January 3, 2017
Cardno 03137902MM.L03

LUST Coordinator
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SUBJECT **Soil Vapor Sampling Memorandum**
Former Mobil Station 99CHT
7323 Aurora Avenue North
Seattle, Washington

LUST Coordinator:

At the request of ExxonMobil Environmental Services Company (EMES), on behalf of ExxonMobil Oil Corporation, Cardno has prepared the enclosed memorandum which summarizes soil vapor sampling activities conducted at the subject site on November 22, 2016.

Please contact Mr. Bobby Thompson, Cardno Project Manager for this site, at 206 510 5855, or Ms. Marla Madden, EMES Project Manager for this site, at 714 964 4935, with questions.

Sincerely,

Laina Cole
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Direct Line 206 394 7225
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ENCLOSURE

Cardno's *Soil Vapor Sampling Memorandum*, dated January 3, 2017

cc: w/ enclosure
Mr. Chris Dalton, Property Owner *(Electronic copy via email)*
Ms. Marla Madden, ExxonMobil Environmental Services Company *(Filed in project folder)*

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Ms. Marla Madden
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8941 Atlanta Avenue, #384
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SUBJECT **Soil Vapor Sampling Memorandum**
Former Mobil Station 99CHT
7323 Aurora Avenue North
Seattle, Washington

Ms. Madden:

At the request of ExxonMobil Environmental Services Company (EMES), on behalf of ExxonMobil Oil Corporation, Cardno has prepared the enclosed memorandum which summarizes soil vapor sampling (SVS) activities conducted at the subject site on November 22, 2016. Cardno performed the fieldwork in accordance with a site-specific health and safety plan and Cardno's standard field protocol (Appendix A).

SITE DESCRIPTION

Former Mobil Station 99CHT is located at 7323 Aurora Avenue North, on the southwestern intersection of Winona Avenue North and Aurora Avenue North, Seattle, King County, Washington (Plate 1). The surrounding area consists of residential and commercial properties.

A review of chain of title documents indicates that the subject site operated as a gasoline service station from at least 1927 when General Petroleum Corporation of California (General Petroleum) leased the property. In 1960, Socony Mobil Oil Company (Mobil), successor to General Petroleum, terminated the lease (First American, 2015). An approved building plan from 1961, from the City of Seattle Department of Buildings, shows the planned redevelopment of the service station including an auto hoist, floor sump, dispenser island, four USTs located northwest and southwest of the dispenser island, and a 4,000-gallon and 6,000-gallon UST located in the northern portion of the subject site. In 1962, a permit was granted to Mobil Oil Company for the installation of an electric sign. A review of city directories by SouthEarth Strategies, Inc. indicated the Mobil-branded gasoline service station operated through the 1960s. The property is currently occupied by a lawn mower repair business, which has operated at the site since the 1970s. No information included regarding station decommissioning or removal of the USTs, dispenser island, or associated piping was available (SES, 2015).

Approximate locations of the former dispenser island, historical UST locations, station building, and other select site features are shown on Plate 2.

SOIL VAPOR SAMPLING ACTIVITIES

On November 22, 2016, Cardno collected samples of soil vapor from SVS wells SVS1 through SVS3 using Summa™ canisters inside of a custom-made helium shroud. The vapor sampling assembly consisted of a helium shroud, a flow regulator, a vacuum gauge, airtight valves, tubing, an electric air pump, a helium detector, and sample collection vessels (Summa™ canisters).

Prior to sampling, Cardno assembled the sampling system over the SVS well and performed a leak test by evacuating all air from the sample tubing using an electric air pump. Ball valves were used to isolate the tubing and a vacuum gauge was used to monitor for any leaks. If the sampling system was not able to hold a vacuum, all connections were checked and the leak test was repeated.

Upon successful completion of the leak test, Cardno calculated purge volumes for each SVS well, accounting for the casing, sample tubing, and sand pack porosity. Following the determination of the sampling system purge volume, the ball valve leading to the well was opened, an atmosphere of 20 percent helium by volume was introduced inside the shroud, and the sampling system was purged using an electric pump. The purged vapor was pumped into a Tedlar bag that was tested with a helium detector to monitor for any leaks. No significant leaks were detected, and the valve from the SVS wells to the pump was closed. The valve to the Summa™ canister was then opened, and a sample was collected from the SVS well for laboratory analysis. The Summa™ canisters were filled until the pressure inside was the vessel was approximately negative 5 inches of mercury and the flow regulator and ball valve was closed.

LABORATORY ANALYSES

Soil vapor samples were submitted for analysis to Eurofins Calscience, Inc., a state-certified laboratory, located in Garden Grove, California. The samples were analyzed for:

- Full-scan VOCs (including but not limited to TPHg, BTEX, oxygenated compounds, lead scavengers, and naphthalene) in accordance with EPA Method TO-15.
- C5-C8 aliphatic hydrocarbons, C9-C12 aliphatic hydrocarbons, C6-C8 aromatic hydrocarbons, and C9-C10 aromatic hydrocarbons in accordance with EPA Method TO-3.
- Oxygen, carbon dioxide, methane, and helium (leak detection compound) in accordance with American Society of Testing and Materials (ASTM) Method D-1946.

Soil vapor analytical results are summarized in Tables 1 and 2. Laboratory analytical results and COC documentation are provided in Appendix B.

SOIL VAPOR SAMPLING RESULTS

Due to the shallow depths of the SVS wells, measurements were compared to sub-slab gas screening levels as defined in the Washington State Department of Ecology's draft *Guidance for Evaluation Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, revised February 2016 (Ecology, 2016). No constiuents of concern exceeded the MTCA Method B Sub-Slab Soil Gas Screening Levels (Tables 1 and 2; Plate 3). The leak detection gas, helium, was not detected in any of the SVS samples exceeding permissible limits, indicating that soil vapor samples are representative of in-situ soil vapor conditions. Soil vapor analytical results are shown on Plate 3 and in Tables 1 and 2.

LIMITATIONS

For any documents cited that were not generated by Cardno, the data taken from those documents is used "as is" and is assumed to be accurate. Cardno does not guarantee the accuracy of this data and makes no warranties for the referenced work performed nor the inferences or conclusions stated in these documents. This report and the works performed have been undertaken in good faith, with due diligence and with the expertise, experience capability and specialized knowledge necessary to perform the Work in a good and workmanlike manner and within all accepted standards pertaining to providers of environmental services, in Washington at the time of investigation.

No soil engineering or geotechnical references are implied or should be inferred. The evaluation of the geologic conditions at the site for this investigation is made from a limited number of data points. Subsurface conditions may vary away from these data points.

Cardno appreciates the opportunity to provide assistance on this project. Please contact Mr. Bobby Thompson, Cardno Project Manager for this site, at 206 510 5855 with any questions.

Sincerely,

Bobby Thompson
Assistant Project Manager
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Don Clabaugh, P.E. 30454
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Cardno
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REFERENCES

First American Title Insurance Company (First American). April 16, 2015. Recorded Document Guarantee, 7323 Aurora Avenue North, Seattle, Washington.

King County GIS Center (King County). December 11, 2013. *Parcel Viewer 2.0*. URL: http://gismaps.kingcounty.gov/parcelviewer2/. Accessed June 5, 2015.

SouthEarth Strategies, Inc. (SES). March 5, 2015. *Subsurface Investigation, Former Mobil Station Property, 7323 Aurora Avenue North, Seattle, Washington.*

Washington State Department of Ecology Toxics Cleanup Program (Ecology). February 2016. *DRAFT: Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*. URL: https://fortress.wa.gov/ecy/publications/documents/0909047.pdf. Accessed April 1, 2016.

ENCLOSURES

Plate 1	Site Location Map
Plate 2	Generalized Site Plan
Plate 3	Cumulative Soil Vapor Sample Analyses Map
Table 1	Cumulative Soil Vapor Analytical Results
Table 2	Cumulative Soil Vapor Analytical Results – Additional VOCs

