

March 23, 2020

Mr. Hank Stukey
Terra Hydr, Inc.
11670 SW Waldo Way
Sherwood, OR 97140

Re: Intent to Dispose of Non-Hazardous Soils Generated During HC&C System Leak Cleanup,
NW Natural Gasco and Siltronic HC&C System, 7900 NW St. Helens Road, Portland, Oregon
(Gasco Site) and 7200 NW Front Ave, Portland, Oregon 97210 (Siltronic Site)

Dear Mr. Stukey:

NW Natural requests transport and disposal of 24 55-gallon drums containing petroleum-impacted soil to Waste Management, Inc.'s Hillsboro (Subtitle D) Landfill. The drums are currently stored at the NW Natural Gasco site.

The drums contain soil investigation-derived waste (IDW) generated by a flange rupture of the HC&C system which impacted topsoil with groundwater extracted from the hydraulic control and containment (HC&C) system operations at the Siltronic Corporation site. Anchor QEA, LLC, collected three composite samples from the drums. Each composite sample was comprised of a subsample collected from each of eight drums.

The composite samples were submitted to Apex Laboratories, LLC, for analysis of the following:

- Total cyanide (UV digestion/gas diffusion/amperometric detection)
- Free liquids
- Percent dry weight (Total Solids)
- Total petroleum hydrocarbons: diesel and oil range (NWTPH-Dx) and gasoline range (NWTPH-Gx)
- Total metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (U.S. Environmental Protection Agency [EPA] 6020A)
- Volatile organic compounds (EPA 5035A/8260C)
- Semivolatile organic compounds (EPA 8270D)

The analytical results for the composite samples are provided in Table 1. Table 1 includes method detection limits (MDLs) for "non-detect" constituents. Neither the reported concentrations nor the MDLs for these constituents exceed Resource Conservation and Recovery Act (RCRA) toxicity characteristic regulatory levels. These regulatory levels are based on leachate concentrations tested by toxicity characteristic leaching procedure (TCLP) methodology. Total-concentration analytical results were screened against EPA's TCLP regulatory levels multiplied by 20 (Table 1) to account for

attenuation that occurs during the leaching process. Screening of these data indicates that constituent concentrations do not exceed RCRA toxicity characteristic regulatory levels.

The soil was generated within the designated trichloroethene (TCE) Contaminated Materials Management Area. Neither TCE nor its breakdown products (cis-1,2-dichloroethene [DCE], trans-1,2-DCE, 1,1-DCE, and vinyl chloride) were detected above the MDLs identified in Table 1. MDLs reported by the laboratory were below Oregon Department of Environmental Quality's (DEQ) May 2018 Risk-Based Concentrations (RBCs) for Occupational Exposure by Ingestion, Dermal Contact, and Inhalation, listed below:

Analyte	May 2018 DEQ RBCs (µg/kg)
1,1-dichloroethylene (DCE)	29,000,000
cis-1,2-DCE	2,300,000
trans-1,2-DCE	23,000,000
TCE	51,000
Vinyl Chloride	4,400

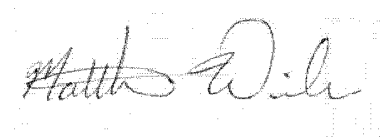
Based on the preceding analytical testing and screening procedure, it is concluded that the drums of soil IDW are acceptable for disposal as petroleum-impacted soil at a RCRA Subtitle D non-hazardous waste disposal facility. Upon acceptance of the attached profile, the waste will be transported off site and disposed of at Waste Management's Hillsboro Landfill.

In response to the EZ Profile Addendum No. D.7, which requests documentation of the state-mandated cleanup, NW Natural's Voluntary Agreement with DEQ, No. WMCVC-NWR-94-13, is attached to this package (Attachment A). The Voluntary Agreement is dated August 8, 1994, with two addendums dated July 19, 2006, and October 11, 2016, respectively.

A summary of analytical results (Table 1), APEX Laboratories analytical reports (Attachment B), and completed Waste Management disposal profile (Attachment C) are also enclosed.

Please contact me if you have any questions.

Thank you,



Matt Wilson
Anchor QEA, LLC

cc: Robert Wyatt (NW Natural); Patty Dost and Sarah Riddle (Pearl Legal Group); Ryan Barth, John Renda, and Tim Stone (Anchor QEA, LLC); Rob Ede (Hahn and Associates, Inc.); and Dana Bayuk (Oregon Department of Environmental Quality)

Attachments

Table 1 Analytical Results

Attachment A Voluntary Agreement No. WMCVC-NWR-94-13, August 8, 1994, as Amended by the First Addendum, Dated July 19, 2006, and the Second Addendum, Dated October 11, 2016

