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Environmental Engineering, Inc.

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TECHNICAL MEMORANDUM

To: John Mefford, Ecology, Yakima, WA

CC: Mike Ehlebracht, Hart Crowser, Seattle, WA

From: Mike Procsal, TerraGraphics, Boise, ID

Date: November 1, 2014

Project Code: 14030

Subject: **CMG: Third Quarter (September 2014) Groundwater Sampling Data Summary**

1 Introduction

TerraGraphics Environmental Engineering, Inc. (TerraGraphics) teamed with Hart Crowser, Inc. (under contract with the Washington State Department of Ecology, [Ecology]) to perform groundwater compliance monitoring at CMG Properties (hereinafter, referred to as the "site"), located at 502 North Avenue, Sunnyside, Washington (Figure 1). This Memorandum summarizes the field activities and laboratory analytical results. Groundwater sample results were compared to Model Toxics Control Act (MTCA) Method A Cleanup Levels (Washington Administrative Code [WAC] 173-340, Tables 720-1). Recommendations for future actions to be taken at the site are provided in Section 7.

Groundwater monitoring activities were conducted in accordance with the Sampling and Analysis Plan (SAP)/Quality Assurance Project Plan (QAPP) for Groundwater Monitoring at CMG Properties in Sunnyside, Washington (TerraGraphics 2014). The primary goal of this work is to collect and analyze groundwater samples for petroleum contaminants and natural attenuation parameters. The analytical results will be used to evaluate natural attenuation as the remedy for petroleum impacted groundwater and to determine if current environmental conditions warrant site closure.

2 Site Use and History

CMG Properties is located at 502 North Avenue, Sunnyside, Washington (Figure 1). The site is currently being operated as a dairy supply and service warehouse (Excel Dairy Service Inc.). In April 2006, a 1,100-gallon leaking underground storage tank (UST) was removed from the site.

The UST site assessment revealed concentrations of gasoline, and benzene, ethyl benzene, toluene, and total xylenes (BTEX) exceeding MTCA Method A unrestricted soil cleanup levels (Table 740-1, WAC 173-340-900). In June 2006, a remedial investigation was conducted to further define the extent of petroleum contamination caused by the release. During that investigation, a dry well was encountered in the northeastern portion of the excavation. Groundwater samples were not obtained during the tank removal, nor during the June 2006 investigation, but at approximately 8.5 feet below ground surface (bgs) the soil was observed to be very moist. The excavation was backfilled with soil removed from the pit during investigation activities.

TerraGraphics and Hart Crowser, Inc. completed an environmental assessment at the site in December 2011. Soil sampling data collected as part of this work indicated that gasoline-range hydrocarbons and BTEX compounds exceeded MTCA Method A unrestricted cleanup levels in only one of the six borings at the site. The extent of soil petroleum contamination identified in 2011 appeared to be limited and did not significantly impact site groundwater quality.

Three groundwater monitoring wells (MW-1, MW-2, and MW-3) were also installed as part of the 2011 assessment. Diesel- and oil-range hydrocarbons and lead exceeded MTCA Method A Groundwater Cleanup Levels in wells MW-1 and MW-3, respectively. However, these exceedances may have been due to elevated turbidity and the presence of natural organics. Recommendations provided in the Environmental Site Assessment Report (TerraGraphics 2012) included conducting quarterly groundwater monitoring for one year using procedures to minimize turbidity and interference from natural organics.

Groundwater monitoring activities were conducted by Ecology staff in January 2014 and samples were analyzed for petroleum contaminants and natural attenuation parameters. Results are summarized in Table 1.

In March 2014, Ecology requested additional groundwater sampling. Ecology contracted Hart Crowser, Inc. and TerraGraphics to perform quarterly groundwater monitoring sampling beginning during the Second Quarter of 2014. The results from the Third Quarter 2014 groundwater sampling event are presented in this Memorandum.

3 Groundwater Sampling

On September 12, 2014, TerraGraphics collected groundwater samples from three onsite groundwater monitoring wells. Prior to sampling, water quality parameters were monitored and recorded utilizing a flow through cell and multi-probe. Groundwater was purged from the wells at a rate of approximately 200 milliliters/minute (mL/min) until the water quality parameters stabilized (Table 2).

Three groundwater samples (labeled MW-1, MW-2, and MW-3) and one duplicate (labeled MW-3D) were collected at a rate of approximately 200 mL/min. Samples were iced and sent to TestAmerica Laboratories, Inc. (TestAmerica) located at 5755 8th Street East, Tacoma, Washington. The coolers were scheduled for Saturday delivery, however the Fedex shipping facility (located in Pendleton, Oregon) coded the shipment incorrectly as weekday delivery and the coolers were routed through Memphis, Tennessee. As a result, the ice did not hold during this delayed transport and the sample temperatures were above the preservation requirement when they arrived at TestAmerica the following Monday. The temperatures of the three coolers

at receipt time were 11.2ºC, 13.8ºC, and 14.5ºC, which are outside SAP/QAPP guidelines. Therefore, TerraGraphics used professional judgment to determine the reliability of the data, and qualify detects as estimated low (J-) and non-detects as estimated (UJ). The samples were analyzed for the following constituents:

1) Benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN), methyl tert-butyl ether (MTBE), ethylene dibromide (EDB), and 1,2-dichloroethane (EDC), using U.S. Environmental Protection Agency (USEPA) Method 8260B (USEPA 1996),
2) Total Petroleum Hydrocarbons-Gasoline Range Organics (TPH-Gx),Total Petroleum Hydrocarbons-Diesel and Oil Range Organics (TPH-Dx) using both silica gel and standard cleanup by Ecology's Analytical Methods for Petroleum Hydrocarbons (Ecology 1997),
3) Lead (total and dissolved) using USEPA Method 200.8/6020 (USEPA 1994b),
4) Natural attenuation parameters (including nitrates, manganese, sulfate, and alkalinity) using USEPA Methods 300.0/9056 (USEPA 2007a), 200.7/6010 (USEPA 1994a), 200.8/6020 (USEPA 1994b), and 310.1/2320B (USEPA 1978), and
5) Total Suspended Solids (TSS) using Standard Method 2540D (1997).

Ferrous iron (a metabolic byproduct of ferric iron) was measured in the field using a Hach field test since the hold time for this type of analysis is very short. The field test was conducted by collecting a small volume of purge water and mixing it with a phenanthroline indicator. The phenanthroline indicator in the Ferrous Iron Reagent reacts with ferrous iron in the sample to form an orange color in proportion to the ferrous iron concentration. Ferrous iron concentrations are included in Table 3.

4 Quality Assurance

A stage 2A data validation Quality Assurance/Quality Control (QA/QC) review was conducted to evaluate the precision, accuracy, and completeness of the data obtained from the laboratory (USEPA 2009). Data were collected, analyzed, and received at the laboratory according to guidelines presented in the SAP/QAPP except for the following:

- The temperatures of the three coolers at receipt time were 11.2ºC, 13.8ºC, and 14.5ºC, which are outside SAP/QAPP guidelines. Therefore, TerraGraphics used professional judgment to determine the reliability of the data, and as a result qualified detects as estimated low (J-) and non-detects as estimated (UJ).
- USEPA Method 300.0 was outside of SAP/QAPP holding times for samples MW-1, MW-3D, MW-2, and MW-3. Nitrate as N in all samples is qualified as an estimate with a "J" flag if it is above the reporting limit (RL), and rejected with an "R" flag if it is below the RL.

