Geosyntec consultants

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15 March 2016

Tom Middleton
Toxics Cleanup Program
Southwest Regional Office,
Washington State Department of Ecology
PO Box 47775
Olympia, WA 98504-7775

**Subject:** **Gordon Trucking**
**151 Stewart Road SW, Pacific, WA**
**Facility/Site No.: 3393818 VCP Project No: SW0969**
**Geosyntec Project: PNR0583**

Dear Mr. Middleton:

This letter has been prepared by Geosyntec Consultants (Geosyntec) to summarize groundwater monitoring results from 2016 groundwater monitoring event at the Gordon Trucking Inc. (GTI) property in Pacific, WA (site). Groundwater monitoring is being conducted under the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP), project number SW0969.

## BACKGROUND

In August 2007, GTI discovered petroleum-impacted soil during pipe repair work in the vicinity of a fuel island at their Pacific, Washington property (Figure 1). In response, approximately 150 tons of soil were removed from the site. Soil and groundwater samples were collected in order to characterize the lateral and vertical extent of soil contamination resulting from the release. In 2008 and 2009, five groundwater monitoring wells (MW-01 through MW-05) were installed at the site (Figure 2). In 2009, GTI implemented a remedial program to address existing petroleum levels in the soil above Ecology Model Toxics Control Act (MTCA) Method A cleanup levels for diesel and heavy oil. Subsequent actions at the site included applying an in-situ microbial inoculant and the initiation of a soil and groundwater sampling program to evaluate the effectiveness of the in-situ treatment. Additional microbial inoculant was applied in 2010 and oxygen release compound (ORC) filter socks were installed in monitoring wells where petroleum hydrocarbon remained in groundwater (MW-03 and MW-04). These ORC socks were removed in 2011.

Semi-annual groundwater monitoring was performed at the site between 2008 and 2013. On January 4, 2013, Geosyntec submitted a work plan to Ecology ("Gordon Trucking Groundwater Monitoring Work Plan for 2013") recommending to change the monitoring frequency from semi-annual to annual and the installation of ORC socks in three monitoring wells. The work plan was approved on January 25, 2013 and ORC socks were installed in February 2013.

Annual groundwater sampling has since occurred in February 2014, January 2015 and February 2016 during seasonal high groundwater levels. New ORC socks were installed in February 2014 and have been replaced on an annual basis. Several weeks prior to the most recent monitoring event groundwater sampling, the existing socks (installed in January 2015) were removed to allow the groundwater to return to its natural geochemical state. Subsequently, after collection of groundwater samples was completed, new ORC socks were installed in wells MW-02, MW-03 and MW-04 and will remain in the wells throughout 2016.

## GROUNDWATER MONITORING

On February 02, 2016, the five groundwater monitoring wells were gauged using an electronic water level probe capable of detecting water depth with a precision of 0.01 foot. Project personnel recorded static water levels prior to sampling (Table 1 and Figures 3 and 4). The observed groundwater elevations in MW-03, MW-04, and MW-05 were slightly higher but generally similar to the levels recorded a year earlier in January 2015. The highest groundwater elevations were observed in MW-05 (63.88 feet above mean sea level [ft AMSL]).

To ensure representative groundwater sample collection, monitoring wells were sampled using low flow groundwater sampling methodology. Field parameters such as temperature, electrical conductivity, pH, oxidation-reduction potential (ORP), and dissolved oxygen were measured during well purging and are summarized in Table 1. Once field parameters stabilized, groundwater samples were collected, preserved and stored as directed by the analytical laboratory. Equipment decontamination protocols were implemented using low-phosphate detergent and distilled water to prevent cross-contamination between sampling locations. Quality control samples comprised greater than ten percent of the total sample set submitted for laboratory analysis.

### Results

Groundwater samples were submitted to TestAmerica in Tacoma, Washington for analysis of diesel-, kerosene-, and motor oil-range petroleum hydrocarbons by the Northwest Total Petroleum Hydrocarbons diesel-extended method (NWTPH-Dx). Full laboratory reports are included in Attachment A. Analytical results and the corresponding MTCA cleanup levels are summarized in Table 2, and Figures 3 and 4. Calculated differences between field duplicate

groundwater samples were thirty percent or less and are considered acceptable (Table 3). The analytical results were as follows:

- Total petroleum hydrocarbons (TPH) by NWTPH-Dx method were only detected in wells MW-03, MW-04 and MW-05. The TPH concentrations were greater than the Department of Ecology MTCA Method A cleanup level of 500 µg/L in MW-03 (1,400 µg/L) and MW-04 (540 µg/L). The TPH concentrations in MW-05 (180 µg/L) were below the MTCA Method A cleanup level. TPH concentrations from this sampling event were below historical winter groundwater sampling results.

- Diesel-range petroleum hydrocarbons were only detected in wells MW-03, MW-04 and MW-05. Diesel-range petroleum hydrocarbons concentrations were greater than the MTCA Method A cleanup level of 500 µg/L in MW-03 (2,000 µg/L) and MW-04 (750 µg/L). The concentration of diesel-range constituents in MW-05 (300 µg/L) were below the MTCA Method A cleanup level. Diesel-range concentrations from this sampling event were below historical winter groundwater sampling results.

- Motor oil-range petroleum hydrocarbons were detected only in well MW-03 (360 µg/L) and at a concentration less than the MTCA Method A cleanup level of 500 µg/L. Motor-oil range constituent concentrations in MW-01, MW-02, MW-04, and MW-05 were below the laboratory detection limit. Motor oil-range concentrations from this sampling event were below historical winter groundwater sampling results.

- The NWTPH-Dx analytical results were indicative of weathered diesel fuel, consistent with previous monitoring results.

## DISCUSSION

From historically collected groundwater monitoring data, groundwater levels at the site have been observed to vary seasonally between winter and summer by as much as three feet. Together with the high groundwater levels in the winter months, the petroleum constituents in groundwater also generally increase in the winter. Conversely, during the summer months when groundwater levels decrease, petroleum constituent concentrations decrease as well. This general pattern has been historically well displayed in MW-3, the monitoring well with the highest petroleum constituent concentrations. During periods of high groundwater, petroleum constituents that are adsorbed to soil particles in the zone between low and high groundwater levels likely are dissolved into groundwater. During periods of low groundwater levels the concentrations are interpreted to decrease due to degradation.

Overall, petroleum constituent concentrations in MW-3 have decreased significantly since 2012 when kerosene- (10,000 µg/L), diesel- (17,000 µg/L), and motor oil-range (4,900 µg/L) concentrations in the well were observed at the historical maximums. The overall decrease in concentrations, particularly in MW-03, is a positive result and suggests that the continued ORC sock implementation is assisting in constituent degradation. Therefore, new ORC socks were installed at the site following sample collection.

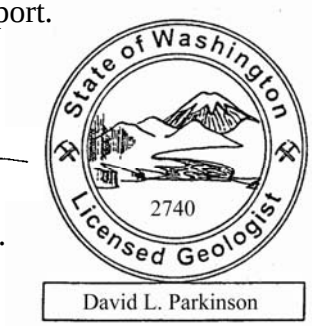
## FUTURE ACTIONS

Diesel and kerosene concentrations continue to exceed MTCA Method A groundwater cleanup levels in MW-03 and MW-04. However, the TPH results from this most recent groundwater sampling event are lower in comparison with historical results for all five wells.