Attachment B APEX Laboratory Report No. A0B0096

Attachment C Waste Management, Inc., Disposal Profile

Table

Table 1
Analytical Results

Analyte	Samples		Sample 1 STS-020420-1to8		Sample 2 STS-020420-9to16		Sample 3 STS-020420-17to24	
	IDW Source		Soil from Siltronic Corporation Flange Rupture, Drum Number 1 through 8		Soil from Siltronic Corporation Flange Rupture, Drum Number 9 through 16		Soil from Siltronic Corporation Flange Rupture, Drum Number 17 through 24	
	20-Times TCLP Limit	F002 Threshold Screening Values	Result	Qualifier	Result	Qualifier	Result	Qualifier
Conventionals								
Total Cyanide (mg/kg)	--	--	0.375	--	0.450	--	0.439	--
Free liquid (mL)	--	--	0.00	--	0.00	--	0.00	--
Total Solids (% by weight)	--	--	75.1	--	77.1	--	76.3	--
Total Metals (mg/kg)								
Arsenic	100	--	3.83	--	3.63	--	3.81	--
Barium	2,000	--	98.0	--	72.7	--	72.9	--
Cadmium	20	--	0.188	J	0.151	J	0.162	J
Chromium	100	--	21.7	--	20.9	--	27.6	--
Lead	100	--	23.7	--	17.4	--	22.5	--
Mercury	4	--	0.0225	U	0.0552	U	0.0536	U
Selenium	20	--	0.281	U	0.690	U	0.670	U
Silver	100	--	0.0561	U	0.138	U	0.134	U
Total Petroleum Hydrocarbons (TPH) (mg/kg)								
Diesel Range	--	--	115	--	185	--	365	--
Gasoline Range	--	--	5.65	J	6.43	J	9.12	--
Oil Range	--	--	140	--	176	--	261	--
Volatile Organic Compounds (VOCs) (µg/kg)								
Acetone	--	--	697	U	669	U	666	U
Acrylonitrile	--	--	69.7	U	66.9	U	66.6	U
Benzene	10,000	--	6.97	U	6.69	U	6.66	U
Bromobenzene	--	--	17.4	U	16.7	U	16.7	U
Bromochloromethane	--	--	34.9	U	33.4	U	33.3	U
Bromodichloromethane	--	--	34.9	U	33.4	U	33.3	U
Bromoform	--	--	69.7	U	66.9	U	66.6	U
Bromomethane	--	--	697	U	669	U	666	U
2-Butanone (MEK)	4,000,000	--	34.9	U	33.4	U	33.3	U
n-Butylbenzene	--	--	34.9	U	33.4	U	33.3	U
sec-Butylbenzene	--	--	34.9	U	33.4	U	33.3	U
tert-Butylbenzene	--	--	34.9	U	33.4	U	33.3	U
Carbon disulfide	--	--	34.9	U	33.4	U	33.3	U
Carbon tetrachloride	10,000	--	34.9	U	33.4	U	33.3	U
Chlorobenzene	2,000,000	--	17.4	U	16.7	U	16.7	U
Chloroethane	--	--	34.9	U	33.4	U	33.3	U
Chloroform	120,000	--	34.9	U	33.4	U	33.3	U
Chloromethane	--	--	17.4	U	16.7	U	16.7	U
2-Chlorotoluene	--	--	34.9	U	33.4	U	33.3	U
4-Chlorotoluene	--	--	34.9	U	33.4	U	33.3	U
1,2-Dibromo-3-chloropropane	--	--	17.4	U	16.7	U	16.7	U
Dibromochloromethane	--	--	69.7	U	66.9	U	66.6	U
1,2-Dibromoethane (EDB)	--	--	34.9	U	33.4	U	33.3	U
Dibromomethane	--	--	34.9	U	33.4	U	33.3	U
1,2-Dichlorobenzene	--	--	17.4	U	16.7	U	16.7	U
1,3-Dichlorobenzene	--	--	17.4	U	16.7	U	16.7	U
1,4-Dichlorobenzene	150,000	--	17.4	U	16.7	U	16.7	U
Dichlorodifluoromethane	--	--	69.7	U	66.9	U	66.6	U
1,1-Dichloroethane	--	--	17.4	U	16.7	U	16.7	U
1,2-Dichloroethane (EDC)	10,000	--	17.4	U	16.7	U	16.7	U
1,1-Dichloroethene	14,000	29,000,000	17.4	U	16.7	U	16.7	U
cis-1,2-Dichloroethene	--	2,300,000	17.4	U	16.7	U	16.7	U
trans-1,2-Dichloroethene	--	23,000,000	17.4	U	16.7	U	16.7	U
1,2-Dichloropropane	--	--	17.4	U	16.7	U	16.7	U
1,3-Dichloropropane	--	--	34.9	U	33.4	U	33.3	U
2,2-Dichloropropane	--	--	34.9	U	33.4	U	33.3	U
1,1-Dichloropropene	--	--	34.9	U	33.4	U	33.3	U
cis-1,3-Dichloropropene	--	--	34.9	U	33.4	U	33.3	U
trans-1,3-Dichloropropene	--	--	34.9	U	33.4	U	33.3	U
Ethylbenzene	--	--	17.4	U	16.7	U	16.7	U
Hexachlorobutadiene	--	--	69.7	U	66.9	U	66.6	U
2-Hexanone	--	--	34.9	U	33.4	U	33.3	U
Isopropylbenzene	--	--	34.9	U	33.4	U	33.3	U
4-Isopropyltoluene	--	--	34.9	U	33.4	U	33.3	U
4-Methyl-2-pentanone (MIBK)	--	--	34.9	U	33.4	U	33.3	U

Intent to Dispose of Non-Hazardous Soils Generated During H&C System Spill
NW Natural Gasco Site, 7900 NW St. Helens Rd., Portland, Oregon

Table 1
Analytical Results

Analyte	Samples		Sample 1 STS-020420-1to8		Sample 2 STS-020420-9to16		Sample 3 STS-020420-17to24	
	IDW Source		Soil from Siltronic Corporation Flange Rupture, Drum Number 1 through 8		Soil from Siltronic Corporation Flange Rupture, Drum Number 9 through 16		Soil from Siltronic Corporation Flange Rupture, Drum Number 17 through 24	
	20-Times TCLP Limit	F002 Threshold Screening Values	Result	Qualifier	Result	Qualifier	Result	Qualifier
Methyl tert-butyl ether (MTBE)	--	--	34.9	U	33.4	U	33	U
Methylene chloride	--	--	349	U	334	U	333	U
Naphthalene	--	--	189	--	257	--	606	--
n-Propylbenzene	--	--	17.4	U	16.7	U	16.7	U
Styrene	--	--	34.9	U	33.4	U	33.3	U
1,1,1,2-Tetrachloroethane	--	--	17.4	U	16.7	U	16.7	U
1,1,2,2-Tetrachloroethane	--	--	34.9	U	33.4	U	33.3	U
Tetrachloroethene (PCE)	14,000	1,000,000	17.4	U	16.7	U	16.7	U
Toluene	--	--	34.9	U	33.4	U	33.3	U
1,2,3-Trichlorobenzene	--	--	174	U	167	U	167	U
1,2,4-Trichlorobenzene	--	--	174	U	167	U	167	U
1,1,1-Trichloroethane	--	--	17.4	U	16.7	U	16.7	U
1,1,2-Trichloroethane	--	--	17.4	U	16.7	U	16.7	U
Trichloroethene (TCE)	10,000	51,000	17.4	U	16.7	U	16.7	U
Trichlorofluoromethane	--	--	69.7	U	66.9	U	66.6	U
1,2,3-Trichloropropane	--	--	34.9	U	33.4	U	33.3	U
1,2,4-Trimethylbenzene	--	--	34.9	U	33.4	U	33.3	U
1,3,5-Trimethylbenzene	--	--	34.9	U	33.4	U	33.3	U
Vinyl chloride	4,000	4,400	17.4	U	16.7	U	16.7	U
m,p-Xylene	--	--	34.9	U	33.4	U	33.3	U
o-Xylene	--	--	17.4	U	16.7	U	16.7	U
Semivolatile Organic Compounds (µg/kg)								
Acenaphthene	--	--	1550	--	3620	--	3250	--
Acenaphthylene	--	--	520	--	576	--	645	--
Anthracene	--	--	1760	--	3370	--	3070	--
Benz(a)anthracene	--	--	3000	--	3040	--	3240	--
Benzo(a)pyrene	--	--	5030	--	4760	--	5110	--
Benzo(b)fluoranthene	--	--	4240	--	3910	--	4240	--
Benzo(k)fluoranthene	--	--	1530	M-05	1470	M-05	1510	M-05
Benzo(g,h,i)perylene	--	--	3840	--	3390	--	3690	--
Chrysene	--	--	3730	--	3780	--	4070	--
Dibenz(a,h)anthracene	--	--	416	--	373	--	410	--
Fluoranthene	--	--	8920	--	11500	--	11400	--
Fluorene	--	--	1040	--	2140	--	1920	--
Indeno(1,2,3-cd)pyrene	--	--	3240	--	2890	--	3110	--
1-Methylnaphthalene	--	--	678	U	658	U	676	U
2-Methylnaphthalene	--	--	678	U	658	U	676	U
Naphthalene	--	--	678	U	658	U	676	U
Phenanthrene	--	--	6560	--	11500	--	10500	--
Pyrene	--	--	10900	--	13300	--	13600	--
Carbazole	--	--	509	U	494	U	507	U
Dibenzofuran	--	--	340	U	330	U	339	U
4-Chloro-3-methylphenol	--	--	3400	U	3300	U	3390	U
2-Chlorophenol	--	--	1690	U	1640	U	1690	U
2,4-Dichlorophenol	--	--	1690	U	1640	U	1690	U
2,4-Dimethylphenol	--	--	1690	U	1640	U	1690	U
2,4-Dinitrophenol	--	--	8490	U	8240	U	8460	U
4,6-Dinitro-2-methylphenol	--	--	8490	U	8240	U	8460	U
2-Methylphenol	--	--	849	U	824	U	846	U
3+4-Methylphenol(s)	--	--	849	U	824	U	646	U
2-Nitrophenol	--	--	3400	U	3300	U	3390	U
4-Nitrophenol	--	--	3400	U	3300	U	3390	U
Pentachlorophenol (PCP)	2,000,000	--	3400	U	3300	U	3390	U
Phenol	--	--	678	U	658	U	676	U
2,3,4,6-Tetrachlorophenol	--	--	1690	U	1640	U	1690	U
2,3,5,6-Tetrachlorophenol	--	--	1690	U	1640	U	1690	U
2,4,5-Trichlorophenol	8,000,000	--	1690	U	1640	U	1690	U
2,4,6-Trichlorophenol	40,000	--	1690	U	1640	U	1690	U
Bis(2-ethylhexyl) phthalate	--	--	5090	U	4940	U	5070	U
Butyl benzyl phthalate	--	--	3400	U	3300	U	3390	U
Diethylphthalate	--	--	3400	U	3300	U	3390	U
Dimethylphthalate	--	--	3400	U	3300	U	3390	U
Di-n-butylphthalate	--	--	3400	U	3300	U	3390	U