The final completeness for the study is assessed at 97.6%. Based on a complete review of the field QA/QC sample results and TestAmerica QA/QC sample results, the dataset for the CMG Properties sampling is determined to be of usable quality. Water quality parameters were measured to demonstrate stability in well recharge prior to sampling. However, review of last recorded values at MW-2 indicated improbable temperature readings (25.0 ºC) and therefore was rejected as shown in Table 2.

4.1 Precision

Data precision was assessed by evaluating relative percent differences (RPDs) for a field replicate, laboratory control samples (LCS)/LCS duplicate pairs, and laboratory replicates. All RPDs where the original sample and the duplicate sample had detections above the RL were within the SAP/QAPP specified range (±20% or ±35% for field replicate). In instances where the original sample was not detected above the RL but the field replicate was, half of the method detection limit was used instead of a non-detect to calculate the RPD. This was the case for Diesel Range Organics (DRO) which had a calculated RPD of 73.7%. Therefore, DRO in both MW-3 and MW-3D is qualified as an estimate with a "J" flag; all other data met precision goals.

4.2 Accuracy

Accuracy of laboratory data was assessed based on percent recovery of LCS samples and matrix spike samples. All data met accuracy goals.

4.3 Completeness

Completeness is an estimate of the amount of valid data obtained from the analytical measurement system for a given set of data. Percent completeness is defined as:

$$\text{Percent Completeness} = [(N_{nq})/(N_t)] \times 100$$

where N_{nq} = number of samples analyzed that meet the data quality goals

N_t = total number of samples analyzed

Data are considered to meet data quality goals when data are not rejected. The SAP/QAPP specifies a target percent completeness of 95% for this project (TerraGraphics 2014). Based on the QA/QC review described here, the final completeness for groundwater data analyzed by TestAmerica for the September 2014 CMG Properties sampling event is 97.6%.

4.4 Comparability

Data comparability was assessed based on field collection and laboratory methods. All data were obtained using standard protocols for sample collection and laboratory analysis and are sufficient for comparison with other site data. The dataset for the site sampling at CMG Properties is determined to be of acceptable quality.

5 Results and Conclusions

Heavy oil results were calculated by adding TPH-Dx and motor oil results, and the total was compared to the MTCA Method A Cleanup Level for heavy oil. All other constituents were compared to their individual respective Method A Cleanup Levels and are summarized in the sections below.

5.1 Groundwater Results

Petroleum concentrations in all three groundwater wells collected on September 12, 2014, were below MTCA Method A Cleanup Levels with the exception of heavy oil (combined diesel- and motor-oil range hydrocarbons) concentrations detected at MW-1 (Table 1). After the MW-1 groundwater samples were subjected to silica gel cleanup, which is designed to reduce the impacts from polar compounds typically associated with natural organic material, the oil-like signature was no longer present and DRO, motor oil, and heavy oil were not detected.

Since there have been indications that naturally occurring organics interference has likely positively biased the TPH-Dx results, contaminant concentrations at the site appear to be compliant with Method A Groundwater Cleanup Levels. Silica gel cleanup methods shall be utilized during future sampling in order to continue to demonstrate compliance. TSS were detected at all three wells indicating the potential presence of silt and/or clay particles. None of the wells exhibited petroleum odor and there was no visual evidence of petroleum.

Groundwater was encountered at approximately between 4 and 5 feet bgs. The calculated groundwater gradient indicates flow toward the south-southeast at approximately 0.096 ft/ft (Figure 2). This flow direction is consistent with historical data from the site which indicates south to south-east flow.

5.2 Natural Attenuation Analysis

Previous groundwater monitoring results indicated that additional lines of support may be necessary to accept natural attenuation as an ongoing remedial strategy to degrade the apparent remaining dissolved phase petroleum hydrocarbons. However, since TPH-Dx results are likely biased high due to the presence of natural organics, and that the silica gel cleanup results indicate compliance, ongoing monitoring of natural attenuation parameters may not be necessary. Natural attenuation parameters are included in Table 3 and are provided as a supplementary data in this Memorandum.

6 Conclusions

TerraGraphics concludes the following:

- Petroleum concentrations are below MTCA A Cleanup Levels for all constituents except heavy oil for the Third Quarter 2014 groundwater sampling event.
- There have been indications that naturally occurring organics interference has likely positively biased the TPH-Dx results. Silica gel cleanup method results (2014 data) have shown significantly lower TPH-Dx concentrations and are within compliance.

7 Recommendations

TerraGraphics recommends the following:

- Analyze groundwater samples for the following constituents: BTEXN by USEPA 8260, EDB by USEPA Method 8011, TPH-Gx, and both TPH-Dx standard and silica gel cleanup method.
- Consider discontinuing monitoring natural attenuation parameters as a secondary line of evidence to support natural attenuation since groundwater monitoring wells appear to be compliant.

8 References and Resources Used

Washington State Department of Ecology (Ecology), 1997. Analytical Methods for Petroleum Hydrocarbons. ECY 97-602, June 1997.

TerraGraphics Environmental Engineering, Inc. (TerraGraphics), 2012. Environmental Site Assessment Report, CMG Properties, Sunnyside, WA. Prepared for Ecology; March.

TerraGraphics, 2014. Sampling Analysis Plan (SAP)/Quality Assurance Project Plan (QAPP) for Groundwater Monitoring at CMG Propeties in Sunnyside, Washington. Prepared for Ecology; May.

Standard Methods, 1997. Method 2540d: Solids, Total Suspended Solids (TSS) Dried at 103-105^{o}C.

U.S. Environmental Protection Agency (USEPA), 1978. Method 310.1: Alkalinity by Titration.

USEPA, 1994a. Method 200.7: Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Spectrometry, Revision 4.4.

USEPA, 1994b. Method 200.8: Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma – Mass Spectrometry, Revision 5.4.

USEPA, 1996. Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), Revision 2.

USEPA, 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. USEPA 540-5-08-005. January 13.

Washington Administrative Code (WAC) 173-340. Title 173, Chapter 173-340: Model Toxics Control Act – cleanup. Last update: 10/12/07, <http://apps.leg.wa.gov/wac/default.aspx?cite=173-340>.