We have installed oxygen-release socks in MW-02, MW-03, and MW-04 to aid in microbial degradation of the hydrocarbons. The next annual sampling event is scheduled for the first quarter of 2017, during seasonally high groundwater levels. The currently deployed oxygen-release socks will be removed from the wells a minimum of two weeks prior to when the next groundwater monitoring event is scheduled.

Please contact Dave Parkinson at (206) 496-1446 or Adrianna Jarosz (206) 496-1447 if you have questions regarding this report.

Sincerely,




Dave Parkinson, PhD, L.G.
Senior Scientist

Adrianna Jarosz, EIT
Senior Staff Engineer

cc: Kimberly Miltimore - GTI

Enclosures:

Table 1: Groundwater Field Parameters
Table 2: Groundwater Laboratory Results
Table 3: Laboratory QA/QC Results
Figure 1: Location Map
Figure 2: Site Map
Figure 3: Plots of Monitoring Results
Figure 4: Plot of Groundwater Elevation and Diesel Concentrations
Attachment A – Laboratory Reports

# Tables

Table 1
Groundwater Parameters
Gordon Trucking, Inc., Pacific, Washington

| Monitoring Well | Date Measured | TOC Elevation (feet AMSL) | DTW (feet) | Groundwater Elevation (feet AMSL) | Temperature (°C) | Electrical Conductivity (mS/cm) | pH | ORP (mV) | DO (mg/L) |
|---|---|---|---|---|---|---|---|---|---|
| MW-01 | 1/11/2008 | 67.39 | 3.92 | 63.47 | 9.10 | 0.187 | 6.7 | 12 | 2.12 |
| | 6/24/2009 | | 4.81 | 62.58 | 16.7 | 0.357 | 6.6 | -10 | 2.17 |
| | 9/24/2009 | | 5.56 | 61.83 | 19.7 | 0.184 | 6.2 | -129 | 1.00 |
| | 12/16/2009 | | 3.77 | 63.62 | 12.9 | 0.062 | 6.6 | 42 | 3.78 |
| | 3/17/2010 | | 3.94 | 63.45 | 11.7 | 0.072 | 6.5 | 100 | 3.36 |
| | 9/30/2010 | | 5.09 | 62.30 | 19.0 | 0.083 | 5.6 | 134 | 3.02 |
| | 3/15/2011 | | 2.60 | 64.79 | 9.1 | 0.238 | 6.0 | 213 | 6.21 |
| | 9/7/2011 | | 6.01 | 61.38 | 18.4 | 0.057 | 6.0 | 109 | 8.77 |
| | 3/22/2012 | | 2.82 | 64.57 | 9.7 | 0.063 | 5.6 | 180.1 | 5.61 |
| | 9/25/2012 | | 6.14 | 61.25 | 19.4 | 0.059 | 5.4 | 147 | 0.48 |
| | 2/11/2013 | | 4.28 | 63.11 | 10.4 | 0.045 | 5.6 | 179 | 1.83 |
| | 2/27/2014 | | 3.27 | 64.12 | 11.0 | 0.080 | 5.6 | 206 | 4.02 |
| | 1/20/2015 | | 3.58 | 63.81 | 12.2 | 0.062 | 5.4 | 151 | 1.31 |
| | 2/2/2016 | | 3.58 | 63.81 | 12.2 | 0.102 | 5.3 | 104 | 0.00 |
| MW-02 | 1/11/2008 | 65.60 | 1.89 | 63.71 | 7.20 | 0.087 | 5.9 | 148 | 6.33 |
| | 6/24/2009 | | 3.32 | 62.28 | 13.9 | 0.272 | 7.0 | 83 | 2.90 |
| | 9/24/2009 | | 4.06 | 61.54 | 18.0 | 0.385 | 6.2 | 17 | 1.24 |
| | 12/16/2009 | | 2.31 | 63.29 | 6.69 | 0.061 | 6.5 | 117 | 9.75 |
| | 3/17/2010 | | 2.51 | 63.09 | 9.23 | 0.062 | 6.1 | 131 | 1.45 |
| | 9/30/2010 | | 3.70 | 61.90 | 16.81 | 0.288 | 5.9 | 21 | 1.43 |
| | 3/15/2011 | | 1.50 | 64.10 | 8.20 | 0.298 | 6.5 | 9 | 4.79 |
| | 9/7/2011 | | 4.81 | 60.79 | 19.60 | 0.347 | 6.6 | -39 | 3.24 |
| | 3/22/2012 | | 1.75 | 63.85 | 8.57 | 0.061 | 5.2 | 147 | 6.37 |
| | 9/25/2012 | | 4.77 | 60.83 | 19.29 | 0.455 | 6.0 | -17 | 0.40 |
| | 2/11/2013 | | 2.98 | 62.62 | 9.20 | 0.220 | 9.4 | -54 | 9.64 |
| | 2/27/2014 | | 1.90 | 63.70 | 9.86 | 0.048 | 5.9 | 182 | 5.67 |
| | 1/20/2015 | | 2.18 | 63.42 | 9.74 | 0.027 | 5.4 | 123 | 4.90 |
| | 2/2/2016 | | 2.20 | 63.40 | 10.77 | 0.033 | 5.5 | 186 | 5.66 |

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Groundwater Parameters
Gordon Trucking, Inc., Pacific, Washington