Intent to Dispose of Non-Hazardous Soils Generated During H&C System Spill
NW Natural Gasco Site, 7900 NW St. Helens Rd., Portland, Oregon

Table 1
Analytical Results

Analyte	Samples		Sample 1 STS-020420-1to8		Sample 2 STS-020420-9to16		Sample 3 STS-020420-17to24	
	IDW Source		Soil from Siltronic Corporation Flange Rupture, Drum Number 1 through 8		Soil from Siltronic Corporation Flange Rupture, Drum Number 9 through 16		Soil from Siltronic Corporation Flange Rupture, Drum Number 17 through 24	
	20-Times TCLP Limit	F002 Threshold Screening Values	Result	Qualifier	Result	Qualifier	Result	Qualifier
Di-n-octyl phthalate	--	--	3400	U	3300	U	3390	U
N-Nitrosodimethylamine	--	--	849	U	824	U	846	U
N-Nitroso-di-n-propylamine	--	--	849	U	824	U	846	U
N-Nitrosodiphenylamine	--	--	849	U	824	U	846	U
Bis(2-Chloroethoxy) methane	--	--	849	U	824	U	846	U
Bis(2-Chloroethyl) ether	--	--	849	U	824	U	846	U
2,2'-Oxybis(1-Chloropropane)	--	--	849	U	824	U	846	U
Hexachlorobenzene	2,600	--	340	U	330	U	339	U
Hexachlorobutadiene	10,000	--	849	U	824	U	846	U
Hexachlorocyclopentadiene	--	--	1690	U	1640	U	1690	U
Hexachloroethane	60,000	--	849	U	824	U	846	U
2-Chloronaphthalene	--	--	340	U	330	U	339	U
1,2-Dichlorobenzene	--	--	849	U	824	U	846	U
1,3-Dichlorobenzene	--	--	849	U	824	U	846	U
1,4-Dichlorobenzene	--	--	849	U	824	U	846	U
1,2,4-Trichlorobenzene	--	--	849	U	824	U	846	U
4-Bromophenyl phenyl ether	--	--	849	U	824	U	846	U
4-Chlorophenyl phenyl ether	--	--	849	U	824	U	846	U
Aniline	--	--	1690	U	1640	U	1690	U
4-Chloroaniline	--	--	849	U	824	U	846	U
2-Nitroaniline	--	--	6780	U	6580	U	6760	U
3-Nitroaniline	--	--	6780	U	6580	U	6760	U
4-Nitroaniline	--	--	6780	U	6580	U	6760	U
Nitrobenzene	40,000	--	3400	U	3300	U	3390	U
2,4-Dinitrotoluene	2,600	--	3400	U	3300	U	3390	U
2,6-Dinitrotoluene	--	--	3400	U	3300	U	3390	U
Benzoic acid	--	--	42400	U	41100	U	42200	U
Benzyl alcohol	--	--	1690	U	1640	U	1690	U
Isophorone	--	--	849	U	824	U	846	U
Azobenzene (1,2-DPH)	--	--	849	U	824	U	846	U
Bis(2-Ethylhexyl) adipate	--	--	8490	U	8240	U	8460	U
3,3'-Dichlorobenzidine	--	--	6780	U	6580	U	6760	U
1,2-Dinitrobenzene	--	--	8490	U	8240	U	8460	U
1,3-Dinitrobenzene	--	--	8490	U	8240	U	8460	U
1,4-Dinitrobenzene	--	--	8490	U	8240	U	8460	U
Pyridine	--	--	1690	U	1640	U	1690	U

Notes:

F002 Threshold Screening Values = Oregon Department of Environmental Quality May 2018 Risk-Based Concentrations for Occupational Exposure by Ingestion, Dermal Contact, and Inhalation.

Bold: detected analyte

--: not applicable

µg/kg: micrograms per kilogram

µg/L: micrograms per liter

DEQ: Oregon Department of Environmental Quality

IDW: investigation-derived waste

J: Estimated result. Result detected below the lowest point of the calibration curve, but above the specified MDL.

M-05: Estimated result. Peak separation for structural isomers is insufficient for accurate quantification.

MDL: method detection limit

mg/kg: milligrams per kilogram

mL: milliliter

TCLP: toxicity characteristic leaching procedure

TPH: total petroleum hydrocarbons

U: Analyte is not detected above the method detection limit.