ATTACHMENTS

Attachment A	Laboratory Analytical Report

ACRONYM LIST

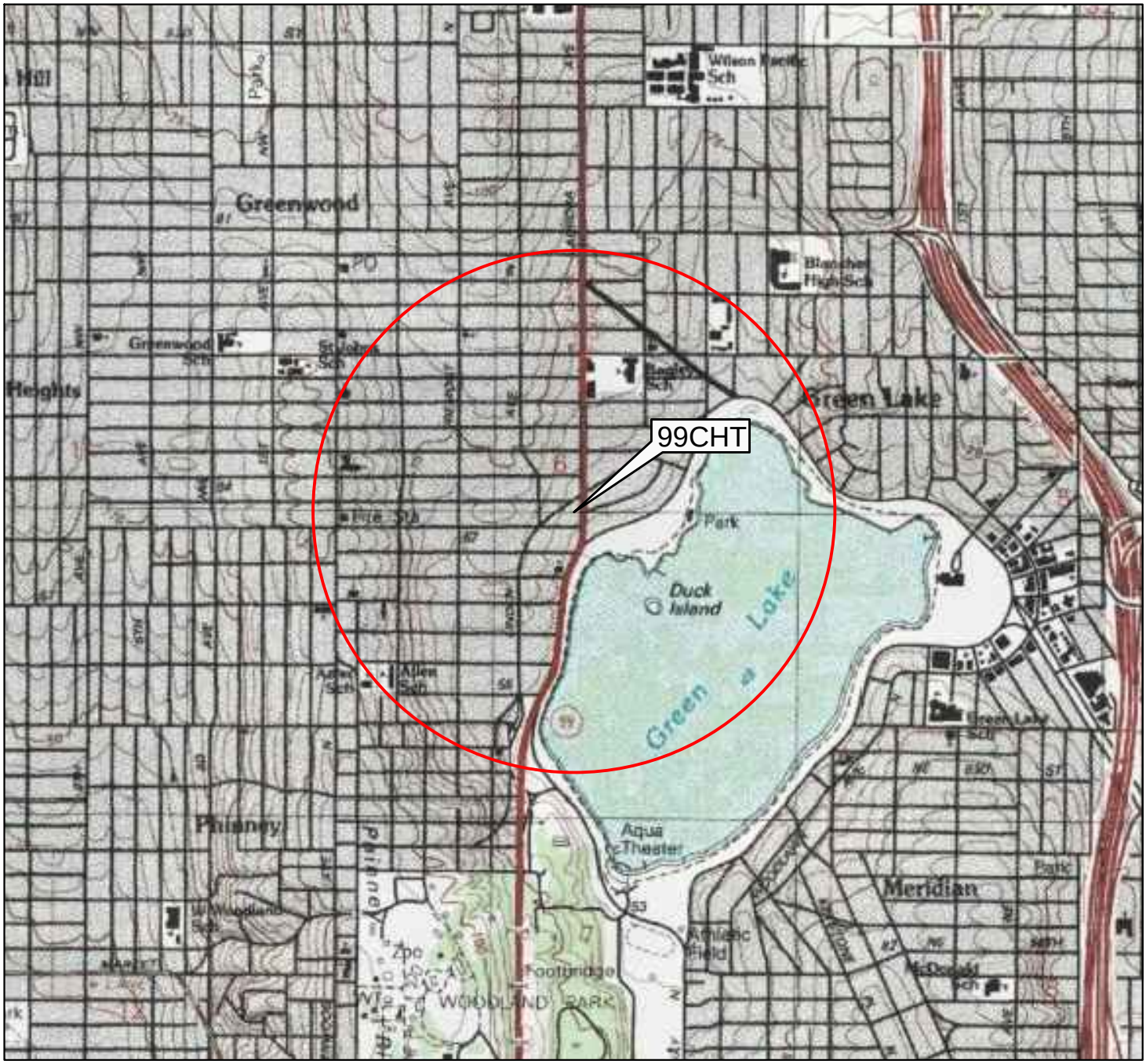
µg/L	Micrograms per liter
µs	Microsiemens
1,2-DCA	1,2-dichloroethane
acfm	Actual cubic feet per minute
AS	Air sparge
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
CEQA	California Environmental Quality Act
cfm	Cubic feet per minute
COC	Chain of Custody
CPT	Cone Penetration (Penetrometer) Test
DIPE	Di-isopropyl ether
DO	Dissolved oxygen
DOT	Department of Transportation
DPE	Dual-phase extraction
DTW	Depth to water
EDB	1,2-dibromoethane
EDC	1,2-dichloroethane
EPA	Environmental Protection Agency
ESL	Environmental screening level
ETBE	Ethyl tertiary butyl ether
FID	Flame-ionization detector
fpm	Feet per minute
GAC	Granular activated carbon
gpd	Gallons per day
gpm	Gallons per minute
GWPTS	Groundwater pump and treat system
HVOC	Halogenated volatile organic compound
J	Estimated value between MDL and PQL (RL)
LEL	Lower explosive limit
LPC	Liquid-phase carbon
LRP	Liquid-ring pump
LUFT	Leaking underground fuel tank
LUST	Leaking underground storage tank
MCL	Maximum contaminant level
MDL	Method detection limit
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
mg/m^3	Milligrams per cubic meter
MPE	Multi-phase extraction
MRL	Method reporting limit
msl	Mean sea level
MTBE	Methyl tertiary butyl ether
MTCA	Model Toxics Control Act
NAI	Natural attenuation indicators
NAPL	Non-aqueous phase liquid
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
ORP	Oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
OVA	Organic vapor analyzer
P&ID	Process & Instrumentation Diagram
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethene or perchloroethylene
PID	Photo-ionization detector
PLC	Programmable logic control
POTW	Publicly owned treatment works
ppmv	Parts per million by volume
PQL	Practical quantitation limit
psi	Pounds per square inch
PVC	Polyvinyl chloride
QA/QC	Quality assurance/quality control
RBSL	Risk-based screening levels
RCRA	Resource Conservation and Recovery Act
RL	Reporting limit
scfm	Standard cubic feet per minute
SSTL	Site-specific target level
STLC	Soluble threshold limit concentration
SVE	Soil vapor extraction
SVOC	Semivolatile organic compound
TAME	Tertiary amyl methyl ether
TBA	Tertiary butyl alcohol
TCE	Trichloroethene
TOC	Top of well casing elevation; datum is msl
TOG	Total oil and grease
TPHd	Total hydrocarbons as diesel
TPHg	Total hydrocarbons as gasoline
TPHmo	Total hydrocarbons as motor oil
TPHs	Total hydrocarbons as stoddard solvent
TRPH	Total recoverable hydrocarbons
UCL	Upper confidence level
USCS	Unified Soil Classification System
USGS	United States Geologic Survey
UST	Underground storage tank
VCP	Voluntary Cleanup Program
VOC	Volatile organic compound
VPC	Vapor-phase carbon

ATTACHMENT A

SOIL VAPOR SAMPLING FIELD PROTOCOL

ATTACHMENT B

LABORATORY ANALYTICAL REPORT



FN 0313790001

EXPLANATION

1/2-mile radius circle

APPROXIMATE SCALE

0 0.25 0.5 mile

N

SOURCE: Modified from a map provided by USGS

Cardno
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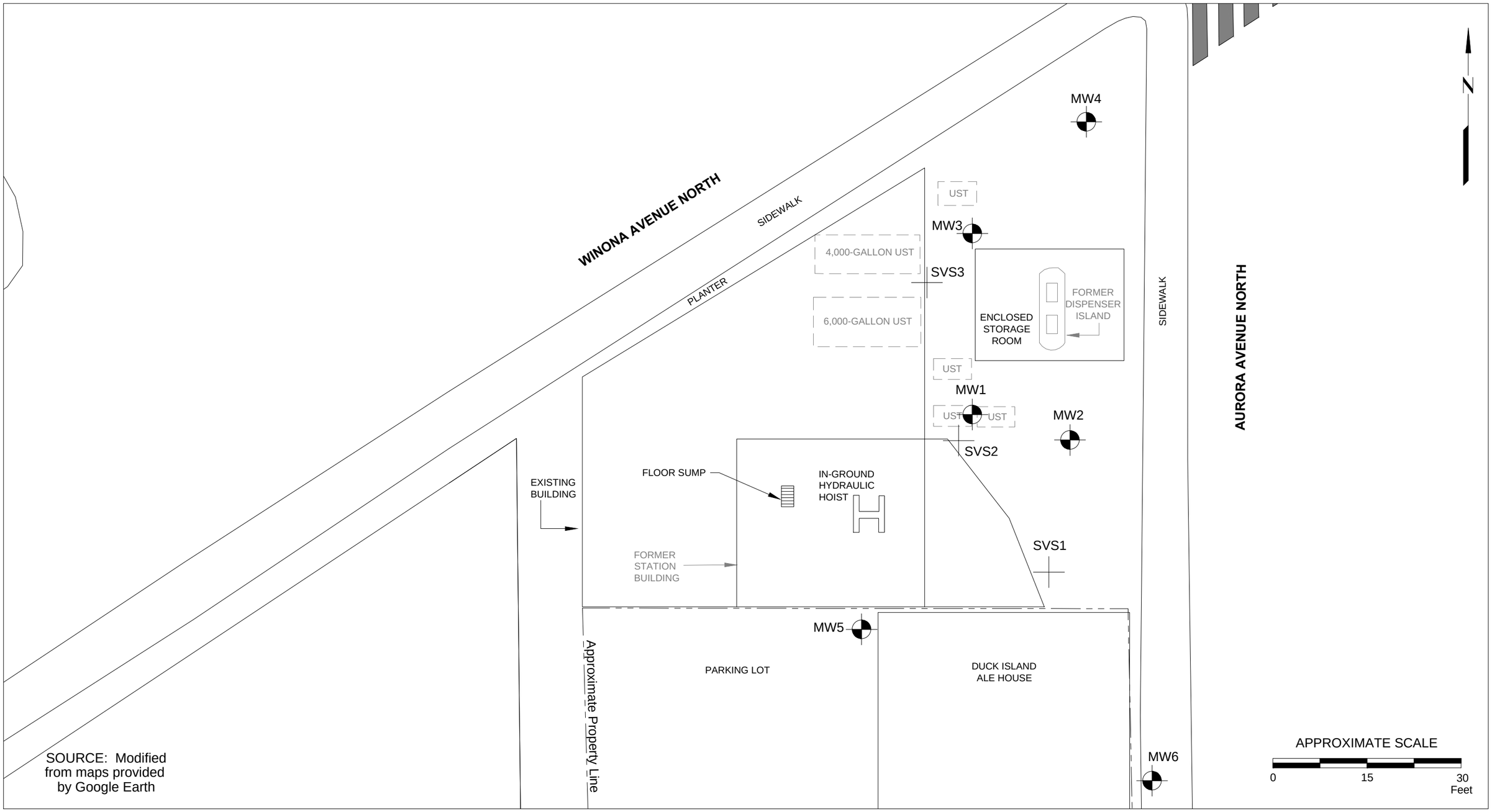
SITE LOCATION MAP