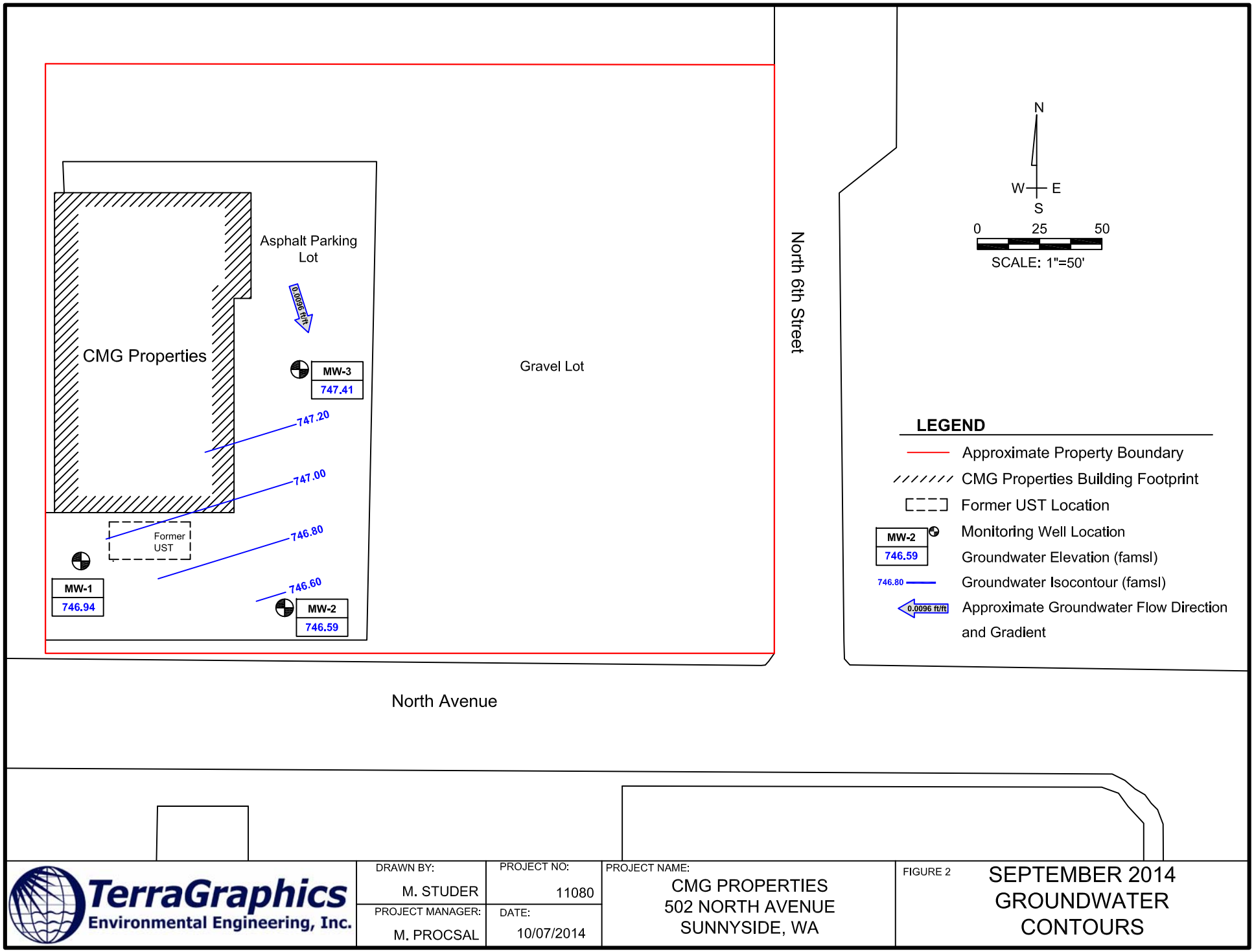
Attachment 1

Figures

Approximate Site Boundary

Image courtesy of Google Maps

Project No. 14030	TerraGraphics Environmental Engineering, Inc.	**CMG Properties** **502 North Avenue** **Sunnyside, Washington**	Date: 10/07/2014
Scale: not to scale			
Requestor: M. Procsal		**Figure 1. Site Location**	
Drafter: M. Studer			



TerraGraphics Environmental Engineering, Inc.	DRAWN BY: M. STUDER PROJECT MANAGER: M. PROCSAL	PROJECT NO: 11080 DATE: 10/07/2014	PROJECT NAME: CMG PROPERTIES 502 NORTH AVENUE SUNNYSIDE, WA	FIGURE 2 SEPTEMBER 2014 GROUNDWATER CONTOURS

Attachment 2

Tables

Table 1
Groundwater Analytical Results (µg/L)
CMG Properties
Sunnyside, Washington

Sample ID/Sample Date	Groundwater Elevation (famsl)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	Dissloved Lead (µg/L)	Total Lead (µg/L)	EDC (µg/L)	EDB (µg/L)	MTBE (µg/L)	GRO (µg/L)	Heavy Oil** (µg/L)	DRO (µg/L)	Motor Oil (µg/L)	Heavy Oil** Silica Gel Cleanup (µg/L)	DRO Silica Gel Cleanup (µg/L)	Motor Oil Silica Gel Cleanup (µg/L)
MW-1																		
12/16/2011	746.76	<1.0	0.65 J	<1.0	<3.0	<1.0	-	2.7J	<1.0	<0.10	<1.0	59 B	**1,440 Y**	**530 Y**	**910 Y**	-	-	-
WA Ecology 1/14/2014	-	<0.10	<0.10	<0.10	<0.30	-	<2.0	2.1	<0.10	<0.10	<0.10	<50	**3,100 Y**	**1,100 Y**	**2,000 Y**	<360	<120	<240
6/26/2014	747.13	<0.10	<0.10	<0.10	<0.30	<0.40	<2.0	<2.0	<0.10	-	<0.10	<50 UB	**2,310 Y1J**	**810 Y1J**	**1,500 Y1J**	<380	<130	<250
duplicate 6/26/2014	747.13	<0.10	<0.10	<0.10	<0.30	<0.40	<2.0	<2.0	<0.10	-	<0.10	<50 UB	**3,300 Y1J**	**1,100 Y1J**	**2,200 Y1J**	<380	<130	<250
9/12/2014	746.94	<0.10 UJ	<0.10 UJ	<0.10 UJ	<0.30 UJ	<0.40 UJ	<2.0 UJ	<2.0 UJ	<0.10 UJ	<0.10 UJ	<0.10 UJ	<50 UJ	**1,040 Y1J-**	**890 Y1J-**	150 Y1J-	<370 UJ	<120 UJ	<250 UJ
MW-2																		
12/16/2011	746.44	1.8	0.24 J	0.70 J	4.2	1.3	_	3.1 J	<1.0	-	<1.0	58 B	410	170 Y	240 J	-	-	-
WA Ecology 1/14/2014	-	5.3	0.10	0.13	3.8	-	<2.0	<2.0	<0.10	<0.10	<0.10	<50	420	170	250	<360	<120	<240
6/26/2014	746.82	0.10	<0.10	<0.10	<0.30	<0.40	<2.0	4.2	<0.1	-	<0.10	<50 UB	<370 J	<120 J	<250 J	<370	<120	<250
9/12/2014	746.59	<0.10 UJ	<0.10 UJ	<0.10 UJ	<0.30 UJ	<0.40 UJ	<2.0 UJ	<2.0 UJ	<0.10 UJ	<0.10 UJ	<0.10 UJ	<50 UJ	<370 UJ	<120 UJ	<250 UJ	<370 UJ	<120 UJ	<250 UJ
MW-3																		
12/16/2011	747.09	<1.0	<1.0	<0.15	<3.0	<1.0	_	**20 J**	<1.0	-	<1.0	11 J B	302	92 J	210 J	-	-	-
duplicate 12/16/2011	-	0.27 J	0.27 J	0.19 J	1.05 J	<1.0	_	**22 J**	<1.0	<0.010	<1.0	19 J B	313	93 J	220 J	-	-	-
WA Ecology 1/14/2014	-	<0.10	<0.1	<0.10	<0.30	-	<2.0	2.2	<0.10	<0.10	<0.10	<50	**530**	140	390	<380	<120	260
6/26/2014	747.59	<0.10	<0.10	<0.10	<0.30	<0.40	<2.0	<2.0	<0.10	-	<0.10	100 J	<370 J	<120 J	<250 J	<370	<120	<250
9/12/2014	747.41	<0.10 UJ	<0.10 UJ	<0.10 UJ	<0.30 UJ	<0.40 UJ	<2.0 UJ	<2.0 UJ	<0.10 UJ	<0.10 UJ	<0.10 UJ	<50 UJ	<370 UJ	<120 UJ	<250 UJ	<370 UJ	<120 UJ	<250 UJ
duplicate 9/12/2014	747.41	<0.10 UJ	<0.10 UJ	<0.10 UJ	<0.30 UJ	<0.40 UJ	<2.0 UJ	<2.0 UJ	<0.10 UJ	<0.10 UJ	<0.10 UJ	<50 UJ	<380 UJ	130 Y1J-	<250 UJ	<370 UJ	<120 UJ	<250 UJ
MTCA Method A Groundwater Cleanup Levels (µg/L)		5	1,000	700	1,000	160	-	15	5.0	0.01	20	800 or 1,000*	500	500	500	500	500	500