VOC: volatile organic compounds

Attachment A

Voluntary Agreement No. WMCVC-NWR-94-13, August 8, 1994, as Amended by the First Addendum, Dated July 19, 2006, and the Second Addendum, Dated October 11, 2016

RECEIVED SEP 8 2004

VOLUNTARY AGREEMENT FOR
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

DEQ NO. WMCVC-NWR-94-13

BETWEEN: Northwest Natural Gas Company
AND: Oregon Department of Environmental Quality (DEQ)
EFFECTIVE DATE: 8/8/94

Pursuant to ORS 465.260(2) and (4), the Director, Oregon Department of Environmental Quality (DEQ), enters this Agreement with the Northwest Natural Gas Company (NWNG). This Agreement contains the following provisions:

	<u>Page</u>
I. Recitals.....	1
II. Agreement.....	3
A. Work.....	3
B. Public Participation.....	3
C. DEQ Access and Oversight.....	3
D. Project Managers.....	4
E. Notice and Samples.....	4
F. Quality Assurance.....	5
G. Records.....	5
H. Progress Reports.....	6
I. Other Applicable Laws.....	6
J. Reimbursement of DEQ Costs.....	6
K. Force Majeure.....	7
L. Prior Approval.....	7
M. Dispute Resolution.....	7
N. Enforcement of Agreement and Reservation of Rights.....	8
O. Hold Harmless.....	8
P. Parties Bound.....	9
Q. Modification.....	9
R. Duration and Termination.....	9

I. RECITALS

- A. NWNG is a "person" under ORS 465.200(13).
- B. The NWNG site is a "facility" under ORS 465.200(6). The NWNG site occupies approximately 47 acres at 7540 N.W. St. Helens Road, Portland, Oregon and is the location of a former oil gasification plant. A vicinity map and a site map are included in Attachment A to this Agreement.

- C. From 1913 until 1956, NWNG, then known as the Portland Gas and Coke Company (GASCO) operated an oil gasification plant on the present property owned by NWNG. An adjoining approximately 73 acre portion of the property was sold by NWNG in 1962 and is currently the site of the Wacker Siltronics Corporation manufacturing facility. The former GASCO facility produced oil gas and lampblack briquettes. Other materials produced by the plant for sale included light oils, tar and electrode grade coke. Wastes generated at the facility included tar, wastewater containing dissolved and suspended hydrocarbons, and spent oxide. Many of these wastes were disposed of in on-site tar ponds. In 1971 the largest remaining tar pond was estimated to contain 6 million gallons of tar and tar/water emulsion. This tar pond was subsequently filled in with spent oxide material and rubble and spread out over the southeastern portion of the site. NWNG currently operates a liquified natural gas (LNG) plant at the site and leases portions of the former GASCO facility to Pacific Northern Oil Company (Pacific Northern) and Koppers Industries, Incorporated (Koppers).
- D. Investigations conducted to date indicate that petroleum hydrocarbons, volatile aromatic hydrocarbons and polycyclic aromatic hydrocarbons (PAHs) are present in subsurface soils and groundwater on the NWNG property. A total PAH concentration of 926 mg/l was detected in a 1984 sample collected from a monitoring well installed on the property leased from NWNG by Koppers. Ethylbenzene and xylene were detected in the same monitoring well at 380 mg/l and 2600 mg/l respectively. Analysis of a 1984 sediment sample collected from the NWNG LNG containment basin detected 300 mg/kg of total PAHs. Analysis of a 1993 water sample collected from the NWNG LNG containment basin detected 8.3 mg/l of benzene and 1.4 mg/l of total PAHs.

The substances described in this section are "hazardous substances" under ORS 465.200(9). The presence of hazardous substances in soil and groundwater at the facility constitutes a "release" or "threat of release" into the environment under ORS 465.200(14).

- E. NWNG requested DEQ oversight of its investigation and cleanup activities and executed a voluntary Letter Agreement with DEQ on January 3, 1994. NWNG provided a \$5,000 advance deposit to cover initial DEQ oversight costs.
- F. DEQ considers the activities required by this Agreement to be necessary to protect public health, safety, and welfare and the environment.

II. AGREEMENT

The parties agree as follows:

A. Work

1. Remedial Investigation and Feasibility Study.

NWNG shall perform a remedial investigation and feasibility study (RI/FS) satisfying OAR 340-122-070 and OAR 340-122-080, the terms and schedule of a DEQ-approved work plan developed by NWNG, and applicable elements of the general Scope of Work contained in Attachment B to this Agreement. NWNG may specify, in the proposed work plan, elements of the Scope of Work that NWNG considers inapplicable or unnecessary to the RI/FS for the facility. NWNG may propose to perform the work in phases or operable units.

2. Review

DEQ shall provide review, approvals/disapprovals, and oversight in accordance with the schedule set forth in the Scope of Work, or as soon as thereafter practicable in the event staff resources or workload prevent compliance with the schedule. Any DEQ delay shall correspondingly extend NWNG's schedule for a related deliverable or activity.

3. Additional Measures

NWNG may elect at any time during the term of this Agreement to undertake measures other than those required under this Agreement necessary to address a release or threatened release of hazardous substances at the facility which is the subject of this Agreement. Such other measures shall be subject to prior approval by DEQ, which approval shall be granted if DEQ determines that the additional measures will not compromise the validity of the RI/FS and will not threaten human health or the environment.

B. Public Participation

Upon execution of this Agreement, DEQ will provide public notice of this Agreement through issuance of a press release, at a minimum to a local newspaper of general circulation, describing the measures required under this Agreement. Copies of the Agreement will be made available to the public. DEQ shall provide NWNG a draft of such press release and consider any comments by NWNG on the draft press release, before publication.

C. DEQ Access and Oversight

1. DEQ shall use its best efforts, but not be obligated, to provide reasonable advance notice before entering the

facility. NWNG shall allow DEQ to enter and move freely about all portions of the facility at all reasonable times for the purposes, among other things, of inspecting records relating to work under this Agreement; observing NWNG's progress in implementing this Agreement; conducting such tests and taking such samples as DEQ deems necessary; verifying data submitted to DEQ by NWNG; and, using camera, sound recording, or other recording equipment for purposes relating to work under this Agreement.

2. NWNG shall permit DEQ to inspect and copy all records, files, photographs, documents, and data relating to work under this Agreement, except that NWNG shall not be required to permit DEQ inspection or copying of items subject to attorney-client or attorney work product privilege. DEQ shall use its best efforts, but not be obligated, to provide reasonable advance notice before records inspection and copying requests.
3. Attorney-client and work product privileges may not be asserted with respect to any records required under Section II.G.1 and II.G.2 of this Agreement. NWNG shall identify to DEQ, by addressor-addressee, date, general subject matter, and distribution, any document, record, or item withheld from DEQ on the basis of attorney-client or attorney work product privilege. DEQ reserves its rights under law to obtain documents DEQ asserts are improperly withheld by NWNG.

D. Project Managers

1. To the extent possible, all reports, notices, and other communications required under or relating to this Agreement shall be directed to:

DEQ Project Manager:

Eric Blischke
Department of Environmental Quality
Northwest Region
2020 S.W. Fourth Avenue, Suite 400
Portland, OR 97201
(503) 229-6802

NWNG Project Manager:

Sandra Hart
Northwest Natural Gas
Company
220 S.W. Second Avenue
Portland, OR 97209
(503) 226-4211

2. NWNG's and DEQ's Project Managers shall be available and have the authority to make day-to-day decisions necessary to complete the scope of work under this Agreement.

E. Notice and Samples

NWNG shall make every reasonable attempt to notify DEQ of any excavation, drilling, or sampling to be conducted under this Agreement at least five (5) working days before such activity but in no event less than twenty-four (24) hours before such activity. Upon DEQ's verbal request, NWNG shall make available to DEQ a

split or duplicate of any sample taken pursuant to this Agreement. DEQ shall make every effort to complete analysis of any split or duplicate sample on a schedule consistent with NWNG's schedule for related activities.