FORMER MOBIL STATION 99CHT
7323 Aurora Avenue North
Seattle, Washington

PROJECT NO. 031379

PLATE 1

LEC: 06/09/15



FN 0313790002

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GENERALIZED SITE PLAN

FORMER MOBIL STATION 99CHT
7323 Aurora Avenue North
Seattle, Washington

EXPLANATION

MW6 — Groundwater Monitoring Well

SVS3 — Soil Vapor Sampling Well

Approximate Property Line

PROJECT NO.
031379

PLATE
2
LEC: 04/06/16

Laboratory Results in µg/m3

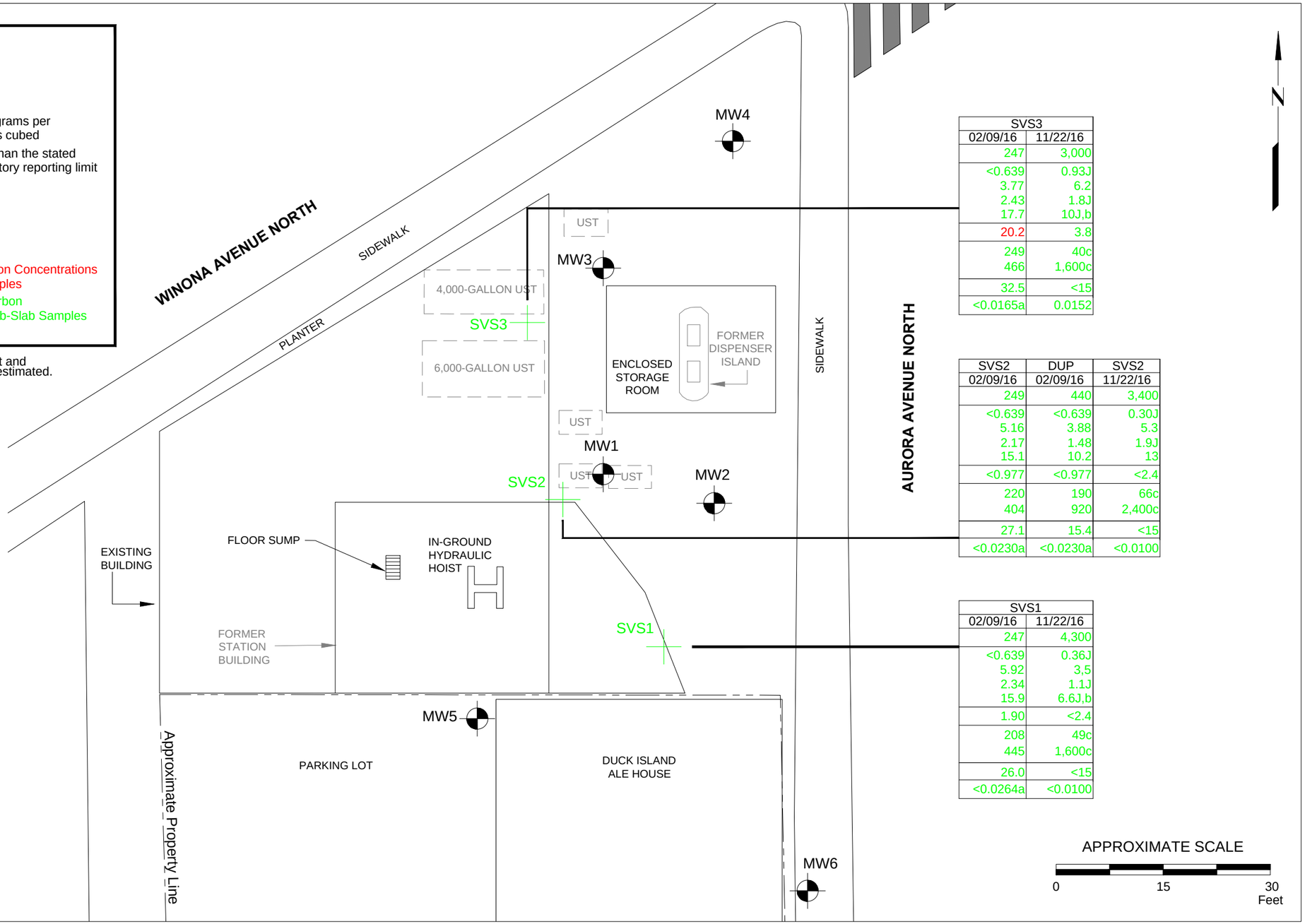
SVS3	Sample Name
11/22/16	Sample Date
3,000	Total Petroleum Hydrocarbons as Gasoline
0.93J	Benzene
6.2	Toluene
1.8J	Ethylbenzene
10J,b	Total Xylenes
3.8	Chloroform
40c	C5-C8 Aliphatic Hydrocarbons
1,600c	C9-C12 Aliphatic Hydrocarbons
<15	C9-C10 Aromatic Hydrocarbons
<0.0100	Helium (%v)

µg/m3 = Micrograms per meters cubed

<0.639 = Less than the stated laboratory reporting limit

- Numbers or Symbols in Red Indicate Vapor Phase Hydrocarbon Concentrations Which Exceed Soil Vapor Screening Levels for Sub-Slab Samples
- Numbers or Symbols in Green Indicate Vapor Phase Hydrocarbon Concentrations Less Than Soil Vapor Screening Levels for Sub-Slab Samples
- No Data Available for Numbers and Well Symbols in Black

J = Analyte was detected at a concentration below the reporting limit and and above the laboratory method detection limit. Reported value is estimated.
b = Analyte positively identified, but quantification is an estimate.
c = Analyte present in associated method blank.



SVS3	
02/09/16	11/22/16
247	3,000
<0.639	0.93J
3.77	6.2
2.43	1.8J
17.7	10J,b
20.2	3.8
249	40c
466	1,600c
32.5	<15
<0.0165a	0.0152

SVS2	DUP	SVS2
02/09/16	02/09/16	11/22/16
249	440	3,400
<0.639	<0.639	0.30J
5.16	3.88	5.3
2.17	1.48	1.9J
15.1	10.2	13
<0.977	<0.977	<2.4
220	190	66c
404	920	2,400c
27.1	15.4	<15
<0.0230a	<0.0230a	<0.0100

SVS1	
02/09/16	11/22/16
247	4,300
<0.639	0.36J
5.92	3,5
2.34	1.1J
15.9	6.6J,b
1.90	<2.4
208	49c
445	1,600c
26.0	<15
<0.0264a	<0.0100

APPROXIMATE SCALE
0 15 30 Feet

SOURCE: Modified from maps provided by Google Earth

FN 0313790002

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CUMULATIVE SOIL VAPOR SAMPLE ANALYSES MAP

FORMER MOBIL STATION 99CHT
7323 Aurora Avenue North
Seattle, Washington

EXPLANATION

MW6 — Groundwater Monitoring Well

SVS3 — Soil Vapor Sampling Well

PROJECT NO. 031379

PLATE 3

RRT: 12/20/16

TABLE 1
CUMULATIVE SOIL VAPOR ANALYTICAL RESULTS
Former Mobil Station 99CHT
7323 Aurora Avenue North
Seattle, Washington

Sample Name	Well ID	Sample Date	TPHg ($\mu g/m^3$)	B ($\mu g/m^3$)	T ($\mu g/m^3$)	E ($\mu g/m^3$)	m,p-Xylenes ($\mu g/m^3$)	o-Xylenes ($\mu g/m^3$)	Total Xylenes ($\mu g/m^3$)	C5-C8 Aliphatics ($\mu g/m^3$)	C9-C12 Aliphatics ($\mu g/m^3$)	C9-C10 Aromatics ($\mu g/m^3$)	Helium (%v)
SVS1	SVS1	02/09/16	247	<0.639	5.92	2.34	10.4	5.47	15.9	208	445	26.0	<0.0264a
SVS1	SVS1	11/22/16	4,300	0.36J	3.5	1.1J	5.0J	1.6J	6.6J,b	49c	1,600c	<15	<0.0100
SVS2	SVS2	02/09/16	249	<0.639	5.16	2.17	9.94	5.17	15.1	220	404	27.1	<0.0230a
SVS2	SVS2	11/22/16	3,400	0.30J	5.3	1.9J	9.6	3.8	13	66c	2,400c	<15	<0.0100
DUP	SVS2	02/09/16	440	<0.639	3.88	1.48	6.99	3.17	10.2	190	920	15.4	<0.0230a
SVS3	SVS3	02/09/16	264	<0.639	3.77	2.43	11.1	6.60	17.7	249	466	32.5	<0.0165a
SVS3	SVS3	11/22/16	3,000	0.93J	6.2	1.8J	7.8J	2.6	10J,b	40c	1,600c	<15	0.0152
Sub-Slab Soil Gas Screening Levels			N/A	457	76,200	15,200	1,520	1,520	N/A	90,000	4,700	6,000	N/A

EXPLANATION:

$\mu g/m^3$ = Micrograms per cubic meter

%v = Percent volume

TPHg = Total Petroleum Hydrocarbons as Gasoline analyzed as gasoline range organics with EPA Method TO-15

B = Benzene; T = Toluene; E = Ethylbenzene

Total Xylenes value is a sum of m,p-Xylenes and o-Xylenes

Benzene, Toulene, Ethylbenzene, m,p-Xylenes, and o-Xylenes = Aromatic compounds analyzed in accordance with EPA Method TO-15

Helium analyzed in accordance with ASTM D-1946

C5-C8 Aliphatics, C9-C12 Aliphatics, and C9-C10 Aromatics analyzed in accordance with EPA Method TO-15 or GC, MS Carbon Chain, refer to laboratory reports

N/A = Not applicable

< = Less than the stated laboratory reporting limit

Shaded values equal or exceed the MTCA Method B Sub-Slab Soil Gas Screening Levels in accordance with Ecology's draft *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action* , revised February 2016

a = Helium percent volume calculation: parts per million by volume multipled by 10,000

J = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.

b = Analyte positively identified, but quantification is an estimate

c = Analyte present in associated method blank

TABLE 2
CUMULATIVE SOIL VAPOR ANALYTICAL RESULTS
ADDITIONAL VOCs
Former Mobil Station 99CHT
7323 Aurora Avenue North
Seattle, Washington

Sample Name	Well ID	Sample Date	1,2,4-TMB ($\mu g/m^3$)	CS_2 ($\mu g/m^3$)	Chloroform ($\mu g/m^3$)	MEK ($\mu g/m^3$)	Naphthalene ($\mu g/m^3$)	PCE ($\mu g/m^3$)	Dichlorodifluoro-methane (µg/m3)	Methylene Chloride (µg/m3)	Styrene (µg/m3)	Trichlorofluoro-methane (µg/m3)
SVS1	SVS1	02/09/16	7.42	13.8	1.90	<1.47	<1.57	37.1	--	<1.50	<0.300	<0.300
SVS1	SVS1	11/22/16	3.3J	<6.2	<2.4	--	<26	83	4.4	0.96J,b	0.33J	1.3J
SVS2	SVS2	02/09/16	6.83	<4.67	<0.977	1.50	<1.57	63.6	--	<1.50	<0.300	<0.300
SVS2	SVS2	11/22/16	6.4J	<6.2	<2.4	--	0.92J	110	3.0	0.94J,b	<6.4	1.2J
DUP (SVS2)	SVS2	02/09/16	4.33	<4.67	<0.977	<1.47	1.68	64.9	--	<1.50	<0.300	<0.300
SVS3	SVS3	02/09/16	9.34	13.3	**20.2**	1.71	<1.57	33.0	--	<1.50	<0.300	<0.300
SVS3	SVS3	11/22/16	5.1J	<6.2	3.8	--	<26	60	1.8J	1.1J,b	<6.4	1.3J
Sub-Slab Soil Gas Screening Levels			107	10,700	4	76,200	45.7	321	1,520	8,330	15,200	10,700

EXPLANATION:
feet bgs = Feet below ground surface
$\mu g/m^3$ = Micrograms per cubic meter
N/A = Not applicable -- = Not Sampled
1,2,4-TMB = 1,2,4-trimethylbenzene
1,3,5-TMB = 1,3,5-trimethylbenzene
CS_2 = Carbon disfulfide
MEK = Methyl ethyl ketone
PCE = Tetrachloroethylene
VOCs = Volatile Organic Compounds in accordance with EPA Method TO-15
Additional VOCs were analyzed. All detections with associated MTCA Method B Sub-Slab Soil Gas Screening Levels are included in this table;
refer to the laboratory report for VOCs without associated Screening levels.
< = Less than the stated laboratory reporting limit
Shaded values equal or exceed the MTCA Method B Sub-Slab Soil Gas Screening Levels in accordance with Ecology's draft *Guidance for Evaluating Soil* Vapor Intrusion in Washington State: *Investigation and Remedial Action* , revised February 2016
J = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.