Notes:
famsl = feet above mean sea level
all concentrations reported in µg/L = micrograms per Liter
GRO = Gasoline Range Organics analyzed by Method NWTPH-Gx
DRO = Diesel Range Organics analyzed by Method NWTPH-Dx
MTBE = methyl tert-butyl ether
EDC = 1,2-dichloroethane
EDB = ethylene dibromide
< = less than the reporting limit
Concentrations in **BOLD** are above the Cleanup Levels as defined by Washington's Model Toxics Control Act (MTCA) (WAC 173-340)
Method A Groundwater Cleanup Levels (Table 720-1, WAC 173-340-900)
- = no value established
m+p-Xylene and o-Xylene results were added to represent Total Xylene concentration and compared to Total Xylene Cleanup Level.
* = cleanup level when benzene is present is 800 µg/L , and 1,000 µg/L when there is no detectable benzene present.
** = summation of DRO and Motor Oil values. 1/2 detection limit used where necessary in summation of heavy oil.
1st Quarter 2014 groundwater samples were collected by Washington Department of Ecology staff.
J = reported result was flagged "J" based on QA/QC objectives and the concentration is an approximate value.
J- = Sample is qualified as an estimate with a low bias based on sample temperatures above 10°C.
Y = (MW-2) reported result was flagged "Y" because the result is due primarily to a mixture of weathered diesel fuel.
Y = (MW-1) reported result was flagged "Y" because the result is due primarily to a mixture of mineral/transformer oil range product and motor oil.
Y1 =The chromatographic response resembles a typical fuel pattern.
UB = field result detection was less than ten times the method blank result detection
B = detected in the method blank

Table 2
Water Quality Parameters
CMG Properties
Sunnyside, Washington

Well ID	pH	Electrical Conductivity (mS)	Temperature (degrees C)	Dissolved Oxygen (mg/L)	ORP (mV)
MW-1					
12/16/2011	7.76	2.681	14.5	8.23	-60.2 J
WA Ecology 1/14/14	-	-	-	-	-
6/26/2014	7.55	1.445	19.0	1.04	-23.1
9/12/2014	7.65	1.411	21.5	0.64	-240
MW-2					
12/16/2011	7.64	2.062	16.0	3.96	-51.3 J
WA Ecology 1/14/14	-	-	-	-	-
6/26/2014	7.64	0.988	17.7	0.10	-78.1
9/12/2014	7.67	1.914	25.0 R	0.19	-294.2
MW-3					
12/16/2011	7.44	3.297	15.7	4.03	-41.3 J
WA Ecology 1/14/14	-	-	-	-	-
6/26/2014	7.34	2.301	18.1	0.30	-11.4
9/12/2014	7.34	2.328	21.8	0.23	-271.3

Notes:
mS = milli siemens
C = celcius
mg/L = milligrams per Liter
ORP = oxidation reduction potential
mV = millivolts
J = reported result was flagged "J" because it is an estimate.
- = no value established
1st Quarter 2014 groundwater samples were collected by Washington Department of Ecology staff.
R = rejected due to improbable/impossible value

Table 3
Natural Attentuation Parameters
CMG Properties
Sunnyside, Washington

Sample ID/Sample Date	Nitrate as N (mg/L)	Sulfate (mg/L)	Alkalinity (mg/L)	Manganese (mg/L)	Ferrous Iron (mg/L)	TSS (mg/L)
MW-1						
12/16/2011	-	-	-	-	-	-
WA Ecology 1/14/2014	1	240	510	0.22	3.0	-
6/26/2014	1.6 J	290	540	0.15	0.0	25.0
Duplicate 6/26/2014	1.6 J	290	540	0.16	-	25.0
9/12/2014	1.1 J	240 J-	500 J-	0.32	0.0	96.0 J-
MW-2						
12/16/2011	-	-	-	-	-	-
WA Ecology 1/14/2014	4	100	420	0.64	3.1	-
6/26/2014	5.3 J	98.0	390	1.40	0.0	110
9/12/2014	4.8 J	100 J-	380 J-	0.43	0.0	18.0 J-
MW-3						
12/16/2011	-	-	-	-	-	-
WA Ecology 1/14/2014	<0.9	590	600	0.71	4.3	-
6/26/2014	<0.9 R	550	630	0.95	0.0	29.0
9/12/2014	<0.9 R	550	640	1.40	-	6.3
duplicate 9/12/2014	<0.9 R	550 J-	620 J-	1.20	0.0	5.3 J-

Notes:
famsl = feet above mean sea level
all concentrations reported in mg/L = micrograms per Liter
< = less than the method detection limit
TSS = Total Suspended Solids
J = Sample is qualified as an estimate based on QA/QC objectives.
J- = Sample is qualified as an estimate with a low bias based on sample temperatures above 10°C.
R = Sample is rejected based on QA/QC objectives.
- = no value established
1st Quarter 2014 groundwater samples were collected by Washington Department of Ecology staff.

Attachment 3

Laboratory Analytical Results

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: 580-45396-1
Client Project/Site: CMG / WA
Revision: 1

For:
TerraGraphics Inc
dba TerraGraphics Environmental Eng Inc
121 South Jackson
Moscow, Idaho 83843

Attn: Mike Procsal

David G Burk

Authorized for release by:
10/16/2014 10:14:22 AM

David Burk, Project Manager I
(253)248-4972
david.burk@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.

Table of Contents

Case Narrative

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Job ID: 580-45396-1

Laboratory: TestAmerica Seattle

Narrative

Receipt

The samples were received on 9/15/2014 10:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 11.2º C, 13.8º C and 14.5º C.

Except:

The following samples were received at the laboratory outside the required temperature criteria: MW-1 (580-45396-1), MW-2 (580-45396-2), MW-3 (580-45396-3), MW-3D (580-45396-4), Trip Blank (580-45396-5). The coolers were received at: 14.5°C, 13.8°C, and 11.2°C. The client has been contacted and would like us to proceed with analysis.

The following samples were received outside of holding time: MW-1 (580-45396-1), MW-2 (580-45396-2), MW-3 (580-45396-3), MW-3D (580-45396-4). The client was contacted, and the laboratory was instructed to proceed with analyses.

GC/MS VOA

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

GC Semi VOA

Method(s) NWTPH-Dx: In analysis batch 170488, for the following sample from preparation batch 170316: MW-1 (580-45396-1), the results in the #2 Diesel Fuel (C10-C24) and Motor Oil (>C24-C36) range(s) are due primarily to a mineral/transformer oil range product. The affected analyte range(s) have been Y qualified and reported.

Method(s) NWTPH-Dx: In analysis batch 170488, for the following sample from preparation batch 170316: MW-3D (580-45396-4), the results in the #2 Diesel Fuel (C10-C24) range(s) are due to what most closely resembles weathered/degraded diesel fuel. The affected analyte range(s) have been Y qualified and reported.

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

Metals

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

General Chemistry

Method(s) 300.0: The following sample(s) were received outside of holding time: MW-1 (580-45396-1), MW-2 (580-45396-2), MW-3 (580-45396-3), MW-3D (580-45396-4).

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.