| Monitoring Well | Date Measured | TOC Elevation (feet AMSL) | DTW (feet) | Groundwater Elevation (feet AMSL) | Temperature (°C) | Electrical Conductivity (mS/cm) | pH | ORP (mV) | DO (mg/L) |
|---|---|---|---|---|---|---|---|---|---|
| MW-03 | 1/11/2008 | 67.82 | 4.17 | 63.65 | 10.6 | 1.127 | 6.9 | -64 | 0.52 |
| | 6/24/2009 | | 5.31 | 62.51 | 14.6 | 2.213 | 6.6 | -134 | 0.44 |
| | 9/24/2009 | | 6.11 | 61.71 | 17.6 | 1.295 | 6.5 | -125 | 0.15 |
| | 12/16/2009 | | 4.51 | 63.31 | 13.3 | 1.263 | 6.6 | -108 | 1.01 |
| | 3/17/2010 | | 4.48 | 63.34 | 11.4 | 1.676 | 6.7 | -106 | 1.12 |
| | 9/30/2010 | | 5.92 | 61.90 | 17.1 | 1.310 | 6.2 | -76 | 1.08 |
| | 3/15/2011 | | 3.77 | 64.05 | 9.4 | 2.179 | 6.5 | -87 | 1.60 |
| | 9/7/2011 | | 6.87 | 60.95 | 19.1 | 1.310 | 6.6 | -48 | 1.76 |
| | 3/22/2012 | | 3.52 | 64.30 | 9.5 | 3.385 | 6.5 | -75 | 2.66 |
| | 9/25/2012 | | 6.46 | 61.36 | 17.6 | 1.38 | 6.5 | -91 | 0.30 |
| | 2/11/2013 | | 4.89 | 62.93 | 10.4 | 1.52 | 6.7 | -78 | 0.36 |
| | 2/27/2014 | | 3.90 | 63.92 | 11.7 | 1.28 | 6.3 | -134 | 2.29 |
| | 1/20/2015 | | 4.20 | 63.62 | 12.2 | 0.71 | 6.6 | -183 | 2.25 |
| | 2/2/2016* | | 4.11 | 63.71 | 12.3 | 1.29 | 5.8 | -116 | 2.29 |
| MW-04 | 1/11/2008 | 67.29 | 3.68 | 63.61 | 11.2 | 0.887 | 6.3 | -16 | 2.14 |
| | 6/24/2009 | 67.31 | 4.72 | 62.59 | 14.2 | 1.394 | 6.4 | -106 | 0.84 |
| | 9/24/2009 | | 5.59 | 61.70 | 18.3 | 1.295 | 6.5 | -123 | 0.15 |
| | 12/16/2009 | | 3.97 | 63.32 | 12.9 | 0.967 | 6.4 | -56 | 1.53 |
| | 3/17/2010 | | 4.00 | 63.29 | 11.1 | 0.965 | 6.5 | -82 | 1.95 |
| | 9/30/2010 | | 5.22 | 62.07 | 17.0 | 0.983 | 6.1 | -66 | 1.03 |
| | 3/15/2011 | | 2.83 | 64.46 | 9.6 | 0.860 | 6.2 | -75 | 1.50 |
| | 9/7/2011 | | 5.91 | 61.38 | 19.0 | 0.685 | 6.6 | -64 | 8.36 |
| | 3/22/2012 | | 3.06 | 64.23 | 9.6 | 1.028 | 6.4 | -75 | 3.08 |
| | 9/25/2012 | | 6.12 | 61.17 | 17.9 | 0.735 | 6.5 | -92 | 2.23 |
| | 2/11/2013 | | 4.47 | 62.82 | 9.9 | 0.811 | 6.7 | -66 | 0.83 |
| | 2/27/2014 | | 3.36 | 63.93 | 10.1 | 0.561 | 6.2 | -99 | 0.79 |
| | 1/20/2015 | | 3.67 | 63.62 | 10.8 | 0.349 | 6.4 | -163 | 1.99 |
| | 2/2/2016 | | 3.59 | 63.70 | 11.3 | 0.789 | 6.6 | -97 | 0.68 |

Table 1
Groundwater Parameters
Gordon Trucking, Inc., Pacific, Washington

| Monitoring Well | Date Measured | TOC Elevation (feet AMSL) | DTW (feet) | Groundwater Elevation (feet AMSL) | Temperature (°C) | Electrical Conductivity (mS/cm) | pH | ORP (mV) | DO (mg/L) |
|---|---|---|---|---|---|---|---|---|---|
| MW-05 | 6/24/2009 | 67.79 | 5.20 | 62.59 | 13.3 | 1.746 | 6.5 | -111 | 1.30 |
| | 9/24/2009 | | 5.99 | 61.80 | 16.2 | 1.142 | 6.5 | -96 | 0.51 |
| | 12/16/2009 | | 4.38 | 63.41 | 13.4 | 1.117 | 6.6 | -67 | 1.63 |
| | 1/21/2010 | | 3.75 | 64.04 | 12.7 | 1.128 | 6.6 | -103 | 0.85 |
| | 3/17/2010 | | 4.36 | 63.43 | 12.3 | 1.132 | 6.6 | -103 | 1.35 |
| | 9/30/2010 | | 5.58 | 62.21 | 16.0 | 1.121 | 6.2 | -116 | 0.75 |
| | 3/15/2011 | | 3.17 | 64.62 | 11.3 | 1.101 | 6.2 | -80 | 3.79 |
| | 9/7/2011 | | 6.23 | 61.56 | 16.5 | 0.705 | 6.7 | -64 | 7.82 |
| | 3/22/2012 | | 3.39 | 64.40 | 11.2 | 1.002 | 6.5 | -90 | 3.05 |
| | 2/11/2013 | | 5.05 | 62.74 | 11.6 | 0.847 | 6.8 | -104 | 1.07 |
| | 2/27/2014 | | 3.73 | 64.06 | 12.0 | 1.01 | 6.5 | -153 | 3.49 |
| | 1/20/2015 | | 3.97 | 63.82 | 11.3 | 0.652 | 6.3 | -171 | 3.31 |
| | 2/2/2016 | | 3.91 | 63.88 | 13.4 | 1.17 | 6.1 | -134 | 3.51 |

Notes:

* MW-03 was gauged on 2/2/16 but water quality parameters were collected on 2/4/16 due to sampling equipment failure.

1 TOC = Top of Casing

2 AMSL = Above Mean Sea Level

3 DTW = Depth to Water

4 ORP = Oxygen Reduction Potential (mV = millivolts)

5 DO = Dissolved Oxygen (mg/L = milligrams per Liter)

6 mS/cm = microSiemens per centimenter

Table 2
Total Petroleum Hydrocarbons Compounds in Groundwater
Gordon Trucking, Inc., Pacific, Washington

| | Date Sampled | Kerosene (µg/L) | #2 Diesel (µg/L) | Motor Oil (µg/L) |
|---|---|---|---|---|
| MW-01 | 1/11/2008 | <500 | <236 | <472 |
| | 6/24/2009 | -- | <236 | <472 |
| | 9/24/2009 | <120 | <120 | <240 |
| | 12/16/2009 | <120 | <120 | 240 |
| | 3/18/2010 | <120 | <120 | <240 |
| | 9/30/2010 | <120 | <120 | <240 |
| | 3/15/2011 | <120 | <120 | <240 |
| | 9/7/2011 | <120 | 130 | <240 |
| | 3/22/2012 | <120 | <120 | <240 |
| | 9/25/2012 | <120 | <120 | <240 |
| | 2/13/2013 | <120 | <120 | <240 |
| | 2/27/2014 | <130 | <130 | 270 |
| | 1/20/2015 | 130 | <130 | <260 |
| | 2/2/2016 | <110 | <110 | <250 |
| MW-02 | 1/11/2008 | <500 | <236 | <472 |
| | 6/24/2009 | -- | 387 | <472 |
| | 9/24/2009 | 280 | 490 | 450 |
| | 12/16/2009 | <120 | 270 | **500** |
| | 3/18/2010 | <120 | 270 | **550** |
| | 9/30/2010 | <120 | <120 | <240 |
| | 3/15/2011 | <120 | 200 | <240 |
| | 9/7/2011 | **710** | **1100** | **980** |
| | 3/22/2012 | 120 | 260 | <240 |
| | 9/25/2012 | **730** | **1,300** | **940** |
| | 2/13/2013 | 310 | 440 | 330 |
| | 2/27/2014 | 120 | 190 | 290 |
| | 1/20/2015 | 140 | 140 | <240 |
| | 2/2/2016 | <110 | <110 | <250 |
| MW-03 | 1/11/2008 | 920 | **958** | <472 |
| | 6/24/2009 | -- | **9,200** | <472 |
| | 9/24/2009 | **4,700** | **6,000** | **1,000** |
| | 12/16/2009 | **3,500** | **5,300** | **1,300** |
| | 3/18/2010 | **8,400** | **15,000** | **3,200** |
| | 9/30/2010 | **1,600** | **2,500** | <240 |
| | 3/15/2011 | **9,000** | **13,000** | **2,500** |
| | 9/7/2011 | **4,200** | **5,100** | **1,500** |
| | 3/22/2012 | **10,000** | **17,000** | **4,900** |
| | 9/25/2012 | **3,000** | **4,300** | **1,700** |
| | 2/13/2013 | **6,100** | **8,700** | **2,500** |
| | 2/27/2014 | **1,700** | **2,100** | **720** |
| | 1/20/2015 | **3,500** | **4,200** | **1,000** |
| | 2/25/2016 | **1,400** | **2,000** | 360 |