F. Quality Assurance

NWNG shall conduct all sampling, sample transport, and sample analysis in accordance with the Quality Assurance/ Quality Control (QA/QC) provisions approved by DEQ as part of the work plan. All plans prepared and work conducted as part of this Agreement shall be consistent with DEQ's "Quality Assurance Policy No. 760.00". NWNG shall ensure that each laboratory used by NWNG for analysis performs such analyses in accordance with such provisions.

G. Records

1. In addition to those technical reports and documents specifically required under this Agreement, NWNG shall provide to DEQ within ten (10) days of DEQ's written request copies of existing documents relating to work required under this Agreement, including QA/QC memoranda and audits, final plans, final reports, task memoranda, field notes, and laboratory analytical data that have undergone data quality validation.
2. If DEQ determines that review of raw data or preliminary laboratory reports is necessary in order to ensure protection of public health, safety, and welfare and the environment, that information will be provided by NWNG immediately upon DEQ's written request. When such information is requested, DEQ will fully inform NWNG of the reasons making the request necessary.
3. Except for preliminary drafts which have been superseded, NWNG and DEQ shall preserve all records and documents in possession or control of NWNG and DEQ, respectively, or their employees, agents, or contractors that relate in any way to activities under this Agreement for at least five (5) years after termination under Section II.R. of this Agreement; provided that after such 5-year period, NWNG and DEQ shall provide the other sixty (60) days notice before destruction or other disposal of such records and make them available for inspection and copying.
4. NWNG may assert a claim of confidentiality regarding any documents or records submitted to or copied by DEQ pursuant to this Agreement. DEQ shall treat documents and records for which a claim of confidentiality has been made in accordance with ORS 192.410 through 192.505. If NWNG does not make a claim of confidentiality at the time the documents or records are submitted to or copied by DEQ, the documents or records may be made available to the public without notice to NWNG.

H. Progress Reports

During each month of this Agreement, NWNG shall deliver to DEQ on or before the tenth (10th) day of each month two (2) copies of a progress report containing the following items. DEQ anticipates that the progress report will not exceed 2 pages in length.

1. Actions taken under this Agreement during the previous month;
2. Actions scheduled to be taken in the next month;
3. Sampling, test results, and any other data generated by NWNG during the previous month; and
4. A description of any problems experienced during the previous month and the actions taken to resolve them.

I. Other Applicable Laws

All actions under this Agreement shall be performed in accordance with all applicable federal, state, and local laws and regulations; except that, in accordance with ORS 465.315(2), DEQ in its discretion may exempt the on-site portion of any removal or remedial action from applicable requirements of ORS 466.005 to 466.385, ORS Chapter 459, or ORS Chapter 468 (1989).

J. Reimbursement of DEQ Oversight Costs

1. DEQ shall submit to NWNG a monthly statement of costs actually and reasonably incurred after issuance of this Agreement by DEQ or the State of Oregon in connection with any activities related to the facility or oversight of NWNG's implementation of this Agreement. Each invoice will include a summary of costs billed to date. DEQ will also include a direct labor summary showing the person charging the time, the number of hours and the nature of the work performed.
2. DEQ or State of Oregon oversight costs payable by NWNG shall include both direct and indirect costs. Direct costs include site-specific expenses, DEQ contractor costs, and DEQ legal costs. Indirect costs are those general management and support costs of the DEQ and of the Waste Management and Cleanup Division allocable to DEQ oversight of this Agreement and not charged as direct, site-specific costs. Indirect costs are based on a percentage of direct personal services costs. DEQ shall maintain work logs, payroll records, receipts and other documents to document work performed and expenses incurred under this Agreement and, upon request, shall make such records available to Respondent for inspection during the time of this Agreement and for at least one year thereafter.

3. Within thirty (30) days of receipt of the monthly statement, NWNG shall pay the amount of costs billed by check made payable to the "State of Oregon, Hazardous Substance Remedial Action Fund".

K. Force Majeure

1. If any event occurs that is beyond NWNG's reasonable control and that causes or might cause a delay or deviation in performance of the requirements of this Agreement, NWNG shall promptly notify DEQ's Project Manager verbally of the cause of the delay or deviation and its anticipated duration, the measures that have been or will be taken to prevent or minimize the delay or deviation, and the timetable by which NWNG proposes to carry out such measures. NWNG shall confirm in writing this information within five (5) working days of the verbal notification.
2. If NWNG demonstrates to DEQ's satisfaction that the delay or deviation has been or will be caused by circumstances beyond the control and despite the due diligence of NWNG, DEQ shall extend times for performance of related activities under this Agreement as appropriate. Circumstances or events beyond NWNG's control might include but are not limited to acts of God, unforeseen strikes or work stoppages, fire, explosion, riot, sabotage, or war. Increased cost of performance or changed business or economic circumstances shall be presumed not to be circumstances beyond NWNG's control.

L. Prior Approval

Where DEQ review and approval is required for any plan or activity under this Agreement, NWNG shall not proceed to implement the plan or activity until DEQ approval is received. Any DEQ delay in granting or denying approval shall correspondingly extend the time for completion by NWNG. Prior approval shall not be required in emergencies or in instances where NWNG believes a delay in undertaking a particular action will threaten human health, safety or the environment; provided NWNG shall notify DEQ immediately after the emergency or activity and evaluate its impact on the RI/FS.

M. Dispute Resolution

In the event of disagreement between NWNG and DEQ regarding implementation of this Agreement, NWNG and DEQ shall, in the following order: 1) make a good faith effort to resolve the dispute between Project Managers; 2) if necessary, refer the dispute for resolution by the immediate supervisors of the Project Managers; and 3) if necessary, provide each other their respective positions in writing and refer the dispute for resolution by DEQ's Administrator of the Waste Management and Cleanup Division or the appropriate Region Administrator and NWNG's Chief Executive

Officer. DEQ's final decision after such dialogue shall be enforceable under this Agreement. If NWNG refuses or fails to follow DEQ's final decision, the parties shall be entitled to such rights and remedies, including but not limited to, judicial review and subject to such limitation as provided by applicable law.

N. Enforcement of Agreement and Reservation of Rights

1. In the event of NWNG's failure to comply with this Agreement (including any failure to reimburse oversight costs), DEQ may enforce this Agreement under ORS 465.260(5) or may terminate this Agreement after thirty (30) days written notice to NWNG.
2. In the event of DEQ's failure to provide oversight in accordance with this Agreement, NWNG may terminate this Agreement after thirty (30) days written notice to DEQ. Costs incurred or obligated by DEQ before the effective date of any termination of this Agreement shall be owed under the Agreement notwithstanding such termination.
3. NWNG does not admit any liability or violation of law by virtue of entering this Agreement.
4. Nothing in this Agreement shall prevent NWNG from exercising any rights of contribution or indemnification NWNG might have against any person regarding activities under this Agreement; provided, NWNG waives any right it might have under ORS 465.260(7) to seek reimbursement from the Hazardous Substance Remedial Action Fund for costs incurred under this Agreement.
5. NWNG agrees not to litigate, in any proceeding brought by DEQ to enforce this Agreement, any issue other than NWNG's compliance with this Agreement.