ATTACHMENT A

SOIL VAPOR SAMPLING FIELD PROTOCOL

Cardno
Soil Vapor Sampling Well Installation and Sampling
Field Protocol

Preliminary Activities

Prior to the onset of field activities at the site, Cardno obtains the appropriate permit(s) from the governing agency(s). Advance notification is made as required by the agency(s) prior to the start of work. Cardno marks the borehole locations and contacts the local one call utility locating service at least 48 hours prior to the start of work to mark buried utilities. Borehole locations may also be checked for buried utilities by a private geophysical surveyor. Prior to drilling, the borehole location is cleared in accordance with the client's procedures. Fieldwork is conducted under the advisement of a registered professional geologist and in accordance with an updated site-specific safety plan prepared for the project, which is available at the job site during field activities.

Well Construction

The borehole is advanced to the desired depth using either a direct-push rig, hand auger, or air vacuum rig. Lithologic conditions are recorded on a boring log during borehole advancement, and select soil matrix sampling may be conducted based on soil characteristics.

Each soil vapor sampling (SVS) well is constructed using inert screen material attached to $^{1}/_{8}$- to ¼-inch outer diameter inert tubing. A gas-tight vacuum fitting or valve is attached to the top of each length of tubing using a female compression fitting. Each screen is set within a minimum of a 12-inch thick appropriately sized sand pack, with a minimum of 3 inches of sand pack above the top of the screen. A minimum of 4 inches of dry granular bentonite is set above each screen and associated sand pack. In SVS wells with multiple and separate casings and screens, the annular space between the top of the dry granular bentonite above the deep screen and the bottom of the sand pack associated with the shallow screen is sealed with a minimum of 18 inches of hydrated bentonite. The remainder of the annular space of the well is sealed with hydrated bentonite to 1 foot below ground surface. Wellheads are finished with traffic-rated well boxes set in concrete flush with the surrounding grade. No glues, chemical cements, or solvents are used in well construction.

A boring log is completed with the construction details for each well, including the materials of construction, depth of the borehole, screen length, and annular seal thickness.

Soil Vapor Sampling

Samples are collected using a soil vapor purging and sampling manifold consisting of a flow regulator, vacuum gauges, vacuum pump, shroud, and laboratory-prepared, gas-tight, opaque containers such as Summa™ canisters. Prior to use, Summa™ canisters are checked to ensure they are under the laboratory induced vacuum between 30 and 25 inches of mercury (in. Hg). New inert tubing is used to purge and sample each well. Prior to purging and sampling each SVS well, Cardno will conduct a vacuum leak test on the sampling equipment. To perform the leak test, the Summa™ canister is connected to the sampling manifold which was connected to the gas-tight vacuum fitting or valve at the wellhead, and the downstream tubing and fittings are vacuum tested at approximately 20 to 30 in. Hg. Purging and sampling are conducted only on SVS wells when the tubing and fittings hold the applied vacuum for 5 minutes per vacuum gauge reading. If the vacuum is not maintained, Cardno will isolate the leak and re-fit the fittings and tubing until the vacuum is held for 5 minutes. Purging is performed with the sampling manifold equipped with a vacuum gauge and flow regulator and vacuum pump. The flow regulator will be set to a rate of no more than 200 ml/min.

Prior to sampling, a helium leak test is performed at each SVS well, including a Summa™ canister and its fittings, to check for leaks in the SVS well annulus. To assess the potential for leaks in the SVS well annulus, a shroud is placed over the SVS well and Summa™ canister and the shroud was filled with a measured amount of helium. Helium screening is performed in the field by pumping soil gas into a Tedlar bag and screening the contents of the Tedlar bag with a helium meter. Pumping is conducted at approximately the same rate of purging, at 100 to 200 ml/min. The concentration of helium in the sample divided by the concentration of helium in the shroud provides a measure of the proportion of the sample attributable to

leakage. A leak that comprises less than 5% of the sample is insignificant. Helium screening will also be performed using laboratory analysis of the contents of the Summa™ canister collected under the shroud.

After purging and the helium leak test, the Summa™ canister is opened and allowed to fill. Sampling is conducted at approximately the same rate of purging, at 100 to 200 ml/min. The canister vacuum readings at the beginning and end of sampling will be recorded. The soil vapor sample collection will end when the vacuum within the sample canister is approximately 5 in Hg. Cardno will label the sample containers, store the samples at ambient temperature in laboratory-supplied containers, and initiate COC records.

Decontamination Procedures

If soil samples are collected, Cardno or the contracted driller decontaminates the soil sampling equipment between each sampling interval using a non-phosphate solution, followed by a minimum of two tap water rinses. De-ionized water may be used for the final rinse. Downhole drilling equipment is steam-cleaned or triple-rinsed prior to advancing each borehole.

Waste Treatment and Disposal

Soil cuttings generated from the well installation are stored on site in labeled, Department of Transportation-approved, 55-gallon drums or other appropriate storage container. The soil is removed from the site and transported under manifest to a client- and regulatory-approved facility for recycling or disposal. Decontamination water is stored on site in labeled, regulatory-approved storage containers, and is subsequently transported under manifest to a client- and regulatory-approved facility for disposal or treated with a permitted mobile or fixed-base carbon treatment system.

ATTACHMENT B

LABORATORY ANALYTICAL REPORT

eurofins | Calscience

WORK ORDER NUMBER: 16-11-2140

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Cardno

Client Project Name: ExxonMobil 99CHT

Attention: Bobby Thompson
801 Second Avenue
Suite 700
Seattle, WA 98104-1573

Approved for release on 12/09/2016 by:
Cecile deGuia
Project Manager

ResultLink

Email your PM

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Contents

Client Project Name: ExxonMobil 99CHT
Work Order Number: 16-11-2140

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Work Order Narrative

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Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 11/23/16. They were assigned to Work Order 16-11-2140.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

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Sample Summary

Client:	Cardno	Work Order:	16-11-2140
	801 Second Avenue, Suite 700	Project Name:	ExxonMobil 99CHT
	Seattle, WA 98104-1573	PO Number:	4410470191
		Date/Time Received:	11/23/16 11:30
		Number of Containers:	3
Attn:	Bobby Thompson		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
SVS1	16-11-2140-1	11/22/16 09:41	1	Air
SVS2	16-11-2140-2	11/22/16 10:23	1	Air
SVS3	16-11-2140-3	11/22/16 11:08	1	Air

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Analytical Report

Cardno
801 Second Avenue, Suite 700
Seattle, WA 98104-1573

Project: ExxonMobil 99CHT

Date Received: 11/23/16
Work Order: 16-11-2140
Preparation: N/A
Method: ASTM D-1946
Units: %v

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS1	**16-11-2140-1-A**	**11/22/16 09:41**	**Air**	**GC 65**	**N/A**	**11/28/16 12:50**	**161128L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Methane	ND	0.500	0.155	1.00	
Carbon Dioxide	4.73	0.500	0.139	1.00	
Oxygen (+ Argon)	15.4	0.500	0.205	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS2	**16-11-2140-2-A**	**11/22/16 10:23**	**Air**	**GC 65**	**N/A**	**11/28/16 13:09**	**161128L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Methane	ND	0.500	0.155	1.00	
Carbon Dioxide	4.14	0.500	0.139	1.00	
Oxygen (+ Argon)	16.9	0.500	0.205	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS3	**16-11-2140-3-A**	**11/22/16 11:08**	**Air**	**GC 65**	**N/A**	**11/28/16 13:28**	**161128L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Methane	ND	0.500	0.155	1.00	
Carbon Dioxide	6.79	0.500	0.139	1.00	
Oxygen (+ Argon)	12.5	0.500	0.205	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-444-519**	**N/A**	**Air**	**GC 65**	**N/A**	**11/28/16 12:31**	**161128L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Methane	ND	0.500	0.155	1.00	
Carbon Dioxide	ND	0.500	0.139	1.00	
Oxygen (+ Argon)	ND	0.500	0.205	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno		Date Received:	11/23/16
801 Second Avenue, Suite 700		Work Order:	16-11-2140
Seattle, WA 98104-1573		Preparation:	N/A
		Method:	ASTM D-1946 (M)
		Units:	%v
Project: ExxonMobil 99CHT			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS1	**16-11-2140-1-A**	**11/22/16 09:41**	**Air**	**GC 55**	**N/A**	**11/23/16 18:14**	**161123L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Helium	ND	0.0100	0.00373	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS2	**16-11-2140-2-A**	**11/22/16 10:23**	**Air**	**GC 55**	**N/A**	**11/23/16 18:41**	**161123L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Helium	ND	0.0100	0.00373	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS3	**16-11-2140-3-A**	**11/22/16 11:08**	**Air**	**GC 55**	**N/A**	**11/23/16 19:04**	**161123L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Helium	0.0152	0.0100	0.00373	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-872-1008**	**N/A**	**Air**	**GC 55**	**N/A**	**11/23/16 10:25**	**161123L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Helium	ND	0.0100	0.00373	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno		Date Received:	11/23/16
801 Second Avenue, Suite 700		Work Order:	16-11-2140
Seattle, WA 98104-1573		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ug/m3
Project: ExxonMobil 99CHT			Page 1 of 8