Table 2
Total Petroleum Hydrocarbons Compounds in Groundwater
Gordon Trucking, Inc., Pacific, Washington

| | Date Sampled | Kerosene (µg/L) | #2 Diesel (µg/L) | Motor Oil (µg/L) |
|---|---|---|---|---|
| MW-04 | 1/11/2008 | <500 | <236 | <472 |
| | 6/24/2009 | -- | **836** | <472 |
| | 9/24/2009 | **950** | **1,300** | **700** |
| | 12/16/2009 | **850** | **1,400** | **820** |
| | 3/18/2010 | **1,300** | **2,200** | **1,300** |
| | 9/30/2010 | 130 | 200 | <240 |
| | 3/15/2011 | **1,500** | **2,000** | <1200 |
| | 9/7/2011 | **2,000** | **2,300** | **1,100** |
| | 3/22/2012 | **1,600** | **2,300** | **1,000** |
| | 9/25/2012 | **1,700** | **2,100** | **810** |
| | 2/13/2013 | **1,700** | **1,900** | **720** |
| | 2/27/2014 | **770** | **950** | **500** |
| | 1/20/2015 | **1,200** | **1,400** | **530** |
| | 2/2/2016 | **540** | **750** | <250 |
| MW-05 | 6/24/2009 | -- | 448 | <472 |
| | 9/24/2009 | 370 | 490 | 420 |
| | 12/16/2009 | 370 | **670** | **710** |
| | 1/21/2010 | 300 | **540** | **550** |
| | 3/18/2010 | 300 | **570** | **760** |
| | 9/30/2010 | <120 | <120 | <240 |
| | 3/15/2011 | **810** | **1,200** | 500 |
| | 9/7/2011 | 390 | 500 | 460 |
| | 3/22/2012 | 480 | **840** | **550** |
| | 9/25/2012 | 370 | **590** | **620** |
| | 2/13/2013 | 280 | 390 | 370 |
| | 2/27/2014 | 240 | 300 | 310 |
| | 2/20/2015 | 300 | 340 | <240 |
| | 2/2/2016 | 180 | 300 | <250 |
| **Method A Cleanup Levels** | | **500** | **500** | **500** |

Notes:

1 Sample analyzed per NWTPH-Dx Method

2 Cleanup Levels per Table 720-1, WAC 173-340-900

3 Bold values indicate data exceeds Method A Cleanup Levels

Table 3
Groundwater Quality Control/Quality Assurance Results Summary
Gordon Trucking, Inc., Pacific, Washington

| | Date Sampled | Kerosene (µg/L) | #2 Diesel (µg/L) | Motor Oil (µg/L) |
|---|---|---|---|---|
| MW-03 | 2/4/2016 | **1,400** | **2,000** | 360 |
| MW-DUP | 2/4/2016 | **1,600** | **2,300** | 480 |
| RPD[1] | | 13% | 14% | 29% |

Notes:

1 RPD = Relative Percent Difference

2 Samples were analyzed beyond the specified holding time.

# Figures


N

**Location Map, Gordon Trucking, Inc.**
**151 Stewart Road SW, Pacific, Washington 98047**

Scale

1,350 675 0 1,350 Feet

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Seattle, WA

March 2016

**Figure 1**


**Legend**

Monitoring well location
(water elevation in feet above mean sea level)

**Groundwater Monitoring Locations with Groundwater Elevations for February 2016 Gordon Trucking Inc.**

45 22.5 0 45 Feet

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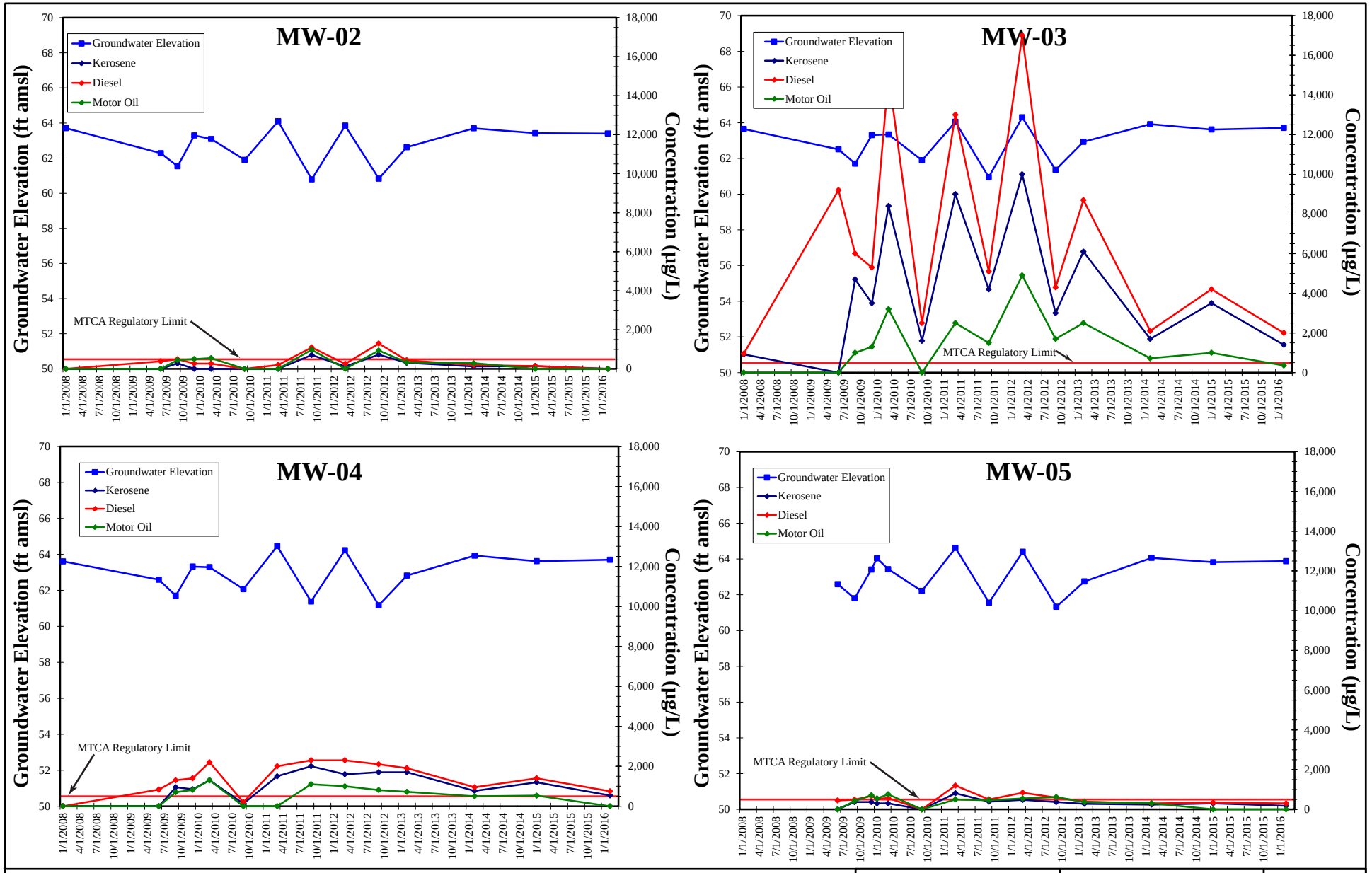
Seattle, WA