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
Y	The chromatographic response resembles a typical fuel pattern.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

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: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Client Sample ID: MW-1
Date Collected: 09/12/14 09:20
Date Received: 09/15/14 10:45

Lab Sample ID: 580-45396-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MTBE	ND		0.10		ug/L			09/25/14 21:42	1
Benzene	ND		0.10		ug/L			09/25/14 21:42	1
EDC	ND		0.10		ug/L			09/25/14 21:42	1
Toluene	ND		0.10		ug/L			09/25/14 21:42	1
Ethylbenzene	ND		0.10		ug/L			09/25/14 21:42	1
m-Xylene & p-Xylene	ND		0.20		ug/L			09/25/14 21:42	1
o-Xylene	ND		0.10		ug/L			09/25/14 21:42	1
Naphthalene	ND		0.40		ug/L			09/25/14 21:42	1
EDB	ND		0.10		ug/L			09/25/14 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*102*		*80 - 127*		*09/25/14 21:42*	*1*
Toluene-d8 (Surr)	*95*		*75 - 125*		*09/25/14 21:42*	*1*
4-Bromofluorobenzene (Surr)	*83*		*75 - 120*		*09/25/14 21:42*	*1*
Dibromofluoromethane (Surr)	*100*		*85 - 115*		*09/25/14 21:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 128*		*09/25/14 21:42*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			09/18/14 17:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*50 - 150*		*09/18/14 17:51*	*1*
Trifluorotoluene (Surr)	*111*		*50 - 150*		*09/18/14 17:51*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	**0.89**	**Y**	0.12		mg/L		09/19/14 17:42	09/23/14 15:03	1
Motor Oil (>C24-C36)	**1.5**	**Y**	0.25		mg/L		09/19/14 17:42	09/23/14 15:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*87*		*50 - 150*	*09/19/14 17:42*	*09/23/14 15:03*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		09/19/14 17:42	09/22/14 16:22	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		09/19/14 17:42	09/22/14 16:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*100*		*50 - 150*	*09/19/14 17:42*	*09/22/14 16:22*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		09/25/14 19:02	09/26/14 10:59	5
Manganese	**0.32**		0.0020		mg/L		09/25/14 19:02	09/26/14 10:59	5

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		09/26/14 10:33	09/26/14 15:46	5

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Client Sample ID: MW-1
Date Collected: 09/12/14 09:20
Date Received: 09/15/14 10:45

Lab Sample ID: 580-45396-1
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	1.1	H	0.90		mg/L			09/17/14 16:43	1
Sulfate	240		12		mg/L			09/18/14 07:05	10
Alkalinity	500		5.0		mg/L			09/18/14 17:45	1
Total Suspended Solids	96		10		mg/L			09/18/14 13:33	1

Client Sample ID: MW-2
Date Collected: 09/12/14 08:35
Date Received: 09/15/14 10:45

Lab Sample ID: 580-45396-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MTBE	ND		0.10		ug/L			09/25/14 22:09	1
Benzene	ND		0.10		ug/L			09/25/14 22:09	1
EDC	ND		0.10		ug/L			09/25/14 22:09	1
Toluene	ND		0.10		ug/L			09/25/14 22:09	1
Ethylbenzene	ND		0.10		ug/L			09/25/14 22:09	1
m-Xylene & p-Xylene	ND		0.20		ug/L			09/25/14 22:09	1
o-Xylene	ND		0.10		ug/L			09/25/14 22:09	1
Naphthalene	ND		0.40		ug/L			09/25/14 22:09	1
EDB	ND		0.10		ug/L			09/25/14 22:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*102*		*80 - 127*		*09/25/14 22:09*	*1*
Toluene-d8 (Surr)	*94*		*75 - 125*		*09/25/14 22:09*	*1*
4-Bromofluorobenzene (Surr)	*84*		*75 - 120*		*09/25/14 22:09*	*1*
Dibromofluoromethane (Surr)	*100*		*85 - 115*		*09/25/14 22:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 128*		*09/25/14 22:09*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			09/18/14 18:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*50 - 150*		*09/18/14 18:24*	*1*
Trifluorotoluene (Surr)	*111*		*50 - 150*		*09/18/14 18:24*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		09/19/14 17:42	09/23/14 15:21	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		09/19/14 17:42	09/23/14 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*95*		*50 - 150*	*09/19/14 17:42*	*09/23/14 15:21*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		09/19/14 17:42	09/22/14 16:40	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		09/19/14 17:42	09/22/14 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*106*		*50 - 150*	*09/19/14 17:42*	*09/22/14 16:40*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		09/25/14 19:02	09/26/14 11:22	5
Manganese	**0.43**		0.0020		mg/L		09/25/14 19:02	09/26/14 11:22	5

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		09/26/14 10:33	09/26/14 15:50	5

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Client Sample ID: MW-2
Date Collected: 09/12/14 08:35
Date Received: 09/15/14 10:45

Lab Sample ID: 580-45396-2
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	4.8	H	0.90		mg/L			09/17/14 17:26	1
Sulfate	100		12		mg/L			09/17/14 18:53	10
Alkalinity	380		5.0		mg/L			09/18/14 17:45	1
Total Suspended Solids	18		5.0		mg/L			09/18/14 13:33	1

Client Sample ID: MW-3
Date Collected: 09/12/14 07:40
Date Received: 09/15/14 10:45

Lab Sample ID: 580-45396-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MTBE	ND		0.10		ug/L			09/25/14 22:37	1
Benzene	ND		0.10		ug/L			09/25/14 22:37	1
EDC	ND		0.10		ug/L			09/25/14 22:37	1
Toluene	ND		0.10		ug/L			09/25/14 22:37	1
Ethylbenzene	ND		0.10		ug/L			09/25/14 22:37	1
m-Xylene & p-Xylene	ND		0.20		ug/L			09/25/14 22:37	1
o-Xylene	ND		0.10		ug/L			09/25/14 22:37	1
Naphthalene	ND		0.40		ug/L			09/25/14 22:37	1
EDB	ND		0.10		ug/L			09/25/14 22:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*103*		*80 - 127*		*09/25/14 22:37*	*1*
Toluene-d8 (Surr)	*96*		*75 - 125*		*09/25/14 22:37*	*1*
4-Bromofluorobenzene (Surr)	*84*		*75 - 120*		*09/25/14 22:37*	*1*
Dibromofluoromethane (Surr)	*102*		*85 - 115*		*09/25/14 22:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 128*		*09/25/14 22:37*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			09/18/14 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*50 - 150*		*09/18/14 18:57*	*1*
Trifluorotoluene (Surr)	*109*		*50 - 150*		*09/18/14 18:57*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		09/19/14 17:42	09/23/14 15:39	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		09/19/14 17:42	09/23/14 15:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*84*		*50 - 150*	*09/19/14 17:42*	*09/23/14 15:39*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		09/19/14 17:42	09/22/14 16:58	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		09/19/14 17:42	09/22/14 16:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*94*		*50 - 150*	*09/19/14 17:42*	*09/22/14 16:58*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		09/25/14 19:02	09/26/14 11:25	5
Manganese	**1.4**		0.0020		mg/L		09/25/14 19:02	09/26/14 11:25	5

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		09/26/14 10:33	09/26/14 15:53	5

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Client Sample ID: MW-3
Date Collected: 09/12/14 07:40
Date Received: 09/15/14 10:45

Lab Sample ID: 580-45396-3
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND	H	0.90		mg/L			09/17/14 17:41	1
Sulfate	**550**		12		mg/L			09/17/14 19:07	10
Alkalinity	**640**		5.0		mg/L			09/18/14 17:45	1
Total Suspended Solids	**6.3**		3.3		mg/L			09/18/14 13:33	1

Client Sample ID: MW-3D
Date Collected: 09/12/14 07:45
Date Received: 09/15/14 10:45