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS1	**16-11-2140-1-A**	**11/22/16 09:41**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 15:45**	**161129L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acetone	10	4.8	0.68	1.00	
Benzene	0.36	1.6	0.27	1.00	J
Benzyl Chloride	ND	7.8	0.25	1.00	
Bromodichloromethane	ND	3.4	0.42	1.00	
Bromoform	ND	5.2	0.84	1.00	
Bromomethane	ND	1.9	0.54	1.00	
2-Butanone	ND	4.4	1.3	1.00	
Carbon Disulfide	ND	6.2	0.87	1.00	
Carbon Tetrachloride	ND	3.1	0.39	1.00	
Chlorobenzene	ND	2.3	0.31	1.00	
Chloroethane	ND	1.3	0.64	1.00	
Chloroform	ND	2.4	0.34	1.00	
Chloromethane	ND	1.0	0.50	1.00	
Dibromochloromethane	ND	4.3	0.47	1.00	
Dichlorodifluoromethane	4.4	2.5	0.29	1.00	
Diisopropyl Ether (DIPE)	ND	8.4	0.27	1.00	
1,1-Dichloroethane	ND	2.0	0.26	1.00	
1,1-Dichloroethene	ND	2.0	0.79	1.00	
1,2-Dibromoethane	ND	3.8	0.53	1.00	
Dichlorotetrafluoroethane	ND	14	1.9	1.00	
1,2-Dichlorobenzene	ND	3.0	0.32	1.00	
1,2-Dichloroethane	ND	2.0	0.28	1.00	
1,2-Dichloropropane	ND	2.3	0.88	1.00	
1,3-Dichlorobenzene	ND	3.0	0.97	1.00	
1,4-Dichlorobenzene	ND	3.0	0.41	1.00	
c-1,3-Dichloropropene	ND	2.3	0.30	1.00	
c-1,2-Dichloroethene	ND	2.0	0.35	1.00	
t-1,2-Dichloroethene	ND	2.0	0.50	1.00	
t-1,3-Dichloropropene	ND	4.5	0.31	1.00	
Ethanol	2.0	9.4	1.6	1.00	J
Ethyl-t-Butyl Ether (ETBE)	ND	8.4	0.24	1.00	
Ethylbenzene	1.1	2.2	0.63	1.00	J
4-Ethyltoluene	0.94	2.5	0.78	1.00	J
Hexachloro-1,3-Butadiene	ND	16	1.1	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno
801 Second Avenue, Suite 700
Seattle, WA 98104-1573

Date Received: 11/23/16
Work Order: 16-11-2140
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Project: ExxonMobil 99CHT

Parameter	Result	RL	MDL	DF	Qualifiers
2-Hexanone	ND	6.1	1.8	1.00	
Methyl-t-Butyl Ether (MTBE)	ND	7.2	0.55	1.00	
Methylene Chloride	0.96	17	0.86	1.00	B,J
4-Methyl-2-Pentanone	ND	6.1	1.5	1.00	
Naphthalene	ND	26	0.85	1.00	
o-Xylene	1.6	2.2	0.68	1.00	J
p/m-Xylene	5.0	8.7	1.4	1.00	J
Xylenes (total)	6.6	2.2	0.68	1.00	JA
Styrene	0.33	6.4	0.27	1.00	J
Tert-Amyl-Methyl Ether (TAME)	ND	8.4	0.21	1.00	
Tert-Butyl Alcohol (TBA)	ND	6.1	0.53	1.00	
Tetrachloroethene	83	3.4	0.46	1.00	
Toluene	3.5	1.9	0.51	1.00	
Trichloroethene	ND	2.7	0.37	1.00	
Trichlorofluoromethane	1.3	5.6	0.96	1.00	J
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	0.54	1.00	
1,1,1-Trichloroethane	ND	2.7	0.43	1.00	
1,1,2-Trichloroethane	ND	2.7	1.0	1.00	
1,3,5-Trimethylbenzene	0.86	2.5	0.71	1.00	J
1,1,2,2-Tetrachloroethane	ND	6.9	0.95	1.00	
1,2,4-Trimethylbenzene	3.3	7.4	0.75	1.00	J
1,2,4-Trichlorobenzene	ND	15	0.92	1.00	
Vinyl Acetate	ND	7.0	0.34	1.00	
Vinyl Chloride	ND	1.3	0.57	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	99	68-134	
1,2-Dichloroethane-d4	102	67-133	
Toluene-d8	100	70-130	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno		Date Received:	11/23/16
801 Second Avenue, Suite 700		Work Order:	16-11-2140
Seattle, WA 98104-1573		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ug/m3
Project: ExxonMobil 99CHT			Page 3 of 8

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS2	**16-11-2140-2-A**	**11/22/16 10:23**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 17:33**	**161129L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acetone	6.0	4.8	0.68	1.00	
Benzene	0.30	1.6	0.27	1.00	J
Benzyl Chloride	ND	7.8	0.25	1.00	
Bromodichloromethane	ND	3.4	0.42	1.00	
Bromoform	ND	5.2	0.84	1.00	
Bromomethane	ND	1.9	0.54	1.00	
2-Butanone	ND	4.4	1.3	1.00	
Carbon Disulfide	ND	6.2	0.87	1.00	
Carbon Tetrachloride	ND	3.1	0.39	1.00	
Chlorobenzene	ND	2.3	0.31	1.00	
Chloroethane	ND	1.3	0.64	1.00	
Chloroform	ND	2.4	0.34	1.00	
Chloromethane	ND	1.0	0.50	1.00	
Dibromochloromethane	ND	4.3	0.47	1.00	
Dichlorodifluoromethane	3.0	2.5	0.29	1.00	
Diisopropyl Ether (DIPE)	ND	8.4	0.27	1.00	
1,1-Dichloroethane	ND	2.0	0.26	1.00	
1,1-Dichloroethene	ND	2.0	0.79	1.00	
1,2-Dibromoethane	ND	3.8	0.53	1.00	
Dichlorotetrafluoroethane	ND	14	1.9	1.00	
1,2-Dichlorobenzene	ND	3.0	0.32	1.00	
1,2-Dichloroethane	ND	2.0	0.28	1.00	
1,2-Dichloropropane	ND	2.3	0.88	1.00	
1,3-Dichlorobenzene	ND	3.0	0.97	1.00	
1,4-Dichlorobenzene	ND	3.0	0.41	1.00	
c-1,3-Dichloropropene	ND	2.3	0.30	1.00	
c-1,2-Dichloroethene	ND	2.0	0.35	1.00	
t-1,2-Dichloroethene	ND	2.0	0.50	1.00	
t-1,3-Dichloropropene	ND	4.5	0.31	1.00	
Ethanol	ND	9.4	1.6	1.00	
Ethyl-t-Butyl Ether (ETBE)	ND	8.4	0.24	1.00	
Ethylbenzene	1.9	2.2	0.63	1.00	J
4-Ethyltoluene	1.9	2.5	0.78	1.00	J
Hexachloro-1,3-Butadiene	ND	16	1.1	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno	Date Received:	11/23/16
801 Second Avenue, Suite 700	Work Order:	16-11-2140
Seattle, WA 98104-1573	Preparation:	N/A
	Method:	EPA TO-15
	Units:	ug/m3
Project: ExxonMobil 99CHT		Page 4 of 8

Parameter	Result	RL	MDL	DF	Qualifiers
2-Hexanone	ND	6.1	1.8	1.00	
Methyl-t-Butyl Ether (MTBE)	ND	7.2	0.55	1.00	
Methylene Chloride	0.94	17	0.86	1.00	B,J
4-Methyl-2-Pentanone	ND	6.1	1.5	1.00	
Naphthalene	0.92	26	0.85	1.00	J
o-Xylene	3.8	2.2	0.68	1.00	
p/m-Xylene	9.6	8.7	1.4	1.00	
Xylenes (total)	13	2.2	0.68	1.00	
Styrene	ND	6.4	0.27	1.00	
Tert-Amyl-Methyl Ether (TAME)	ND	8.4	0.21	1.00	
Tert-Butyl Alcohol (TBA)	0.64	6.1	0.53	1.00	J
Tetrachloroethene	110	3.4	0.46	1.00	
Toluene	5.3	1.9	0.51	1.00	
Trichloroethene	ND	2.7	0.37	1.00	
Trichlorofluoromethane	1.2	5.6	0.96	1.00	J
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	0.54	1.00	
1,1,1-Trichloroethane	ND	2.7	0.43	1.00	
1,1,2-Trichloroethane	ND	2.7	1.0	1.00	
1,3,5-Trimethylbenzene	1.8	2.5	0.71	1.00	J
1,1,2,2-Tetrachloroethane	ND	6.9	0.95	1.00	
1,2,4-Trimethylbenzene	6.4	7.4	0.75	1.00	J
1,2,4-Trichlorobenzene	ND	15	0.92	1.00	
Vinyl Acetate	ND	7.0	0.34	1.00	
Vinyl Chloride	ND	1.3	0.57	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	103	68-134	
1,2-Dichloroethane-d4	100	67-133	
Toluene-d8	98	70-130	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno		Date Received:	11/23/16
801 Second Avenue, Suite 700		Work Order:	16-11-2140
Seattle, WA 98104-1573		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ug/m3
Project: ExxonMobil 99CHT			Page 5 of 8