O. Hold Harmless

1. NWNG shall save and hold harmless the State of Oregon and its commissions, agencies, officers, employees, contractors, and agents, and indemnify the foregoing, from and against any and all claims arising from acts or omissions related to this Agreement of NWNG or its officers, employees, contractors, agents, receivers, trustees, or assigns. The State of Oregon shall notify NWNG of any such claims or actions as soon as practicable after receiving notice that such a claim or action is threatened or has been filed. NWNG shall have the right to participate fully at its own expense in the defense or settlement of such claims, including the right to promptly receive related correspondence with the claimant and the opportunity to participate in related meetings and telephone conferences with the claimant. The state will confer with NWNG regarding litigation and settlement strategy and, to the extent practicable, will allow NWNG to review and comment on

pleadings and settlement documents before they are filed with the court or sent to the claimant. NWNG shall have no obligations under this subsection with respect to any claim settled or otherwise compromised without NWNG's having been provided the opportunity to participate in accordance with this subsection. Subject to Article XI, Section 7 of the Oregon constitution and the Oregon Tort Claims Act, DEQ and the State of Oregon shall be responsible for the acts and omissions of their own employees and agents, except for DEQ acts approving or omissions constituting approval of NWNG's activities under this Agreement. DEQ shall not be considered a party to any contract made by NWNG or its agents in carrying out activities under this Agreement.

2. To the extent permitted by Article XI, Section 7, or the Oregon Constitution and by the Oregon Tort Claims Act, the State of Oregon shall save and hold harmless NWNG and its officers, employees, contractors, and agents, and indemnify the foregoing, from and against any and all claims arising from acts or omissions related to this Agreement of the State of Oregon or its commissions, agencies, officers, employees, contractors, or agents (except for acts approving or omissions constituting approval of any activity of NWNG under this Agreement). NWNG shall not be considered a party to any contract made by DEQ or its agents in carrying out activities under this Agreement.

P. Parties Bound

This Agreement shall be binding on the parties and their respective successors, agents, and assigns. The undersigned representative of each party certifies that he or she is fully authorized to execute and bind such party to this Agreement. No change in ownership or corporate or partnership status relating to the facility shall in any way alter NWNG's obligations under this Agreement, unless otherwise approved in writing by DEQ.

Q. Modification

DEQ and NWNG may modify this Agreement by mutual written agreement.

R. Duration and Termination

Upon completion of work under this Agreement, NWNG shall submit to DEQ a written notice of completion. This Agreement shall be deemed satisfied and terminated upon payment of all oversight cost owed and upon DEQ's issuance of a letter acknowledging satisfactory completion of activities in accordance with this Agreement. Such letter shall be issued within sixty (60) days of receipt of notice of completion and payment of outstanding DEQ oversight costs, or as soon thereafter as is reasonably practicable.

NORTHWEST NATURAL GAS COMPANY

By: B. J. [Signature]
(Name)
Sr V.P.
(Title)

Date: _____

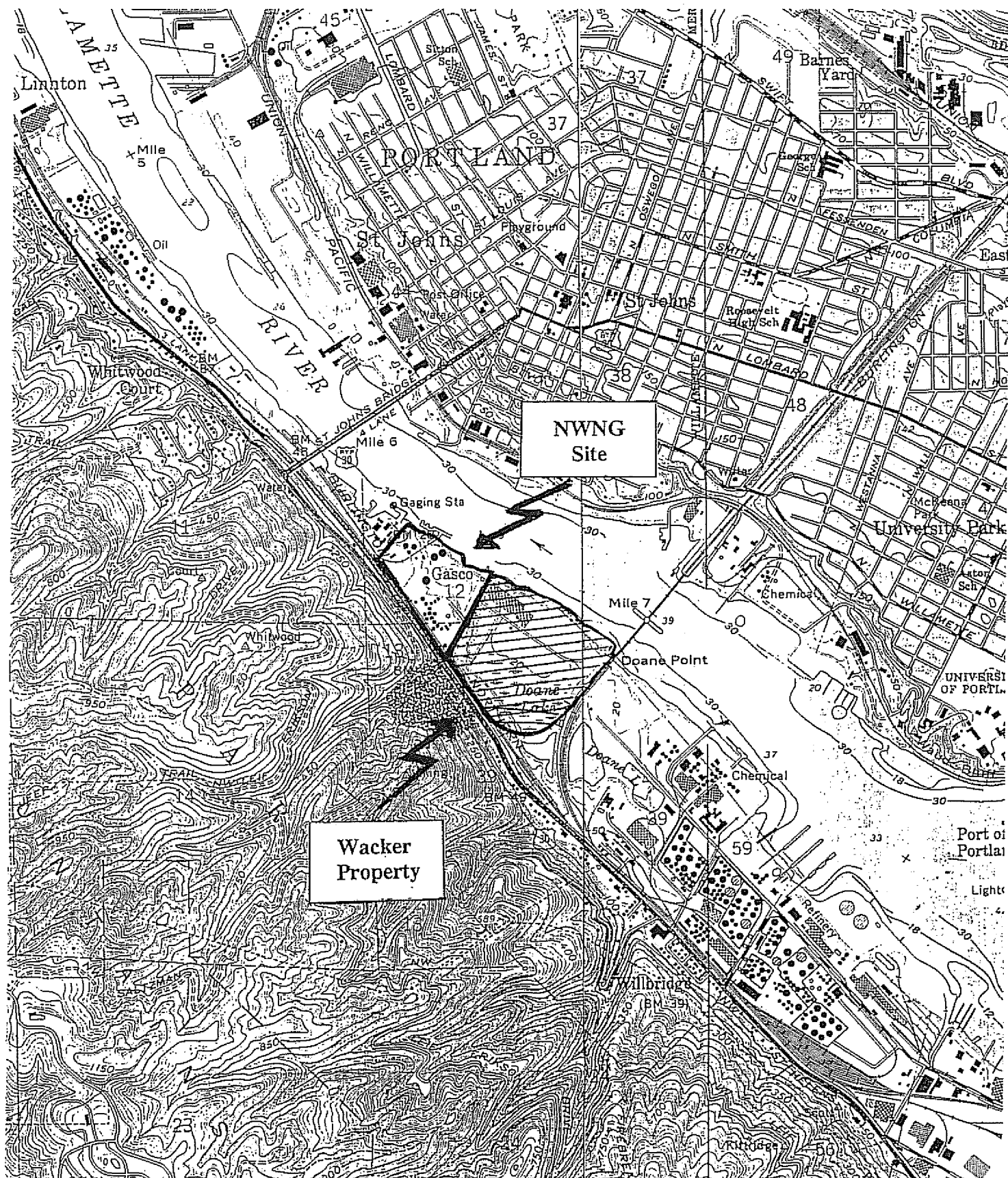
STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

By: [Signature]
(Name)

(Title)

Date: AUG 8 1994

ATTACHMENT A
VICINITY AND SITE MAPS



U.S. CORPS OF
ENGINEERS DREDGING
FACILITIES

WILLAMETTE RIVER

NORTHWEST PORTLAND
INDUSTRIAL AREA

BURLINGTON NORTHERN R.R.