March 2016

**Figure 2**



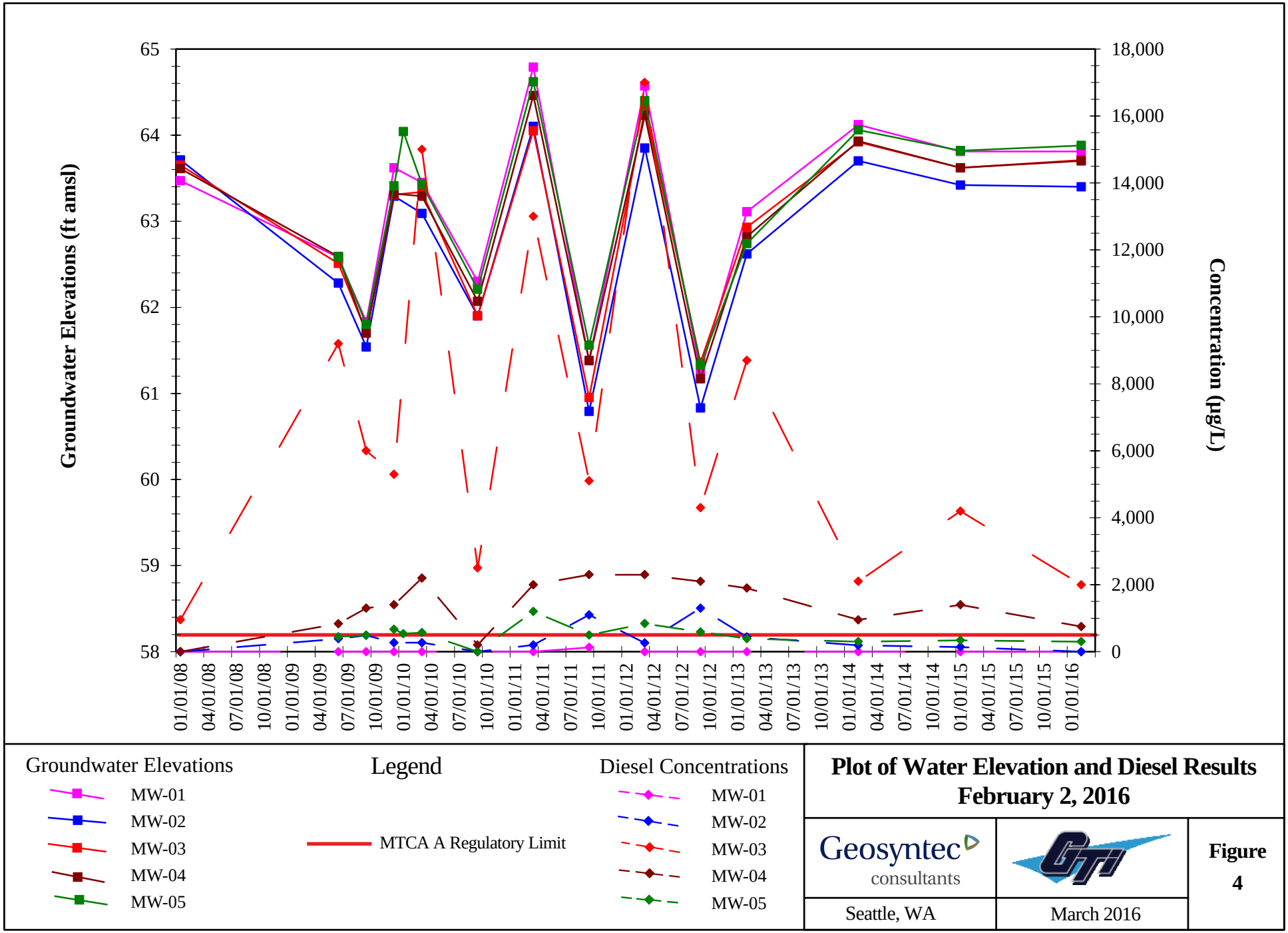

**Plots of MW-02 through MW-05 Monitoring Results**
**Gordon Trucking, Pacific, WA**
**February 2, 2016**

Geosyntec consultants

Seattle, WA

March 2016

**Figure 3**




**Plot of Water Elevation and Diesel Results**
**February 2, 2016**

Geosyntec consultants

Seattle, WA

March 2016

**Figure 4**

# Attachment A

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-57138-1
Client Project/Site: Gordon Trucking, Pacific, WA

For:
Geosyntec Consultants, Inc.
520 Pike Street
Suite 1375
Seattle, Washington 98101

Attn: Adrianna Jarosz

Kristine D. Allen

*Authorized for release by:*
*2/23/2016 4:00:39 PM*

Kristine Allen, Manager of Project Management
(253)248-4970
kristine.allen@testamericainc.com

# Table of Contents

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57138-1

## Job ID: 580-57138-1

### Laboratory: TestAmerica Seattle

**Narrative**

**Job Narrative**
**580-57138-1**

**Comments**
No additional comments.

**Receipt**
The samples were received on 2/2/2016 4:06 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.9º C.

**Receipt Exceptions**

The client requested that we use the containers that are labeled MW03-020216 as the MW05-020216 containers.

**GC Semi VOA**
Method(s) NWTPH-Dx: The surrogate recovery for the blank associated with preparation batch 580-211149 and analytical batch 580-211531 was outside the upper control limits. All associated sample surrogates fell within acceptance criteria; therefore, the data have been reported.

Method(s) NWTPH-Dx: The following samples contained a hydrocarbon pattern in the Kerosene (C8-C20) range; however, the elution pattern was later than the Kerosene (C8-C20) fuel pattern used by the laboratory for quantitative purposes: MW04-020216 (580-57138-3) and MW05-020216 (580-57138-4).

Method(s) NWTPH-Dx: The following sample contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: MW05-020216 (580-57138-4).