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS3	**16-11-2140-3-A**	**11/22/16 11:08**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 18:24**	**161129L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acetone	7.5	4.8	0.68	1.00	
Benzene	0.93	1.6	0.27	1.00	J
Benzyl Chloride	ND	7.8	0.25	1.00	
Bromodichloromethane	ND	3.4	0.42	1.00	
Bromoform	ND	5.2	0.84	1.00	
Bromomethane	ND	1.9	0.54	1.00	
2-Butanone	ND	4.4	1.3	1.00	
Carbon Disulfide	ND	6.2	0.87	1.00	
Carbon Tetrachloride	ND	3.1	0.39	1.00	
Chlorobenzene	ND	2.3	0.31	1.00	
Chloroethane	ND	1.3	0.64	1.00	
Chloroform	3.8	2.4	0.34	1.00	
Chloromethane	ND	1.0	0.50	1.00	
Dibromochloromethane	ND	4.3	0.47	1.00	
Dichlorodifluoromethane	1.8	2.5	0.29	1.00	J
Diisopropyl Ether (DIPE)	ND	8.4	0.27	1.00	
1,1-Dichloroethane	ND	2.0	0.26	1.00	
1,1-Dichloroethene	ND	2.0	0.79	1.00	
1,2-Dibromoethane	ND	3.8	0.53	1.00	
Dichlorotetrafluoroethane	ND	14	1.9	1.00	
1,2-Dichlorobenzene	ND	3.0	0.32	1.00	
1,2-Dichloroethane	ND	2.0	0.28	1.00	
1,2-Dichloropropane	ND	2.3	0.88	1.00	
1,3-Dichlorobenzene	ND	3.0	0.97	1.00	
1,4-Dichlorobenzene	ND	3.0	0.41	1.00	
c-1,3-Dichloropropene	ND	2.3	0.30	1.00	
c-1,2-Dichloroethene	ND	2.0	0.35	1.00	
t-1,2-Dichloroethene	ND	2.0	0.50	1.00	
t-1,3-Dichloropropene	ND	4.5	0.31	1.00	
Ethanol	6.2	9.4	1.6	1.00	J
Ethyl-t-Butyl Ether (ETBE)	ND	8.4	0.24	1.00	
Ethylbenzene	1.8	2.2	0.63	1.00	J
4-Ethyltoluene	1.5	2.5	0.78	1.00	J
Hexachloro-1,3-Butadiene	ND	16	1.1	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno	Date Received:	11/23/16
801 Second Avenue, Suite 700	Work Order:	16-11-2140
Seattle, WA 98104-1573	Preparation:	N/A
	Method:	EPA TO-15
	Units:	ug/m3
Project: ExxonMobil 99CHT		Page 6 of 8

Parameter	Result	RL	MDL	DF	Qualifiers
2-Hexanone	ND	6.1	1.8	1.00	
Methyl-t-Butyl Ether (MTBE)	ND	7.2	0.55	1.00	
Methylene Chloride	1.1	17	0.86	1.00	B,J
4-Methyl-2-Pentanone	ND	6.1	1.5	1.00	
Naphthalene	ND	26	0.85	1.00	
o-Xylene	2.6	2.2	0.68	1.00	
p/m-Xylene	7.8	8.7	1.4	1.00	J
Xylenes (total)	10	2.2	0.68	1.00	JA
Styrene	ND	6.4	0.27	1.00	
Tert-Amyl-Methyl Ether (TAME)	ND	8.4	0.21	1.00	
Tert-Butyl Alcohol (TBA)	ND	6.1	0.53	1.00	
Tetrachloroethene	60	3.4	0.46	1.00	
Toluene	6.2	1.9	0.51	1.00	
Trichloroethene	ND	2.7	0.37	1.00	
Trichlorofluoromethane	1.3	5.6	0.96	1.00	J
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	0.54	1.00	
1,1,1-Trichloroethane	ND	2.7	0.43	1.00	
1,1,2-Trichloroethane	ND	2.7	1.0	1.00	
1,3,5-Trimethylbenzene	1.3	2.5	0.71	1.00	J
1,1,2,2-Tetrachloroethane	ND	6.9	0.95	1.00	
1,2,4-Trimethylbenzene	5.1	7.4	0.75	1.00	J
1,2,4-Trichlorobenzene	ND	15	0.92	1.00	
Vinyl Acetate	ND	7.0	0.34	1.00	
Vinyl Chloride	ND	1.3	0.57	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	98	68-134	
1,2-Dichloroethane-d4	99	67-133	
Toluene-d8	95	70-130	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno		Date Received:	11/23/16
801 Second Avenue, Suite 700		Work Order:	16-11-2140
Seattle, WA 98104-1573		Preparation:	N/A
		Method:	EPA TO-15
		Units:	ug/m3
Project: ExxonMobil 99CHT			Page 7 of 8

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**095-01-021-17787**	**N/A**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 14:55**	**161129L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Acetone	ND	4.8	0.68	1.00	
Benzene	ND	1.6	0.27	1.00	
Benzyl Chloride	ND	7.8	0.25	1.00	
Bromodichloromethane	ND	3.4	0.42	1.00	
Bromoform	ND	5.2	0.84	1.00	
Bromomethane	ND	1.9	0.54	1.00	
2-Butanone	ND	4.4	1.3	1.00	
Carbon Disulfide	ND	6.2	0.87	1.00	
Carbon Tetrachloride	ND	3.1	0.39	1.00	
Chlorobenzene	ND	2.3	0.31	1.00	
Chloroethane	ND	1.3	0.64	1.00	
Chloroform	ND	2.4	0.34	1.00	
Chloromethane	ND	1.0	0.50	1.00	
Dibromochloromethane	ND	4.3	0.47	1.00	
Dichlorodifluoromethane	ND	2.5	0.29	1.00	
Diisopropyl Ether (DIPE)	ND	8.4	0.27	1.00	
1,1-Dichloroethane	ND	2.0	0.26	1.00	
1,1-Dichloroethene	ND	2.0	0.79	1.00	
1,2-Dibromoethane	ND	3.8	0.53	1.00	
Dichlorotetrafluoroethane	ND	14	1.9	1.00	
1,2-Dichlorobenzene	ND	3.0	0.32	1.00	
1,2-Dichloroethane	ND	2.0	0.28	1.00	
1,2-Dichloropropane	ND	2.3	0.88	1.00	
1,3-Dichlorobenzene	ND	3.0	0.97	1.00	
1,4-Dichlorobenzene	ND	3.0	0.41	1.00	
c-1,3-Dichloropropene	ND	2.3	0.30	1.00	
c-1,2-Dichloroethene	ND	2.0	0.35	1.00	
t-1,2-Dichloroethene	ND	2.0	0.50	1.00	
t-1,3-Dichloropropene	ND	4.5	0.31	1.00	
Ethanol	ND	9.4	1.6	1.00	
Ethyl-t-Butyl Ether (ETBE)	ND	8.4	0.24	1.00	
Ethylbenzene	ND	2.2	0.63	1.00	
4-Ethyltoluene	ND	2.5	0.78	1.00	
Hexachloro-1,3-Butadiene	ND	16	1.1	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno
801 Second Avenue, Suite 700
Seattle, WA 98104-1573

Project: ExxonMobil 99CHT

Date Received: 11/23/16
Work Order: 16-11-2140
Preparation: N/A
Method: EPA TO-15
Units: ug/m3

Parameter	Result	RL	MDL	DF	Qualifiers
2-Hexanone	ND	6.1	1.8	1.00	
Methyl-t-Butyl Ether (MTBE)	ND	7.2	0.55	1.00	
Methylene Chloride	1.3	17	0.86	1.00	J
4-Methyl-2-Pentanone	ND	6.1	1.5	1.00	
Naphthalene	ND	26	0.85	1.00	
o-Xylene	ND	2.2	0.68	1.00	
p/m-Xylene	ND	8.7	1.4	1.00	
Xylenes (total)	ND	2.2	0.68	1.00	
Styrene	ND	6.4	0.27	1.00	
Tert-Amyl-Methyl Ether (TAME)	ND	8.4	0.21	1.00	
Tert-Butyl Alcohol (TBA)	ND	6.1	0.53	1.00	
Tetrachloroethene	ND	3.4	0.46	1.00	
Toluene	ND	1.9	0.51	1.00	
Trichloroethene	ND	2.7	0.37	1.00	
Trichlorofluoromethane	ND	5.6	0.96	1.00	
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	11	0.54	1.00	
1,1,1-Trichloroethane	ND	2.7	0.43	1.00	
1,1,2-Trichloroethane	ND	2.7	1.0	1.00	
1,3,5-Trimethylbenzene	ND	2.5	0.71	1.00	
1,1,2,2-Tetrachloroethane	ND	6.9	0.95	1.00	
1,2,4-Trimethylbenzene	ND	7.4	0.75	1.00	
1,2,4-Trichlorobenzene	ND	15	0.92	1.00	
Vinyl Acetate	ND	7.0	0.34	1.00	
Vinyl Chloride	ND	1.3	0.57	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	98	68-134	
1,2-Dichloroethane-d4	103	67-133	
Toluene-d8	100	70-130	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno		Date Received:	11/23/16
801 Second Avenue, Suite 700		Work Order:	16-11-2140
Seattle, WA 98104-1573		Preparation:	N/A
		Method:	EPA TO-3M
		Units:	ug/m3
Project: ExxonMobil 99CHT			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS1	**16-11-2140-1-A**	**11/22/16 09:41**	**Air**	**GC 13**	**N/A**	**11/23/16 18:59**	**161123L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
TPH as Gasoline	4300	7000	2000	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS2	**16-11-2140-2-A**	**11/22/16 10:23**	**Air**	**GC 13**	**N/A**	**11/23/16 19:15**	**161123L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
TPH as Gasoline	3400	7000	2000	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS3	**16-11-2140-3-A**	**11/22/16 11:08**	**Air**	**GC 13**	**N/A**	**11/23/16 19:27**	**161123L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
TPH as Gasoline	3000	7000	2000	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**098-01-005-7526**	**N/A**	**Air**	**GC 13**	**N/A**	**11/23/16 10:00**	**161123L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
TPH as Gasoline	ND	7000	2000	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno
801 Second Avenue, Suite 700
Seattle, WA 98104-1573