NORTHWEST
NATURAL GAS

PACIFIC NORTHERN
OIL LEASE AREA

GASCO
ADMIN. BLDG.

PROCESS BUILDING

WACKER

KOPPER'S
LEASE AREA

OLYMPIC PIPELINE AND UTILITIES EASEMENT

SILTRONIC

N.W. ST. HELENS ROAD

ROCK
QUARRY

NORTH
DOANE
LAKE

NORTH DOANE'S LAKE SITE INVESTIG

STUDY AREA FEATURES

CAMP PRESSER & McKEE INC	SHEET NO.
2300 15th STREET	2-2
SUITE 400	CDM
DENVER, COLORADO 80202	CDM 8435-118

0 100 200 300 400 500



ATTACHMENT B
SCOPE OF WORK

ATTACHMENT B

VOLUNTARY CLEANUP PROGRAM
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SCOPE OF WORK

I. OBJECTIVES AND SCHEDULE

A. OBJECTIVES

1. Work performed under this Agreement shall complement and incorporate existing site information with the following specific objectives:
 - i. Determine the magnitude, nature and extent of contamination at the Northwest Natural Gas Company (NWNG) site located at 7540 N.W. St. Helens Road. The investigation and cleanup, if required, shall include properties leased to Pacific Northern Oil Company and Koppers Industries, Incorporated. The investigation shall focus on, but not be limited to, petroleum related contaminants such as volatile aromatic compounds and polycyclic aromatic hydrocarbons (PAHs) and inorganic contaminants such as metals, cyanide and hydrogen sulfide.
2. Work performed under this Agreement shall complement and incorporate existing site information with the following overall objectives:
 - i. Identify the hazardous substances which have been released to the environment,
 - ii. Determine the full nature and extent of hazardous substances in affected media on and off-site,
 - iii. Determine the distribution of hazardous substance concentrations,
 - iv. Determine the direction and rate of migration of hazardous substances,
 - v. Identify migration pathways,
 - vi. Identify the environmental impact and risk to human health and/or the environment,
 - vii. Develop the information necessary to select a remedial action.

B. SCHEDULE

The Remedial Investigation/Feasibility Study (RI/FS) described in this Scope of Work may be completed in phases if that approach will better enable NWNG to meet the objectives listed above. All work under this Agreement will proceed in accordance with the schedule below, which assumes a phased approach and is measured in calendar days:

RI/FS Proposal	Provide to DEQ within 30 days of issuance of this agreement.
Meeting to discuss RI/FS Proposal	Between DEQ and NWNG within 15 days of DEQ's receipt of the RI/FS proposal; DEQ and NWNG will meet, if necessary, to review the proposal, concur on the RI/FS approach, and discuss the content and format of deliverables.
DEQ approval of RI/FS Proposal	To NWNG within 10 days of meeting or within 15 days of receipt of RI/FS Proposal if meeting not held.
Draft RI/FS Work Plan	To DEQ within 45 days of receipt of DEQ's approval of the RI/FS Proposal; the Draft RI/FS Work Plan shall include the draft Sampling and Analysis Plan (SAP), Health and Safety Plan (HASP), Quality Assurance Project Plan (QAPP), Endangerment Assessment Work Plan (EAWP) and Feasibility Study Work Plan (FSWP).
DEQ review and comments	To NWNG within 30 days of receipt of the Draft RI/FS Work Plan.
Revised Draft RI/FS Work Plan	To DEQ within 15 days of receipt of DEQ comments; the revised RI/FS Work Plan shall include a revised SAP, HASP, QAPP, EAWP and FSWP as necessary, addressing DEQ comments.
DEQ review and approval	To NWNG within 15 days of receipt of an approvable RI/FS Work Plan.
Implementation of RI	Within 15 days of receipt of DEQ approval; NWNG shall complete work according to the schedule specified in the approved Work Plan.
RI Letter Report	To DEQ within 30 days of completion of RI and receipt of laboratory data. Data shall be validated and any unusable data identified. Shall include a recommendation whether additional phases are required; format to be mutually agreed upon by DEQ and NWNG.
DEQ review and comments	To NWNG within 15 days of receipt.
Subsequent Phase Work Plan Addenda	If it is mutually determined by DEQ and NWNG that additional phases are required, NWNG shall submit a Work Plan Addendum according to a format and schedule agreed upon between the parties prior to starting each phase of the Remedial Investigation, the Endangerment Assessment and the Feasibility Study.
DEQ review and comment	To NWNG within 21 days of receipt of each Work Plan Addendum.

Subsequent Phase RI Letter Reports	Within 30 days of completion of subsequent phases of the RI work, NWNG shall issue additional Phase ___ RI Letter Reports which summarize the RI work to date and include a recommendation whether additional phases are required.
DEQ review and comment	To NWNG within 15 days of receipt of the Letter report for each phase of the RI.
Draft RI Report Outline	To DEQ within 30 days of receipt of DEQ's comments on the final phase of the RI work and receipt of all laboratory data; the outline will provide a table of contents and a list of figures and tables.
DEQ Review and Comment	To NWNG within 15 days of receipt.
Draft RI Report	To DEQ within 60 days of receipt of DEQ's comments; the draft RI report will include a draft Endangerment Assessment, summarize all RI work to date and respond to all DEQ comments to-date.
DEQ review and comments	To NWNG within 45 days of receipt of the Draft RI Report.
Final RI Report	To DEQ within 30 days of receipt of DEQ comments.
Review and approval	To NWNG within 30 days of receipt of an approvable RI Report.
Draft FS Report	To DEQ within 60 days of DEQ approval of the Final RI Report
DEQ review and comments	To NWNG within 45 days of receipt of the Draft FS report
Final FS Report	To DEQ within 30 days of receipt of DEQ's comments
DEQ review and approval	To NWNG within 30 days of receipt of an approvable FS Report

II. RI/FS PROPOSAL

The RI/FS Proposal will be a brief discussion of NWNG's proposed approach to the RI/FS, addressing soil, groundwater, surface water, sediments, and air. The proposal will provide the framework for the RI/FS Work Plan and will include the following, assuming a phased approach:

- A. A summary of site-specific issues and a review of the results of previously completed work;
- B. A general description of each proposed phase, including the goals and objectives of each;
- C. Phase I sample locations, depths, proposed analytical methods, and the rationale for each (include map); and

- D. The estimated schedule for implementation of Phase I and subsequent phases if necessary.

III. REMEDIAL INVESTIGATION WORK PLAN

The RI Work Plan shall be based on the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, OSWER Directive 9355.3-01, 1988, and developed in accordance with OAR 340-122-080.

The Work Plan shall include, but not be limited to the following items:

A. PROJECT MANAGEMENT PLAN

1. A proposed schedule for submittals and implementation of all proposed activities.
2. A description of the personnel involved in the project, including their qualifications to do the proposed work.