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

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

# Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57138-1

## Qualifiers

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| X | Surrogate is outside control 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) |

# Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57138-1

**Client Sample ID: MW01-020216**
**Date Collected: 02/02/16 11:55**
**Date Received: 02/02/16 16:06**

**Lab Sample ID: 580-57138-1**
**Matrix: Water**

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Kerosene (C8-C20) | ND | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 17:17 | 1 |
| #2 Diesel (C10-C24) | ND | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 17:17 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/11/16 15:19 | 02/18/16 17:17 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *86* | | *50 - 150* | *02/11/16 15:19* | *02/18/16 17:17* | *1* |

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57138-1

**Client Sample ID: MW02-020216**
**Date Collected: 02/02/16 10:45**
**Date Received: 02/02/16 16:06**

**Lab Sample ID: 580-57138-2**
**Matrix: Water**

**Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Kerosene (C8-C20) | ND | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 17:37 | 1 |
| #2 Diesel (C10-C24) | ND | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 17:37 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/11/16 15:19 | 02/18/16 17:37 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *79* | | *50 - 150* | *02/11/16 15:19* | *02/18/16 17:37* | *1* |

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57138-1

**Client Sample ID: MW04-020216**
**Date Collected: 02/02/16 13:30**
**Date Received: 02/02/16 16:06**

**Lab Sample ID: 580-57138-3**
**Matrix: Water**

**Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Kerosene (C8-C20)** | **0.54** | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 17:57 | 1 |
| **#2 Diesel (C10-C24)** | **0.75** | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 17:57 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/11/16 15:19 | 02/18/16 17:57 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *81* | | *50 - 150* | *02/11/16 15:19* | *02/18/16 17:57* | *1* |

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57138-1

**Client Sample ID: MW05-020216**
**Date Collected: 02/02/16 12:45**
**Date Received: 02/02/16 16:06**

**Lab Sample ID: 580-57138-4**
**Matrix: Water**

**Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Kerosene (C8-C20)** | **0.18** | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 18:17 | 1 |
| **#2 Diesel (C10-C24)** | **0.30** | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 18:17 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/11/16 15:19 | 02/18/16 18:17 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *85* | | *50 - 150* | *02/11/16 15:19* | *02/18/16 18:17* | *1* |

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

**Lab Sample ID: MB 580-211149/1-A**
**Matrix: Water**
**Analysis Batch: 211531**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 211149**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Kerosene (C8-C20) | ND | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 16:57 | 1 |
| #2 Diesel (C10-C24) | ND | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 16:57 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/11/16 15:19 | 02/18/16 16:57 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *169* | *X* | *50 - 150* | *02/11/16 15:19* | *02/18/16 16:57* | *1* |

**Lab Sample ID: MB 580-211149/1-B**
**Matrix: Water**
**Analysis Batch: 211295**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 211149**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/12/16 19:10 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/11/16 15:19 | 02/12/16 19:10 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *76* | | *50 - 150* | *02/11/16 15:19* | *02/12/16 19:10* | *1* |

**Lab Sample ID: LCS 580-211149/2-B**
**Matrix: Water**
**Analysis Batch: 211295**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 211149**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | | 2.00 | 1.73 | | mg/L | | 86 | 59 - 120 | | |
| Motor Oil (>C24-C36) | | | 2.01 | 1.66 | | mg/L | | 82 | 71 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *83* | | *50 - 150* |

**Lab Sample ID: LCSD 580-211149/3-B**
**Matrix: Water**
**Analysis Batch: 211295**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 211149**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | | 2.00 | 1.83 | | mg/L | | 92 | 59 - 120 | 6 | 27 |
| Motor Oil (>C24-C36) | | | 2.01 | 1.68 | | mg/L | | 84 | 71 - 140 | 1 | 27 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *83* | | *50 - 150* |

# Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57138-1

## Client Sample ID: MW01-020216
**Lab Sample ID: 580-57138-1**
**Date Collected: 02/02/16 11:55**
**Matrix: Water**
**Date Received: 02/02/16 16:06**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 211149 | 02/11/16 15:19 | MDD | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 211531 | 02/18/16 17:17 | KZ1 | TAL SEA |

## Client Sample ID: MW02-020216
**Lab Sample ID: 580-57138-2**
**Date Collected: 02/02/16 10:45**
**Matrix: Water**
**Date Received: 02/02/16 16:06**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 211149 | 02/11/16 15:19 | MDD | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 211531 | 02/18/16 17:37 | KZ1 | TAL SEA |

## Client Sample ID: MW04-020216
**Lab Sample ID: 580-57138-3**
**Date Collected: 02/02/16 13:30**
**Matrix: Water**
**Date Received: 02/02/16 16:06**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 211149 | 02/11/16 15:19 | MDD | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 211531 | 02/18/16 17:57 | KZ1 | TAL SEA |

## Client Sample ID: MW05-020216
**Lab Sample ID: 580-57138-4**
**Date Collected: 02/02/16 12:45**
**Matrix: Water**
**Date Received: 02/02/16 16:06**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 211149 | 02/11/16 15:19 | MDD | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 211531 | 02/18/16 18:17 | KZ1 | TAL SEA |

**Laboratory References:**

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57138-1

## Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| Alaska (UST) | State Program | 10 | UST-022 | 03-02-16 |
| California | State Program | 9 | 2901 | 01-31-18 |
| L-A-B | DoD ELAP | | L2236 | 01-19-19 |
| L-A-B | ISO/IEC 17025 | | L2236 | 01-19-19 |
| Montana (UST) | State Program | 8 | N/A | 04-30-20 |
| Oregon | NELAP | 10 | WA100007 | 11-06-16 |
| US Fish & Wildlife | Federal | | LE058448-0 | 02-28-16 |
| USDA | Federal | | P330-14-00126 | 04-08-17 |

# Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57138-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 580-57138-1 | MW01-020216 | Water | 02/02/16 11:55 | 02/02/16 16:06 |
| 580-57138-2 | MW02-020216 | Water | 02/02/16 10:45 | 02/02/16 16:06 |
| 580-57138-3 | MW04-020216 | Water | 02/02/16 13:30 | 02/02/16 16:06 |
| 580-57138-4 | MW05-020216 | Water | 02/02/16 12:45 | 02/02/16 16:06 |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
5755 8th Street E.
Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.testamericainc.com

☐ Rush
☐ Short Hold

# Chain of Custody Record

| Client | Client Contact | Date | Chain of Custody Number |
|---|---|---|---|
| Geosyntec Consultants | Adrianna Jarosz | 2/2/16 | 23788 |
| **Address** | **Telephone Number (Area Code)/Fax Number** | **Lab Number** | **Page 1 of 1** |
| 520 Pike St, Ste 1375 | 206-496-1447 | 57138 | |
| **City** | **State / Zip Code** | **Sampler** | **Lab Contact** |
| Seattle | WA 98101 | AJ | C. Escarez |
| **Project Name and Location (State)** | **Billing Contact** | **Contract/Purchase Order/Quote No.** | |
| Gordon Trucking, Dacific (WA) | Lisa Curtis | PNR0609 | |

| Sample I.D. and Location/Description (Containers for each sample may be combined on one line) | Date | Time | Matrix: Air | Aqueous | Sed. | Soil | Containers & Preservatives: Unpres. | H2SO4 | HNO3 | HCl | NaOH | ZnAc/ NaOH | Analysis: NWTPH-DX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW01-020216 | 2/2/16 | 1155 | | X | | | | | | X | | | X |
| MW02-020216 | | 1045 | | | | | | | | | | | |
| ~~MW03-020216~~ | | | | | | | | | | | | | (AJ) (sample not collected) |
| MW04-020216 | | 1330 | | | | | | | | | | | |
| MW05-020216 | | 1245 | | | | | | | | | | | |
| ~~MWDUP-020216~~ | | 1200 | | | | | | | | | | | |

Special Instructions/
580-57138 Chain of Custody

**Cooler**
☐ Yes ☐ No Cooler Temp: _____

**Possible Hazard Identification**
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

**Sample Disposal**
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

**Turn Around Time Required (business days)**
☐ 24 Hours ☐ 48 Hours ☐ 5 Days ☒ 10 Days ☐ 15 Days ☐ Other _____

**QC Requirements (Specify)**

| | Sign/Print | Date | Time |
|---|---|---|---|
| 1. Relinquished By | ADRIANNA JAROSZ | 2/2/16 | 1606 |
| 1. Received By | | 2/2/16 | 1606 |
| 2. Relinquished By | | | |
| 2. Received By | | | |
| 3. Relinquished By | | | |
| 3. Received By | | | |

TB ___ Cooler IR2 Cor 5.8 Unc 5.9
Cooler Dsc Lg BI Wht @Lab _____
Wet/Packs Packing Bubble
Cli d-c. w/o c.s.