Project: ExxonMobil 99CHT

Date Received: 11/23/16
Work Order: 16-11-2140
Preparation: N/A
Method: GC/MS Carbon Chain
Units: ug/m3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS1	**16-11-2140-1-A**	**11/22/16 09:41**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 15:45**	**A161129L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
C6-C8 Aromatic Hydrocarbons	11	20	8.1	1.00	J
C9-C10 Aromatic Hydrocarbons	ND	15	2.8	1.00	
C5-C8 Aliphatic Hydrocarbons	49	38	8.9	1.00	B
C9-C12 Aliphatic Hydrocarbons	1600	59	4.6	1.00	B

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	98	57-129	
1,2-Dichloroethane-d4	99	47-137	
Toluene-d8	97	78-156	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS2	**16-11-2140-2-A**	**11/22/16 10:23**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 17:33**	**A161129L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
C6-C8 Aromatic Hydrocarbons	19	20	8.1	1.00	J
C9-C10 Aromatic Hydrocarbons	ND	15	2.8	1.00	
C5-C8 Aliphatic Hydrocarbons	66	38	8.9	1.00	B
C9-C12 Aliphatic Hydrocarbons	2400	59	4.6	1.00	B

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	103	57-129	
1,2-Dichloroethane-d4	98	47-137	
Toluene-d8	96	78-156	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Cardno		Date Received:	11/23/16
801 Second Avenue, Suite 700		Work Order:	16-11-2140
Seattle, WA 98104-1573		Preparation:	N/A
		Method:	GC/MS Carbon Chain
		Units:	ug/m3
Project: ExxonMobil 99CHT			Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SVS3	**16-11-2140-3-A**	**11/22/16 11:08**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 18:24**	**A161129L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
C6-C8 Aromatic Hydrocarbons	19	20	8.1	1.00	J
C9-C10 Aromatic Hydrocarbons	ND	15	2.8	1.00	
C5-C8 Aliphatic Hydrocarbons	40	38	8.9	1.00	B
C9-C12 Aliphatic Hydrocarbons	1600	59	4.6	1.00	B

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	98	57-129	
1,2-Dichloroethane-d4	97	47-137	
Toluene-d8	92	78-156	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-270-132**	**N/A**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 14:55**	**A161129L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
C6-C8 Aromatic Hydrocarbons	ND	20	8.1	1.00	
C9-C10 Aromatic Hydrocarbons	ND	15	2.8	1.00	
C5-C8 Aliphatic Hydrocarbons	9.3	38	8.9	1.00	J
C9-C12 Aliphatic Hydrocarbons	6.7	59	4.6	1.00	J

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene	97	57-129	
1,2-Dichloroethane-d4	100	47-137	
Toluene-d8	97	78-156	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - Sample Duplicate

Cardno
801 Second Avenue, Suite 700
Seattle, WA 98104-1573

Project: ExxonMobil 99CHT

Date Received: 11/23/16
Work Order: 16-11-2140
Preparation: N/A
Method: EPA TO-3M

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
16-11-2110-7	**Sample**	**Air**	**GC 13**	**N/A**	**11/23/16 17:27**	**161123D01**
16-11-2110-7	**Sample Duplicate**	**Air**	**GC 13**	**N/A**	**11/23/16 17:38**	**161123D01**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
TPH as Gasoline	11430	10290	11	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

Cardno
801 Second Avenue, Suite 700
Seattle, WA 98104-1573

Project: ExxonMobil 99CHT

Date Received: 11/23/16
Work Order: 16-11-2140
Preparation: N/A
Method: ASTM D-1946

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-16-444-519	**LCS**	**Air**	**GC 65**	**N/A**	**11/28/16 11:55**	**161128L01**
099-16-444-519	**LCSD**	**Air**	**GC 65**	**N/A**	**11/28/16 12:14**	**161128L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Methane	4.500	4.451	99	4.475	99	80-120	1	0-30	
Carbon Dioxide	15.00	14.83	99	15.31	102	80-120	3	0-30	
Carbon Monoxide	6.990	6.922	99	6.939	99	80-120	0	0-30	
Oxygen (+ Argon)	4.010	4.046	101	3.962	99	80-120	2	0-30	
Nitrogen	69.50	67.70	97	67.41	97	80-120	0	0-30	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

Cardno		Date Received:	11/23/16
801 Second Avenue, Suite 700		Work Order:	16-11-2140
Seattle, WA 98104-1573		Preparation:	N/A
		Method:	ASTM D-1946 (M)
Project: ExxonMobil 99CHT			Page 2 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-872-1008	**LCS**	**Air**	**GC 55**	**N/A**	**11/23/16 09:45**	**161123L01**
099-12-872-1008	**LCSD**	**Air**	**GC 55**	**N/A**	**11/23/16 10:04**	**161123L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Helium	1.000	0.9451	95	0.9502	95	80-120	1	0-30	
Hydrogen	1.000	0.9395	94	0.9463	95	80-120	1	0-30	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

Cardno
801 Second Avenue, Suite 700
Seattle, WA 98104-1573

Project: ExxonMobil 99CHT

Date Received: 11/23/16
Work Order: 16-11-2140
Preparation: N/A
Method: EPA TO-15

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-021-17787	**LCS**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 12:30**	**161129L01**
095-01-021-17787	**LCSD**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 13:18**	**161129L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
Acetone	59.39	72.13	121	73.54	124	67-133	56-144	2	0-30	
Benzene	79.87	84.63	106	84.09	105	70-130	60-140	1	0-30	
Benzyl Chloride	129.4	123.8	96	120.6	93	38-158	18-178	3	0-30	
Bromodichloromethane	167.5	181.1	108	182.1	109	70-130	60-140	1	0-30	
Bromoform	258.4	290.0	112	292.4	113	63-147	49-161	1	0-30	
Bromomethane	97.08	108.1	111	112.4	116	70-139	58-150	4	0-30	
2-Butanone	73.73	70.64	96	71.25	97	66-132	55-143	1	0-30	
Carbon Disulfide	77.85	67.94	87	69.12	89	68-146	55-159	2	0-30	
Carbon Tetrachloride	157.3	170.4	108	171.4	109	70-136	59-147	1	0-30	
Chlorobenzene	115.1	121.5	106	126.1	110	70-130	60-140	4	0-30	
Chloroethane	65.96	74.55	113	77.46	117	65-149	51-163	4	0-30	
Chloroform	122.1	125.0	102	126.8	104	70-130	60-140	1	0-30	
Chloromethane	51.63	55.91	108	56.41	109	69-141	57-153	1	0-30	
Dibromochloromethane	213.0	233.9	110	239.5	112	70-138	59-149	2	0-30	
Dichlorodifluoromethane	123.6	128.2	104	131.2	106	67-139	55-151	2	0-30	
Diisopropyl Ether (DIPE)	104.5	90.63	87	90.50	87	63-130	52-141	0	0-30	
1,1-Dichloroethane	101.2	102.6	101	103.4	102	70-130	60-140	1	0-30	
1,1-Dichloroethene	99.12	110.9	112	111.5	113	70-135	59-146	1	0-30	
1,2-Dibromoethane	192.1	212.8	111	213.9	111	70-133	60-144	1	0-30	
Dichlorotetrafluoroethane	174.8	197.3	113	199.4	114	51-135	37-149	1	0-30	
1,2-Dichlorobenzene	150.3	151.0	100	154.9	103	48-138	33-153	3	0-30	
1,2-Dichloroethane	101.2	107.5	106	107.4	106	70-132	60-142	0	0-30	
1,2-Dichloropropane	115.5	119.0	103	120.4	104	70-130	60-140	1	0-30	
1,3-Dichlorobenzene	150.3	154.9	103	154.4	103	56-134	43-147	0	0-30	
1,4-Dichlorobenzene	150.3	153.1	102	156.6	104	52-136	38-150	2	0-30	
c-1,3-Dichloropropene	113.5	129.5	114	125.6	111	70-130	60-140	3	0-30	
c-1,2-Dichloroethene	99.12	102.5	103	104.0	105	70-130	60-140	1	0-30	
t-1,2-Dichloroethene	99.12	100.8	102	103.1	104	70-130	60-140	2	0-30	
t-1,3-Dichloropropene	113.5	132.5	117	130.9	115	70-147	57-160	1	0-30	
Ethanol	188.4	228.6	121	237.7	126	37-139	20-156	4	0-30	
Ethyl-t-Butyl Ether (ETBE)	104.5	100.3	96	100.2	96	67-130	56-140	0	0-30	
Ethylbenzene	108.6	114.2	105	115.0	106	70-130	60-140	1	0-30	
4-Ethyltoluene	122.9	123.6	101	125.6	102	68-130	58-140	2	0-30	
Hexachloro-1,3-Butadiene	266.6	241.4	91	255.1	96	44-146	27-163	6	0-30	
2-Hexanone	102.4	111.9	109	115.5	113	70-136	59-147	3	0-30	
Methyl-t-Butyl Ether (MTBE)	90.13	89.13	99	90.10	100	68-130	58-140	1	0-30	

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

Cardno	Date Received: 11/23/16
801 Second Avenue, Suite 700	Work Order: 16-11-2140
Seattle, WA 98104-1573	Preparation: N/A
	Method: EPA TO-15
Project: ExxonMobil 99CHT	Page 4 of 6

