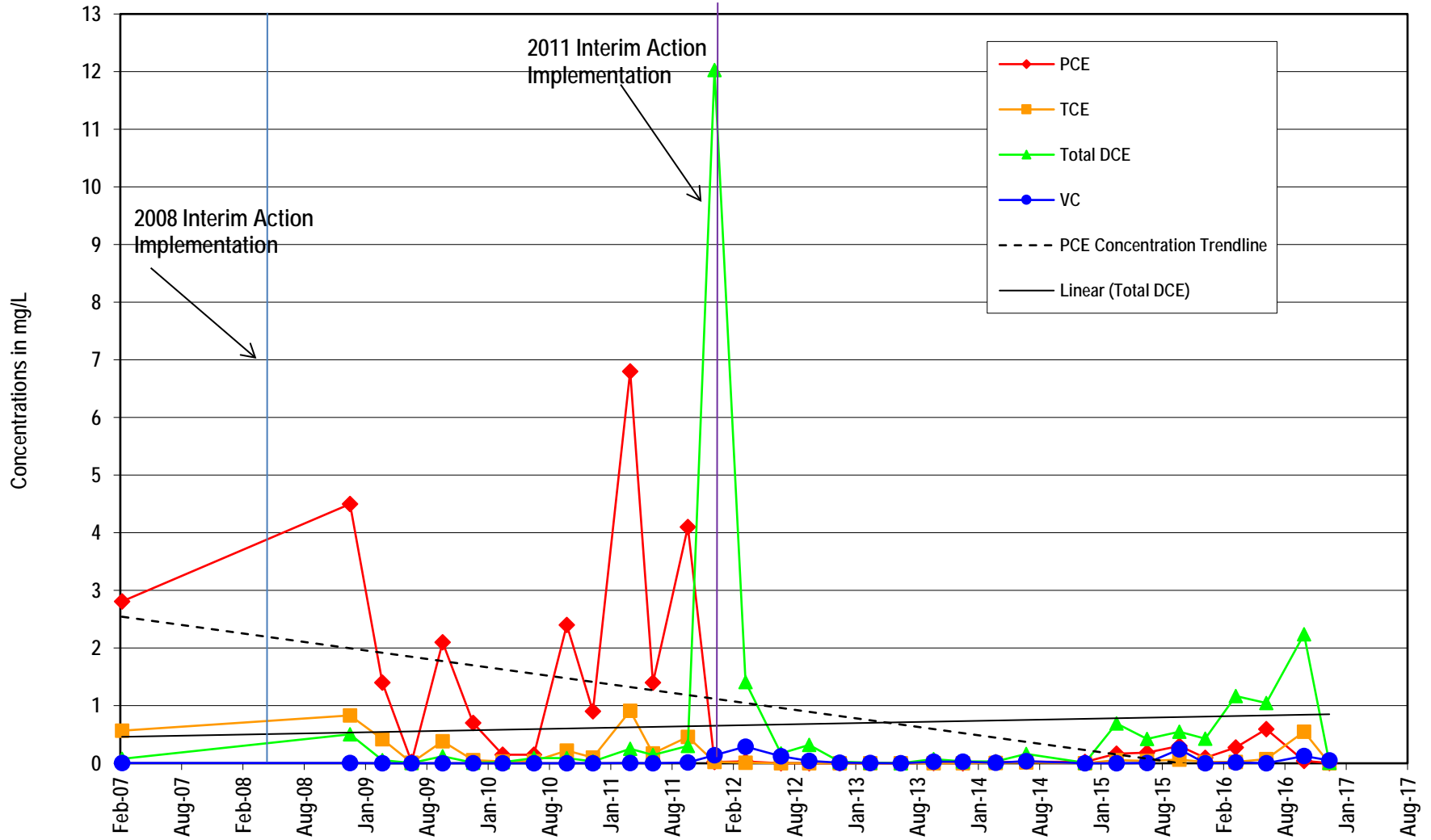
Interim Action Area - VOC Trends: MP-1



Total Molar Ethenes in MP-1



### Interim Action Area - VOC Trends: EX



Total Molar Ethenes in EX