Comments

**DISTRIBUTION:** WHITE – Stays with the Samples; CANARY – Returned to Client with Report; PINK – Field Copy


2/23/2016

# Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-57138-1

**Login Number: 57138**
**List Number: 1**
**Creator: Presley, Kim A**

**List Source: TestAmerica Seattle**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| 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. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| 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. | True | |
| 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 | |

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-57161-1
Client Project/Site: Gordon Trucking, Pacific, WA

For:
Geosyntec Consultants, Inc.
520 Pike Street
Suite 1375
Seattle, Washington 98101

Attn: Adrianna Jarosz

Kristine D. Allen

*Authorized for release by:*
*2/29/2016 5:01:40 PM*

Kristine Allen, Manager of Project Management
(253)248-4970
kristine.allen@testamericainc.com

# Table of Contents

# Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57161-1

## Job ID: 580-57161-1

### Laboratory: TestAmerica Seattle

**Narrative**

**Job Narrative**
**580-57161-1**

**Comments**
No additional comments.

**Receipt**
The samples were received on 2/4/2016 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 8.3º C.

**GC Semi VOA**
Method(s) NWTPH-Dx: The surrogate recovery for the blank associated with preparation batch 580-211149 and analytical batch 580-211531 was outside the upper control limits. All associated sample surrogates fell within acceptance criteria; therefore, the data have been reported.

Method(s) NWTPH-Dx: The following samples contained a hydrocarbon pattern in the Kerosene (C8-C20) range; however, the elution pattern was later than the Kerosene (C8-C20) fuel pattern used by the laboratory for quantitative purposes: MW03-020416 (580-57161-1) and MWDUP-020416 (580-57161-2).

Method(s) NWTPH-Dx:: The results for MW03-020416 (580-57161-1) and the field MWDUP-020416 (580-57161-2) were not comparable in the original extractions. Samples were re-extraced outside of holding time and the results are comparable. The sample chromatograms were reviewed and the chromotography is similar between both extractions. Non-homogeneity is suspected in the original extraction. Both sets of data have been reported.

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

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

## Qualifiers

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| H | Sample was prepped or analyzed beyond the specified holding time |
| X | Surrogate is outside control 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) |

# Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57161-1

**Client Sample ID: MW03-020416**
**Date Collected: 02/04/16 10:15**
**Date Received: 02/04/16 11:20**

**Lab Sample ID: 580-57161-1**
**Matrix: Water**

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Kerosene (C8-C20)** | **0.13** | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 18:37 | 1 |
| **#2 Diesel (C10-C24)** | **0.17** | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 18:37 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/11/16 15:19 | 02/18/16 18:37 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *84* | | *50 - 150* | *02/11/16 15:19* | *02/18/16 18:37* | *1* |

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) - RE

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Kerosene (C8-C20)** | **1.4** | **H** | 0.11 | | mg/L | | 02/23/16 16:59 | 02/25/16 22:26 | 1 |
| **#2 Diesel (C10-C24)** | **2.0** | **H** | 0.11 | | mg/L | | 02/23/16 16:59 | 02/25/16 22:26 | 1 |
| **Motor Oil (>C24-C36)** | **0.36** | **H** | 0.25 | | mg/L | | 02/23/16 16:59 | 02/25/16 22:26 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *70* | | *50 - 150* | *02/23/16 16:59* | *02/25/16 22:26* | *1* |

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57161-1

**Client Sample ID: MWDUP-020416**
**Date Collected: 02/04/16 10:00**
**Date Received: 02/04/16 11:20**

**Lab Sample ID: 580-57161-2**
**Matrix: Water**

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Kerosene (C8-C20) | 7.6 | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 18:57 | 1 |
| #2 Diesel (C10-C24) | 10 | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 18:57 | 1 |
| Motor Oil (>C24-C36) | 1.2 | | 0.25 | | mg/L | | 02/11/16 15:19 | 02/18/16 18:57 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *115* | | *50 - 150* | *02/11/16 15:19* | *02/18/16 18:57* | *1* |

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) - RE

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Kerosene (C8-C20) | 1.6 | H | 0.11 | | mg/L | | 02/23/16 16:59 | 02/25/16 22:45 | 1 |
| #2 Diesel (C10-C24) | 2.3 | H | 0.11 | | mg/L | | 02/23/16 16:59 | 02/25/16 22:45 | 1 |
| Motor Oil (>C24-C36) | 0.48 | H | 0.25 | | mg/L | | 02/23/16 16:59 | 02/25/16 22:45 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *75* | | *50 - 150* | *02/23/16 16:59* | *02/25/16 22:45* | *1* |

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

**Lab Sample ID: MB 580-211149/1-A**
**Matrix: Water**
**Analysis Batch: 211531**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 211149**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Kerosene (C8-C20) | ND | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 16:57 | 1 |
| #2 Diesel (C10-C24) | ND | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/18/16 16:57 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/11/16 15:19 | 02/18/16 16:57 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *169* | *X* | *50 - 150* | *02/11/16 15:19* | *02/18/16 16:57* | *1* |

**Lab Sample ID: MB 580-211149/1-B**
**Matrix: Water**
**Analysis Batch: 211295**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 211149**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | ND | | 0.11 | | mg/L | | 02/11/16 15:19 | 02/12/16 19:10 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/11/16 15:19 | 02/12/16 19:10 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *76* | | *50 - 150* | *02/11/16 15:19* | *02/12/16 19:10* | *1* |

**Lab Sample ID: LCS 580-211149/2-B**
**Matrix: Water**
**Analysis Batch: 211295**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 211149**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | | 2.00 | 1.73 | | mg/L | | 86 | 59 - 120 | | |
| Motor Oil (>C24-C36) | | | 2.01 | 1.66 | | mg/L | | 82 | 71 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *83* | | *50 - 150* |

**Lab Sample ID: LCSD 580-211149/3-B**
**Matrix: Water**
**Analysis Batch: 211295**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 211149**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | | 2.00 | 1.83 | | mg/L | | 92 | 59 - 120 | 6 | 27 |
| Motor Oil (>C24-C36) | | | 2.01 | 1.68 | | mg/L | | 84 | 71 - 140 | 1 | 27 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *83* | | *50 - 150* |