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
Methylene Chloride	86.84	91.12	105	92.43	106	69-130	59-140	1	0-30	
4-Methyl-2-Pentanone	102.4	108.8	106	107.9	105	70-130	60-140	1	0-30	
Naphthalene	131.1	103.6	79	107.2	82	24-144	4-164	3	0-30	
o-Xylene	108.6	108.9	100	109.5	101	69-130	59-140	1	0-30	
p/m-Xylene	217.1	220.2	101	219.0	101	70-132	60-142	1	0-30	
Styrene	106.5	109.2	103	105.1	99	65-131	54-142	4	0-30	
Tert-Amyl-Methyl Ether (TAME)	104.5	103.4	99	104.4	100	69-130	59-140	1	0-30	
Tert-Butyl Alcohol (TBA)	151.6	138.6	91	141.4	93	66-144	53-157	2	0-30	
Tetrachloroethene	169.6	172.7	102	182.8	108	70-130	60-140	6	0-30	
Toluene	94.21	95.47	101	95.83	102	70-130	60-140	0	0-30	
Trichloroethene	134.3	146.1	109	144.6	108	70-130	60-140	1	0-30	
Trichlorofluoromethane	140.5	154.3	110	157.2	112	63-141	50-154	2	0-30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	191.6	167.1	87	170.0	89	70-136	59-147	2	0-30	
1,1,1-Trichloroethane	136.4	143.7	105	146.0	107	70-130	60-140	2	0-30	
1,1,2-Trichloroethane	136.4	150.6	110	149.8	110	70-130	60-140	1	0-30	
1,3,5-Trimethylbenzene	122.9	119.3	97	121.9	99	62-130	51-141	2	0-30	
1,1,2,2-Tetrachloroethane	171.6	181.9	106	182.4	106	63-130	52-141	0	0-30	
1,2,4-Trimethylbenzene	122.9	121.4	99	122.5	100	60-132	48-144	1	0-30	
1,2,4-Trichlorobenzene	185.5	180.9	98	188.5	102	31-151	11-171	4	0-30	
Vinyl Acetate	88.03	83.60	95	84.40	96	58-130	46-142	1	0-30	
Vinyl Chloride	63.91	70.42	110	71.48	112	70-134	59-145	1	0-30	

Total number of LCS compounds: 57
Total number of ME compounds: 0
Total number of ME compounds allowed: 3
LCS ME CL validation result: Pass

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

Cardno		Date Received:	11/23/16
801 Second Avenue, Suite 700		Work Order:	16-11-2140
Seattle, WA 98104-1573		Preparation:	N/A
		Method:	EPA TO-3M
Project: ExxonMobil 99CHT			Page 5 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
098-01-005-7526	**LCS**	**Air**	**GC 13**	**N/A**	**11/23/16 09:50**	**161123L01**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
TPH as Gasoline	932500	932000	100	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

Cardno
801 Second Avenue, Suite 700
Seattle, WA 98104-1573

Project: ExxonMobil 99CHT

Date Received: 11/23/16
Work Order: 16-11-2140
Preparation: N/A
Method: GC/MS Carbon Chain
Page 6 of 6

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-270-132	**LCS**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 10:06**	**A161129L01**
099-14-270-132	**LCSD**	**Air**	**GC/MS AA**	**N/A**	**11/30/16 10:54**	**A161129L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
C5-C8 Aliphatic Hydrocarbons	569.6	577.9	101	535.8	94	47-137	8	0-30	
C9-C12 Aliphatic Hydrocarbons	885.2	707.9	80	681.0	77	47-137	4	0-30	

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RPD: Relative Percent Difference. CL: Control Limits

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Summa Canister Vacuum Summary

Work Order: 16-11-2140 Page 1 of 1

Sample Name	Vacuum Out	Vacuum In	Equipment	Description
SVS1	-29.50 in Hg	-2.40 in Hg	D566	Summa Canister 6L
SVS2	-29.50 in Hg	-2.80 in Hg	SIM066	Summa Canister 6L
SVS3	-29.50 in Hg	-3.00 in Hg	SIM090	Summa Canister 6L

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Sample Analysis Summary Report

Work Order: 16-11-2140 Page 1 of 1

Method	Extraction	Chemist ID	Instrument	Analytical Location
ASTM D-1946	N/A	929	GC 65	2
ASTM D-1946 (M)	N/A	1074	GC 55	2
EPA TO-15	N/A	953	GC/MS AA	2
EPA TO-3M	N/A	1078	GC 13	2
GC/MS Carbon Chain	N/A	953	GC/MS AA	2

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Glossary of Terms and Qualifiers

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Qualifiers	Definition
AZ	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
B	Analyte was present in the associated method blank.
BA	The MS/MSD RPD was out of control due to suspected matrix interference.
BB	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
DF	Reporting limits elevated due to matrix interferences.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
GE	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
HD	Chromat. profile inconsistent with pattern(s) of ref. fuel stnds.
HO	High concentration matrix spike recovery out of limits
HT	Analytical value calculated using results from associated tests.
HX	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS was in control.
IL	Relative percent difference out of control.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
LD	Analyte presence was not confirmed by second column or GC/MS analysis.
LP	The LCS and/or LCSD recoveries for this analyte were above the upper control limit. The associated sample was non-detected. Therefore, the sample data was reported without further clarification.
LQ	LCS recovery above method control limits.
LR	LCS recovery below method control limits.
ND	Parameter not detected at the indicated reporting limit.
QO	Compound did not meet method-described identification guidelines. Identification was based on additional GC/MS characteristics.
RU	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
SG	A silica gel cleanup procedure was performed.
SN	See applicable analysis comment.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofinsus.com or call us.

AIR CHAIN-OF-CUSTODY RECORD

WO NO. / LAB USE ONLY: **16-11-2140**

DATE: 11/22/16
PAGE: 1 OF 1

LABORATORY CLIENT: Cardno
ADDRESS: 801 Second Ave, Suite 700
CITY: Seattle STATE: WA ZIP: 98104
TEL: 206-310-5855 E-MAIL: robert.thompson@cardno.com

CLIENT PROJECT NAME / NO.: ExxonMobil 99CHT
PROJECT CONTACT: Bobby Thompson
PROJECT ADDRESS: 7323 Aurora Ave N
CITY: Seattle STATE: WA ZIP: 98103

P.O. NO.: 4410470191
LAB CONTACT OR QUOTE NO.:
SAMPLER(S): (PRINT) ANDREW YONKOFSKI, CHESTER CHIAO

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☒ STANDARD

EDD: ☐ COELT EDF ☒ OTHER
UNITS: µg/m³

SPECIAL INSTRUCTIONS:
Report to: robert.thompson@cardno.com, laina.cole@cardno.com, andrew.yonkofski@cardno.com

REQUESTED ANALYSES: TPHg by TO-3; VOCs by TO-15; CS-CB Aliphatics, C9-C12 Ali., C9-C10 aro. by GC/MS TO-15; He, O2, CO2, CH4 by ASTM D-1946

LAB USE ONLY	SAMPLE ID	FIELD ID / POINT OF COLLECTION	MATRIX (Indoor (I) Soil Vap. (SV) Ambient (A))	SAMPLING EQUIPMENT: Media ID	Canister Size 6L or 1L	Flow Controller ID	START SAMPLING INFORMATION: Date	Time (24 hr clock)	Canister Pressure (in Hg)	STOP SAMPLING INFORMATION: Date	Time (24 hr clock)	Canister Pressure (in Hg)	TPHg by TO-3	VOCs by TO-15	CS-CB Aliphatics, C9-C12 Ali., C9-C10 aro. by GC/MS TO-15	He, O2, CO2, CH4 by ASTM D-1946	
1	SVS1	SVS1	SV	D566	6L	SCAM 252	11/22/16	0901	-30	11/22/16	0941	-5	X	X	X	X	
2	SVS2	SVS2	SV	SCAM 0616	6L	SCAM 123	11/22/16	0944	>-30	11/22/16	1023	-5	X	X	X	X	
3	SVS3	SVS3	SV	SCAM 0990	6L	SCAM 028	11/22/16	1025	-30	11/22/16	1108	-5	X	X	X	X	

Relinquished by: (Signature) Andrew Yonkofski	Received by: (Signature/Affiliation) FedEx	Date: 11/22/16	Time: 15:00
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date: 11/23/16	Time: 1130
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

2014-07-01 Revision

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FedEx Express **NEW** Package US Airbill

FedEx Tracking Number 8077 7380 7383

Form ID No. 0200

1 From

Date 11/22/16

Sender's Name ANDREW Yurkofsky Phone 206 343 2167

Company CARDNO

Address 801 Second Ave, Suite 700 Dept/Floor/Suite/Room

City Seattle State WA ZIP 98104

2 Your Internal Billing Reference

3 To

Recipient's Name SAMMIE CONTROL Phone 714 895-5495

Company ECI

Address 7440 LINCOLN WAY Dept/Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City GARDEN GROVE State CA ZIP 92841

HOLD Weekday
FedEx location address REQUIRED. NOT available for FedEx First Overnight.

HOLD Saturday
FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

21Hp

4 Express Package Service * To most locations.

NOTE: Service order has changed. Please select carefully.

Next Business Day

- ☐ FedEx First Overnight — Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☒ FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

- ☐ FedEx 2Day A.M. — Second business morning.* Saturday Delivery NOT available.
- ☐ FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.

☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube

6 Special Handling and Delivery Signature Options

☐ SATURDAY Delivery — NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

☐ No Signature Required — Package may be left without obtaining a signature for delivery.

☐ Direct Signature — Someone at recipient's address may sign for delivery. Fee applies.

☐ Indirect — If no one at address, address is residential.

Does this shipment contain dangerous goods?

One box must be checked.

☒ No ☐ Yes — As per attached Shipper's Declaration. ☐ Yes — Shipper's Declaration not required. ☐ Dry Ice — Dry Ice, 9, UN 1845 ☐ Cargo A

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

7 Payment *Bill to:*

Enter FedEx Acct. No. or Credit Card No. below.

☐ Sender — Acct. No. in Section 1 will be billed. ☒ Recipient ☐ Third Party ☐ Credit Card

Total Packages Total Weight lbs. Credit Card Auth.

†Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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WORK ORDER NUMBER: 16-11- 2140

SAMPLE RECEIPT CHECKLIST

COOLER 0 **OF** 0

CLIENT: Cardno

DATE: 11 / 23 / 2016

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC3A (CF: 0.0°C); Temperature (w/o CF): _____°C (w/ CF): _____°C; ☐ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☑ Air ☐ Filter Checked by: JS

CUSTODY SEAL:

Cooler	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: JS
Sample(s)	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 1017

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☐	☐	☑
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: **(Trip Blank Lot Number:** _____**)**

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB

☐ 125PB**znna** ☐ 250AGB ☐ 250CGB ☐ 250CGB**s** ☐ 250PB ☐ 250PB**n** ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s**

☐ 500PB ☐ 1AGB ☐ 1AGB**na$_2$** ☐ 1AGB**s** ☐ 1PB ☐ 1PB**na** ☐ _____ ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____

Air: ☐ Tedlar™ ☑ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 1017

Reviewed by: AG

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