Lab Sample ID: 580-45396-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MTBE	ND		0.10		ug/L			09/25/14 23:04	1
Benzene	ND		0.10		ug/L			09/25/14 23:04	1
EDC	ND		0.10		ug/L			09/25/14 23:04	1
Toluene	ND		0.10		ug/L			09/25/14 23:04	1
Ethylbenzene	ND		0.10		ug/L			09/25/14 23:04	1
m-Xylene & p-Xylene	ND		0.20		ug/L			09/25/14 23:04	1
o-Xylene	ND		0.10		ug/L			09/25/14 23:04	1
Naphthalene	ND		0.40		ug/L			09/25/14 23:04	1
EDB	ND		0.10		ug/L			09/25/14 23:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*98*		*80 - 127*		*09/25/14 23:04*	*1*
Toluene-d8 (Surr)	*94*		*75 - 125*		*09/25/14 23:04*	*1*
4-Bromofluorobenzene (Surr)	*84*		*75 - 120*		*09/25/14 23:04*	*1*
Dibromofluoromethane (Surr)	*101*		*85 - 115*		*09/25/14 23:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 128*		*09/25/14 23:04*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			09/18/14 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*50 - 150*		*09/18/14 20:03*	*1*
Trifluorotoluene (Surr)	*99*		*50 - 150*		*09/18/14 20:03*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	**0.13**	**Y**	0.12		mg/L		09/19/14 17:42	09/23/14 15:57	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		09/19/14 17:42	09/23/14 15:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*85*		*50 - 150*	*09/19/14 17:42*	*09/23/14 15:57*	*1*

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.12		mg/L		09/19/14 17:42	09/22/14 17:16	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		09/19/14 17:42	09/22/14 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*98*		*50 - 150*	*09/19/14 17:42*	*09/22/14 17:16*	*1*

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		09/25/14 19:02	09/26/14 11:29	5
Manganese	**1.2**		0.0020		mg/L		09/25/14 19:02	09/26/14 11:29	5

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		09/26/14 10:33	09/26/14 15:56	5

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Client Sample ID: MW-3D
Date Collected: 09/12/14 07:45
Date Received: 09/15/14 10:45

Lab Sample ID: 580-45396-4
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND	H	0.90		mg/L			09/17/14 17:55	1
Sulfate	**550**		12		mg/L			09/17/14 19:21	10
Alkalinity	**620**		5.0		mg/L			09/18/14 17:45	1
Total Suspended Solids	**5.3**		3.3		mg/L			09/18/14 13:33	1

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Client Sample ID: Trip Blank
Date Collected: 09/12/14 00:00
Date Received: 09/15/14 10:45

Lab Sample ID: 580-45396-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MTBE	ND		0.10		ug/L			09/25/14 17:36	1
Benzene	ND		0.10		ug/L			09/25/14 17:36	1
EDC	ND		0.10		ug/L			09/25/14 17:36	1
Toluene	ND		0.10		ug/L			09/25/14 17:36	1
Ethylbenzene	ND		0.10		ug/L			09/25/14 17:36	1
m-Xylene & p-Xylene	ND		0.20		ug/L			09/25/14 17:36	1
o-Xylene	ND		0.10		ug/L			09/25/14 17:36	1
Naphthalene	ND		0.40		ug/L			09/25/14 17:36	1
EDB	ND		0.10		ug/L			09/25/14 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*102*		*80 - 127*		*09/25/14 17:36*	*1*
Toluene-d8 (Surr)	*94*		*75 - 125*		*09/25/14 17:36*	*1*
4-Bromofluorobenzene (Surr)	*84*		*75 - 120*		*09/25/14 17:36*	*1*
Dibromofluoromethane (Surr)	*102*		*85 - 115*		*09/25/14 17:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 128*		*09/25/14 17:36*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-170726/6
Matrix: Water
Analysis Batch: 170726

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MTBE	ND		0.10		ug/L			09/25/14 14:23	1
Benzene	ND		0.10		ug/L			09/25/14 14:23	1
EDC	ND		0.10		ug/L			09/25/14 14:23	1
Toluene	ND		0.10		ug/L			09/25/14 14:23	1
Ethylbenzene	ND		0.10		ug/L			09/25/14 14:23	1
m-Xylene & p-Xylene	ND		0.20		ug/L			09/25/14 14:23	1
o-Xylene	ND		0.10		ug/L			09/25/14 14:23	1
Naphthalene	ND		0.40		ug/L			09/25/14 14:23	1
EDB	ND		0.10		ug/L			09/25/14 14:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*105*		*80 - 127*		*09/25/14 14:23*	*1*
Toluene-d8 (Surr)	*97*		*75 - 125*		*09/25/14 14:23*	*1*
4-Bromofluorobenzene (Surr)	*85*		*75 - 120*		*09/25/14 14:23*	*1*
Dibromofluoromethane (Surr)	*101*		*85 - 115*		*09/25/14 14:23*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 128*		*09/25/14 14:23*	*1*

Lab Sample ID: LCS 580-170726/7
Matrix: Water
Analysis Batch: 170726

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
MTBE	5.00	4.43		ug/L		89	75 - 120
Benzene	5.00	4.78		ug/L		96	80 - 120
EDC	5.00	4.92		ug/L		98	80 - 140
Toluene	5.00	5.11		ug/L		102	80 - 120
Ethylbenzene	5.00	5.19		ug/L		104	80 - 125
m-Xylene & p-Xylene	5.00	4.95		ug/L		99	80 - 130
o-Xylene	5.00	5.15		ug/L		103	80 - 120
Naphthalene	5.00	4.67		ug/L		93	45 - 130
EDB	5.00	4.68		ug/L		94	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Trifluorotoluene (Surr)	*102*		*80 - 127*
Toluene-d8 (Surr)	*95*		*75 - 125*
4-Bromofluorobenzene (Surr)	*85*		*75 - 120*
Dibromofluoromethane (Surr)	*100*		*85 - 115*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 128*

Lab Sample ID: LCSD 580-170726/8
Matrix: Water
Analysis Batch: 170726

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
MTBE	5.00	4.53		ug/L		91	75 - 120	2	20
Benzene	5.00	4.85		ug/L		97	80 - 120	2	20
EDC	5.00	4.98		ug/L		100	80 - 140	1	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-170726/8
Matrix: Water
Analysis Batch: 170726

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
Toluene			5.00	5.00		ug/L		100	80 - 120	2	20
Ethylbenzene			5.00	5.18		ug/L		104	80 - 125	0	20
m-Xylene & p-Xylene			5.00	4.96		ug/L		99	80 - 130	0	20
o-Xylene			5.00	5.01		ug/L		100	80 - 120	3	20
Naphthalene			5.00	4.62		ug/L		92	45 - 130	1	20
EDB			5.00	4.73		ug/L		95	70 - 130	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Trifluorotoluene (Surr)	*99*		*80 - 127*
Toluene-d8 (Surr)	*92*		*75 - 125*
4-Bromofluorobenzene (Surr)	*85*		*75 - 120*
Dibromofluoromethane (Surr)	*100*		*85 - 115*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 128*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-170146/5
Matrix: Water
Analysis Batch: 170146

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			09/18/14 14:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*50 - 150*		*09/18/14 14:01*	*1*
Trifluorotoluene (Surr)	*108*		*50 - 150*		*09/18/14 14:01*	*1*

Lab Sample ID: LCS 580-170146/6
Matrix: Water
Analysis Batch: 170146

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline			1.00	0.899		mg/L		90	79 - 110		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*50 - 150*
Trifluorotoluene (Surr)	*97*		*50 - 150*

Lab Sample ID: LCSD 580-170146/7
Matrix: Water
Analysis Batch: 170146

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
Gasoline			1.00	0.903		mg/L		90	79 - 110	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*50 - 150*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCSD 580-170146/7
Matrix: Water
Analysis Batch: 170146