**Lab Sample ID: MB 580-211839/1-A**
**Matrix: Water**
**Analysis Batch: 211891**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 211839**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Kerosene (C8-C20) | ND | | 0.11 | | mg/L | | 02/23/16 16:59 | 02/25/16 06:57 | 1 |
| #2 Diesel (C10-C24) | ND | | 0.11 | | mg/L | | 02/23/16 16:59 | 02/25/16 06:57 | 1 |

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

**Lab Sample ID: MB 580-211839/1-A**
**Matrix: Water**
**Analysis Batch: 211891**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 211839**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/23/16 16:59 | 02/25/16 06:57 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *81* | | *50 - 150* | *02/23/16 16:59* | *02/25/16 06:57* | *1* |

**Lab Sample ID: MB 580-211839/1-A**
**Matrix: Water**
**Analysis Batch: 211977**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 211839**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Kerosene (C8-C20) | ND | | 0.11 | | mg/L | | 02/23/16 16:59 | 02/25/16 22:06 | 1 |
| #2 Diesel (C10-C24) | ND | | 0.11 | | mg/L | | 02/23/16 16:59 | 02/25/16 22:06 | 1 |
| Motor Oil (>C24-C36) | ND | | 0.25 | | mg/L | | 02/23/16 16:59 | 02/25/16 22:06 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *o-Terphenyl* | *78* | | *50 - 150* | *02/23/16 16:59* | *02/25/16 22:06* | *1* |

**Lab Sample ID: LCS 580-211839/2-A**
**Matrix: Water**
**Analysis Batch: 211891**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 211839**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | | 2.00 | 1.77 | | mg/L | | 88 | 59 - 120 | | |
| Motor Oil (>C24-C36) | | | 2.01 | 1.91 | | mg/L | | 95 | 71 - 140 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *88* | | *50 - 150* |

**Lab Sample ID: LCSD 580-211839/3-A**
**Matrix: Water**
**Analysis Batch: 211891**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 211839**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #2 Diesel (C10-C24) | | | 2.00 | 1.63 | | mg/L | | 81 | 59 - 120 | 8 | 27 |
| Motor Oil (>C24-C36) | | | 2.01 | 1.69 | | mg/L | | 84 | 71 - 140 | 12 | 27 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *o-Terphenyl* | *77* | | *50 - 150* |

# Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57161-1

## Client Sample ID: MW03-020416

**Lab Sample ID: 580-57161-1**

**Date Collected: 02/04/16 10:15**

**Matrix: Water**

**Date Received: 02/04/16 11:20**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 211149 | 02/11/16 15:19 | MDD | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 211531 | 02/18/16 18:37 | KZ1 | TAL SEA |
| Total/NA | Prep | 3510C | RE | | 211839 | 02/23/16 16:59 | RBL | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | RE | 1 | 211977 | 02/25/16 22:26 | KZ1 | TAL SEA |

## Client Sample ID: MWDUP-020416

**Lab Sample ID: 580-57161-2**

**Date Collected: 02/04/16 10:00**

**Matrix: Water**

**Date Received: 02/04/16 11:20**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3510C | | | 211149 | 02/11/16 15:19 | MDD | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | | 1 | 211531 | 02/18/16 18:57 | KZ1 | TAL SEA |
| Total/NA | Prep | 3510C | RE | | 211839 | 02/23/16 16:59 | RBL | TAL SEA |
| Total/NA | Analysis | NWTPH-Dx | RE | 1 | 211977 | 02/25/16 22:45 | KZ1 | TAL SEA |

**Laboratory References:**

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57161-1

## Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| Alaska (UST) | State Program | 10 | UST-022 | 03-02-16 |
| California | State Program | 9 | 2901 | 01-31-18 |
| L-A-B | DoD ELAP | | L2236 | 01-19-19 |
| L-A-B | ISO/IEC 17025 | | L2236 | 01-19-19 |
| Montana (UST) | State Program | 8 | N/A | 04-30-20 |
| Oregon | NELAP | 10 | WA100007 | 11-06-16 |
| US Fish & Wildlife | Federal | | LE058448-0 | 10-31-16 |
| USDA | Federal | | P330-14-00126 | 04-08-17 |
| Washington | State Program | 10 | C553 | 02-17-17 |

# Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Gordon Trucking, Pacific, WA

TestAmerica Job ID: 580-57161-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 580-57161-1 | MW03-020416 | Water | 02/04/16 10:15 | 02/04/16 11:20 |
| 580-57161-2 | MWDUP-020416 | Water | 02/04/16 10:00 | 02/04/16 11:20 |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
5755 8th Street E.
Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.testamericainc.com

☐ Rush
☐ Short Hold

# Chain of Custody Record

| Client | Client Contact | Date | Chain of Custody Number |
|---|---|---|---|
| GEOSYNTEC CONSULTANTS | ADRIANNA JAROSZ | 2/4/16 | 28533 |
| **Address** | **Telephone Number (Area Code)/Fax Number** | **Lab Number** | **Page 1 of 1** |
| 520 PIKE ST, STE 1375 | 206-496-1447 | | |
| **City** / **State** / **Zip Code** | **Sampler** | **Lab Contact** | |
| Seattle / WA / 98101 | AJ | C. ESCAREZ | |
| **Project Name and Location (State)** | **Billing Contact** | | |
| Gordon Trucking, Pacific (WA) | Lisa Curtis | | |
| **Contract/Purchase Order/Quote No.** | | | |
| PNR0609 | | | |

| Sample I.D. and Location/Description (Containers for each sample may be combined on one line) | Date | Time | Matrix: Air | Aqueous | Sed. | Soil | Containers & Preservatives: Unpres. | H2SO4 | HNO3 | HCl | NaOH | ZnAc/NaOH | Analysis: NWTPH-DX | Special Instructions/ Conditions of Receipt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW03-020416 | 2/4/16 | 1015 | | X | | | | | | X | | | X | |
| MWDUP-020416 | ↓ | 1000 | | X | | | | | | X | | | X | |

580-57161 Chain of Custody

| Cooler | Possible Hazard Identification | Sample Disposal | (A fee may be assessed if samples are retained longer than 1 month) |
|---|---|---|---|
| ☐ Yes ☐ No Cooler Temp: ____ | ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown | ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months | |

**Turn Around Time Required (business days)**
☐ 24 Hours ☐ 48 Hours ☐ 5 Days ☒ 10 Days ☐ 15 Days ☐ Other ____

**QC Requirements (Specify)**

| | Relinquished By Sign/Print | Date | Time | Received By Sign/Print | Date | Time |
|---|---|---|---|---|---|---|
| 1. | ADRIANNA JAROSZ | 2/4/16 | 1120 | Brian A. Hall | 2/4/16 | 11:20 |
| 2. | | | | | | |
| 3. | | | | | | |

Comments

TB ___ Cooler 1.2 Cor 0.2 Unc 0.3
Cooler Dsc SM Radiol@Lab ___
Wet/Packs Packing SM lb

**DISTRIBUTION:** WHITE – Stays with the Samples; CANARY – Returned to Client with Report; PINK – Field Copy

TAL-8274-580 (0210)

# Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-57161-1

**Login Number: 57161**
**List Number: 1**
**Creator: Devries, Kelsey M**

**List Source: TestAmerica Seattle**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | Received same day of collection; chilling process has begun. |
| Cooler Temperature is recorded. | True | |
| 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. | True | |
| 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 | |