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

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	96		50 - 150

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

Lab Sample ID: MB 580-170316/1-A
Matrix: Water
Analysis Batch: 170488

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 170316

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.13		mg/L		09/19/14 17:42	09/23/14 10:13	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		09/19/14 17:42	09/23/14 10:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	88		50 - 150	09/19/14 17:42	09/23/14 10:13	1

Lab Sample ID: LCS 580-170316/2-A
Matrix: Water
Analysis Batch: 170488

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 170316

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
#2 Diesel (C10-C24)	4.00	3.30		mg/L		83	59 - 120
Motor Oil (>C24-C36)	4.00	3.60		mg/L		90	71 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	92		50 - 150

Lab Sample ID: LCSD 580-170316/3-A
Matrix: Water
Analysis Batch: 170488

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 170316

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)	4.00	3.31		mg/L		83	59 - 120	0	27
Motor Oil (>C24-C36)	4.00	3.61		mg/L		90	71 - 140	0	27

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	97		50 - 150

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

Lab Sample ID: MB 580-170316/1-B
Matrix: Water
Analysis Batch: 170384

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 170316

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.13		mg/L		09/19/14 17:42	09/22/14 10:36	1
Motor Oil (>C24-C36)	ND		0.25		mg/L		09/19/14 17:42	09/22/14 10:36	1

Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup (Continued)

Lab Sample ID: MB 580-170316/1-B
Matrix: Water
Analysis Batch: 170384

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 170316

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	*103*		*50 - 150*	*09/19/14 17:42*	*09/22/14 10:36*	*1*

Lab Sample ID: LCS 580-170316/2-B
Matrix: Water
Analysis Batch: 170384

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 170316

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
#2 Diesel (C10-C24)	4.00	3.65		mg/L		91	59 - 120
Motor Oil (>C24-C36)	4.00	4.14		mg/L		104	71 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	*103*		*50 - 150*

Lab Sample ID: LCSD 580-170316/3-B
Matrix: Water
Analysis Batch: 170384

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 170316

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)	4.00	3.68		mg/L		92	59 - 120	1	27
Motor Oil (>C24-C36)	4.00	4.15		mg/L		104	71 - 140	0	27

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	*108*		*50 - 150*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 580-170839/9-A
Matrix: Water
Analysis Batch: 170915

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 170839

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		09/25/14 19:02	09/26/14 10:46	5
Manganese	ND		0.0020		mg/L		09/25/14 19:02	09/26/14 10:46	5

Lab Sample ID: LCS 580-170839/10-A
Matrix: Water
Analysis Batch: 170915

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 170839

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	0.984		mg/L		98	80 - 120
Manganese	1.00	0.980		mg/L		98	80 - 120

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 580-170839/11-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 170915 — **Prep Batch: 170839**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead			1.00	0.986		mg/L		99	80 - 120	0	20
Manganese			1.00	0.979		mg/L		98	80 - 120	0	20

Lab Sample ID: 580-45396-1 MS — **Client Sample ID: MW-1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 170915 — **Prep Batch: 170839**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	ND		1.00	1.01		mg/L		101	80 - 120
Manganese	0.32		1.00	1.31		mg/L		99	80 - 120

Lab Sample ID: 580-45396-1 MSD — **Client Sample ID: MW-1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 170915 — **Prep Batch: 170839**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	ND		1.00	1.03		mg/L		102	80 - 120	2	20
Manganese	0.32		1.00	1.34		mg/L		102	80 - 120	3	20

Lab Sample ID: 580-45396-1 DU — **Client Sample ID: MW-1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 170915 — **Prep Batch: 170839**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Lead	ND		ND		mg/L		NC	20
Manganese	0.32		0.310		mg/L		3	20

Lab Sample ID: MB 580-170897/15-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 171077 — **Prep Batch: 170897**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0020		mg/L		09/26/14 10:33	09/26/14 14:44	5

Lab Sample ID: LCS 580-170897/16-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 171077 — **Prep Batch: 170897**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead			1.00	0.979		mg/L		98	80 - 120

Lab Sample ID: LCSD 580-170897/17-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 171077 — **Prep Batch: 170897**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead			1.00	0.974		mg/L		97	80 - 120	1	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-170084/3
Matrix: Water
Analysis Batch: 170084

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.2		mg/L			09/17/14 14:08	1

Lab Sample ID: LCS 580-170084/4
Matrix: Water
Analysis Batch: 170084

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	12.0	12.4		mg/L		103	90 - 110

Lab Sample ID: LCSD 580-170084/5
Matrix: Water
Analysis Batch: 170084

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
Sulfate	12.0	12.4		mg/L		103	90 - 110	0	15

Lab Sample ID: 580-45396-1 MS
Matrix: Water
Analysis Batch: 170084

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	240		12.0	ND	4	mg/L		0	90 - 110

Lab Sample ID: 580-45396-1 DU
Matrix: Water
Analysis Batch: 170084

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	240		239		mg/L		0	10

Lab Sample ID: MB 580-170086/3
Matrix: Water
Analysis Batch: 170086

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.90		mg/L			09/17/14 14:08	1

Lab Sample ID: LCS 580-170086/4
Matrix: Water
Analysis Batch: 170086

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.80	1.85		mg/L		103	90 - 110

Lab Sample ID: LCSD 580-170086/5
Matrix: Water
Analysis Batch: 170086

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
Nitrate as N	1.80	1.85		mg/L		103	90 - 110	0	15

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Lab Sample ID: 580-45396-1 MS
Matrix: Water
Analysis Batch: 170086

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.1	H	1.80	2.98		mg/L		103	90 - 110

Lab Sample ID: 580-45396-1 DU
Matrix: Water
Analysis Batch: 170086

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrate as N	1.1	H	1.13		mg/L		0	10

Method: 310.1 - Alkalinity

Lab Sample ID: LCS 580-170210/2
Matrix: Water
Analysis Batch: 170210

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	100	104		mg/L		104	85 - 115

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 580-170167/1
Matrix: Water
Analysis Batch: 170167

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		2.0		mg/L			09/18/14 13:33	1

Lab Sample ID: LCS 580-170167/2
Matrix: Water
Analysis Batch: 170167

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	30.0	30.0		mg/L		100	70.6 - 120

Lab Chronicle

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Client Sample ID: MW-1

Lab Sample ID: 580-45396-1

Date Collected: 09/12/14 09:20

Matrix: Water

Date Received: 09/15/14 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	170726	09/25/14 21:42	AS	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	170146	09/18/14 17:51	AS	TAL SEA
Total/NA	Prep	3510C			170316	09/19/14 17:42	WJR	TAL SEA
Total/NA	Cleanup	3630C			170318	09/19/14 19:48	RBL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	170384	09/22/14 16:22	JJP	TAL SEA
Total/NA	Prep	3510C			170316	09/19/14 17:42	WJR	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	170488	09/23/14 15:03	JJP	TAL SEA
Dissolved	Filtration	FILTRATION			170014	09/17/14 11:17	PAB	TAL SEA
Dissolved	Prep	3005A			170897	09/26/14 10:33	PAB	TAL SEA
Dissolved	Analysis	6020		5	171077	09/26/14 15:46	FCW	TAL SEA
Total Recoverable	Prep	3005A			170839	09/25/14 19:02	PAB	TAL SEA
Total Recoverable	Analysis	6020		5	170915	09/26/14 10:59	FCW	TAL SEA
Total/NA	Analysis	300.0		1	170086	09/17/14 16:43	RSB	TAL SEA
Total/NA	Analysis	300.0		10	170084	09/18/14 07:05	RSB	TAL SEA
Total/NA	Analysis	310.1		1	170210	09/18/14 17:45	TAA	TAL SEA
Total/NA	Analysis	SM 2540D		1	170167	09/18/14 13:33	JLS	TAL SEA

Client Sample ID: MW-2

Lab Sample ID: 580-45396-2

Date Collected: 09/12/14 08:35

Matrix: Water

Date Received: 09/15/14 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	170726	09/25/14 22:09	AS	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	170146	09/18/14 18:24	AS	TAL SEA
Total/NA	Prep	3510C			170316	09/19/14 17:42	WJR	TAL SEA
Total/NA	Cleanup	3630C			170318	09/19/14 19:48	RBL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	170384	09/22/14 16:40	JJP	TAL SEA
Total/NA	Prep	3510C			170316	09/19/14 17:42	WJR	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	170488	09/23/14 15:21	JJP	TAL SEA
Dissolved	Filtration	FILTRATION			170014	09/17/14 11:17	PAB	TAL SEA
Dissolved	Prep	3005A			170897	09/26/14 10:33	PAB	TAL SEA
Dissolved	Analysis	6020		5	171077	09/26/14 15:50	FCW	TAL SEA
Total Recoverable	Prep	3005A			170839	09/25/14 19:02	PAB	TAL SEA
Total Recoverable	Analysis	6020		5	170915	09/26/14 11:22	FCW	TAL SEA
Total/NA	Analysis	300.0		1	170086	09/17/14 17:26	RSB	TAL SEA
Total/NA	Analysis	300.0		10	170084	09/17/14 18:53	RSB	TAL SEA
Total/NA	Analysis	310.1		1	170210	09/18/14 17:45	TAA	TAL SEA
Total/NA	Analysis	SM 2540D		1	170167	09/18/14 13:33	JLS	TAL SEA

Lab Chronicle

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Client Sample ID: MW-3

Lab Sample ID: 580-45396-3

Date Collected: 09/12/14 07:40

Matrix: Water

Date Received: 09/15/14 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	170726	09/25/14 22:37	AS	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	170146	09/18/14 18:57	AS	TAL SEA
Total/NA	Prep	3510C			170316	09/19/14 17:42	WJR	TAL SEA
Total/NA	Cleanup	3630C			170318	09/19/14 19:48	RBL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	170384	09/22/14 16:58	JJP	TAL SEA
Total/NA	Prep	3510C			170316	09/19/14 17:42	WJR	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	170488	09/23/14 15:39	JJP	TAL SEA
Dissolved	Filtration	FILTRATION			170014	09/17/14 11:17	PAB	TAL SEA
Dissolved	Prep	3005A			170897	09/26/14 10:33	PAB	TAL SEA
Dissolved	Analysis	6020		5	171077	09/26/14 15:53	FCW	TAL SEA
Total Recoverable	Prep	3005A			170839	09/25/14 19:02	PAB	TAL SEA
Total Recoverable	Analysis	6020		5	170915	09/26/14 11:25	FCW	TAL SEA
Total/NA	Analysis	300.0		1	170086	09/17/14 17:41	RSB	TAL SEA
Total/NA	Analysis	300.0		10	170084	09/17/14 19:07	RSB	TAL SEA
Total/NA	Analysis	310.1		1	170210	09/18/14 17:45	TAA	TAL SEA
Total/NA	Analysis	SM 2540D		1	170167	09/18/14 13:33	JLS	TAL SEA

Client Sample ID: MW-3D

Lab Sample ID: 580-45396-4

Date Collected: 09/12/14 07:45

Matrix: Water

Date Received: 09/15/14 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	170726	09/25/14 23:04	AS	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	170146	09/18/14 20:03	AS	TAL SEA
Total/NA	Prep	3510C			170316	09/19/14 17:42	WJR	TAL SEA
Total/NA	Cleanup	3630C			170318	09/19/14 19:48	RBL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	170384	09/22/14 17:16	JJP	TAL SEA
Total/NA	Prep	3510C			170316	09/19/14 17:42	WJR	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	170488	09/23/14 15:57	JJP	TAL SEA
Dissolved	Filtration	FILTRATION			170014	09/17/14 11:17	PAB	TAL SEA
Dissolved	Prep	3005A			170897	09/26/14 10:33	PAB	TAL SEA
Dissolved	Analysis	6020		5	171077	09/26/14 15:56	FCW	TAL SEA
Total Recoverable	Prep	3005A			170839	09/25/14 19:02	PAB	TAL SEA
Total Recoverable	Analysis	6020		5	170915	09/26/14 11:29	FCW	TAL SEA
Total/NA	Analysis	300.0		1	170086	09/17/14 17:55	RSB	TAL SEA
Total/NA	Analysis	300.0		10	170084	09/17/14 19:21	RSB	TAL SEA
Total/NA	Analysis	310.1		1	170210	09/18/14 17:45	TAA	TAL SEA
Total/NA	Analysis	SM 2540D		1	170167	09/18/14 13:33	JLS	TAL SEA

Lab Chronicle

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Client Sample ID: Trip Blank
Date Collected: 09/12/14 00:00
Date Received: 09/15/14 10:45

Lab Sample ID: 580-45396-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	170726	09/25/14 17:36	AS	TAL SEA

Laboratory References:

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

Certification Summary

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

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	03-04-15
California	State Program	9	2901	01-31-15
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-15
USDA	Federal		P330-11-00222	04-08-17
Washington	State Program	10	C553	02-17-15

Sample Summary

Client: TerraGraphics Inc
Project/Site: CMG / WA

TestAmerica Job ID: 580-45396-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-45396-1	MW-1	Water	09/12/14 09:20	09/15/14 10:45
580-45396-2	MW-2	Water	09/12/14 08:35	09/15/14 10:45
580-45396-3	MW-3	Water	09/12/14 07:40	09/15/14 10:45
580-45396-4	MW-3D	Water	09/12/14 07:45	09/15/14 10:45
580-45396-5	Trip Blank	Water	09/12/14 00:00	09/15/14 10:45

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

10/16/2014

Client	Client Contact	Date	Chain of Custody Number
Terra Graphics	Mike Procsal	9/12/14	24930
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
3501 W. Eddes St.	(208) 336-7080	453396	
City	**State / Zip Code**	**Sampler**	**Lab Contact**
Boise	ID 83705	Richter	
Project Name and Location (State)	**Billing Contact**		
CMG / WA			
Contract/Purchase Order/Quote No.			

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 (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt
MW-1	9/12/14	0920		X			X		X	X			X	IR 14.5 14.1
MW-2	9/12/14	0835		X			X		X	X			X	2G B/W ICE NONE w/CS
MW-3	9/12/14	0740		X			X		X	X			X	AF 13.8 14.2
MW-3D	9/12/14	0745		X			X		X	X			X	2G B/W ICE NONE w/CS
Trip Blank	9/12/14			X			X		X	X			X	AF 11.2 11.5
														1G B/W
														ICE BUBBLE
														w/CS FERO

580-45396 Chain of Custody

Page 26 of 27

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 Standard

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By Sign/Print: Pete Richter / Pete Richter	9/12/14	1300	1. Received By Sign/Print: R.T. McDaniel	9-15-14	1045
2. Relinquished By Sign/Print:			2. Received By Sign/Print:		
3. Relinquished By Sign/Print:			3. Received By Sign/Print:		

Comments

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

TAL-8274-580 (0210)

Login Sample Receipt Checklist

Client: TerraGraphics Inc

Job Number: 580-45396-1

Login Number: 45396

List Source: TestAmerica Seattle

List Number: 1

Creator: Abello, Andrea N

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.	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.	False	Cooler temperature outside required temperature criteria.
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.	False	Refer to Job Narrative for details.
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	