B. SITE DESCRIPTION

A description of facility operations shall include, but not be limited to, the following:

1. A list of chemical products used on-site currently and historically.
2. The estimated volume of waste disposed of on-site and/or discharged off-site.
3. Time and volume of known spills.
4. A description of past and present waste treatment/disposal practices and areas.
5. The location of past and present raw material and finished product storage areas.
6. The approximate time periods for past operational, treatment, storage, disposal, and/or discharge practices where hazardous substances were involved relative to this investigation.

C. SITE CHARACTERIZATION PLAN

1. Soils

Objective: To identify releases of hazardous substances to soils and to assess the nature and extent of soil contamination.

Scope: The plan shall address all areas which could potentially have received spills, leaks from tanks or piping, been used for waste treatment, storage, or disposal, or have been affected by contaminated surface water or storm water runoff, and all other areas where soil contamination is known or suspected, to the extent necessary for DEQ to select a remedy for the site.

Procedures: The sampling program shall supplement previous soil

sampling at the facility. At a minimum, the plan shall include, but not be limited to, the following:

- a. The proposed location of soil borings including;
 - i. Depth of borings
 - ii. Sampling interval
 - iii. Sample collection methods
 - iv. Analytical parameters
 - v. Method to determine background concentrations for each parameter
 - vi. Rationale for each of the above
- b. Provisions for describing soil boring samples, to include:
 - i. The soil type according to the ASTM D 2487-85, Classification of Soils for Engineering Purposes, and
 - ii. Soil color, structure, texture, mineral composition, moisture, and percent recovery according to ASTM D 2488-84, Description and Identification of Soils (Visual-Manual Procedures)
 - iii. Other relevant characteristics such as visual identification of contamination, odor, and detection of vapors by use of field screening instruments such as HNU, OVA or other equivalent type equipment, and as described by a qualified geologist or geotechnical engineer.

2. Groundwater

Objective: To identify releases of hazardous substances and characterize the lateral and vertical extent of these releases to groundwater

Scope: The plan shall supplement previous investigations at the facility and shall identify releases of hazardous substances to groundwater, and shall also characterize the vertical and lateral extent of groundwater contamination, both on-site and migrating off-site to the extent necessary for DEQ to select a remedy for the site.

Procedures: The sampling program shall supplement previous groundwater sampling at the facility. At a minimum, the plan shall include, but not be limited to, the following:

- a. Well installation plan to include:
 - i. Proposed well locations.

- ii. Proposed well depths.
 - iii. Length of proposed screened intervals.
 - iv. Proposed drilling methods.
 - v. Proposed construction materials and installation methods.
 - vi. Proposed well development and completion methods.
 - vii. Proposed sample collection methods
 - viii. Proposed analytical parameters
 - ix. Proposed method to determine background concentrations of each parameter
 - x. Proposed schedule for sampling all monitoring wells
- b. Hydrologic characterization proposal to include:
- i. Provisions to collect and describe formation materials during drilling. NWNG may consider obtaining continuous cores and using borehole geophysics to supplement coring.
 - ii. A plan to characterize the hydrogeology including a description of:
 - (a) stratigraphy
 - (b) structural geology
 - (c) depositional history
 - (d) regional ground-water flow patterns
 - iii. A plan to describe the hydrogeologic properties of affected hydrogeologic units found at the site, and additional units as necessary to complete the RI/FS, including:
 - (a) hydraulic conductivity
 - (b) porosity
 - (c) lithology
 - (d) hydraulic interconnections between saturated zones
 - iv. Plans to identify the following for each affected aquifer, and additional aquifers as necessary to complete the RI/FS:
 - (a) A description of ground-water flow direction.
 - (b) Identification of vertical and horizontal gradient(s).
 - (c) Interpretation of the flow system including the rate (horizontal and vertical) of groundwater flow, and including seasonal variations.

- v. A plan to describe surface and subsurface features, characteristics, and interrelationships with a potential to influence groundwater flow patterns at the site, including:
 - (a) Identification of pumping groundwater wells, past and present.
 - (b) Influences of rivers, streams, and ditches.
 - (c) Influences of ponds and lakes.
 - (d) Identification of areas of recharge/discharge.
- c. A plan to conduct a well inventory to identify all active and inactive water wells within a one-mile radius of the facility, to include, as necessary:
 - i. Identification of all wells listed with the Oregon Water Resources Department and field confirmation of their location
 - ii. A door-to-door field survey to identify wells for which no logs are on file
 - iii. For all located wells, to the extent practicable, identify:
 - (a) Owner
 - (b) Address
 - (c) Map location
 - (d) Driller
 - (e) Date drilled
 - (f) Depth
 - (g) Casing and screen material, depths and intervals
 - (h) Seal types, depths and intervals
 - (i) Static water levels
 - (j) Approximate land surface elevation
 - (k) Reported water quality and use of well
 - iv. A plan to sample those private wells identified above which, based on the available hydrogeological information, may be at greatest risk of contamination.

3. Surface Water and Sediments

Objective: The Work Plan shall include a plan to identify and evaluate releases of hazardous substances to surface water, including their sediments.

Scope: The plan shall supplement previous investigations at the facility and shall identify all past, existing, and potential impacts to surface waters from the identified release to the extent necessary for DEQ to select a remedy for the site.

Procedures: The sampling program shall supplement previous surface water and sediment sampling at the facility. At a minimum, the plan shall include but not be limited to,

the following:

- a. A delineation of past and present surface drainage patterns at the site.
- b. Proposed sampling points in past and current surface drainages.
- c. Proposed sample collection methodology.
- d. Proposed analytical parameters
- e. Proposed method for determining background values for all parameters.
- f. A rationale for each of the above.

4. Air

Objective: To identify and characterize the release of hazardous substances to the air from unregulated sources at the facility.

Scope: The air assessment plan shall supplement previous investigations at the facility and shall be designed to determine if unregulated air emissions from the site threaten human health or the environment.

Procedures: The sampling plan shall supplement previous air sampling at the facility. At a minimum, the plan shall include, but not be limited to, the following:

- a. Proposed sample locations
- b. Proposed analytical parameters
- c. Proposed sample collection methods
- d. Methodology for determining background values for each parameter
- e. Rationale for each of the above

D. SAMPLING AND ANALYSIS PLAN (SAP)

Objective: To adequately document all sampling and analysis procedures.

Scope: The SAP shall be sufficiently detailed to function as a manual for field staff. In preparation of the SAP, the following guidance documents shall be utilized: Data Quality Objectives for Remedial Response Activities, EPA/540/G-87/004 (OSWER Directive 9355.0-7B), March, 1987; Test Methods for Evaluating Solid Waste, SW-846; and A Compendium of Superfund Field Operations Methods, EPA/540/P-87/001 (OSWER Directive 9355.0-14), December, 1987. The SAP shall address all topics listed in Policy #760.000, Quality Assurance Policy.

Procedures: The Work Plan shall include a SAP for all sampling activities. The SAP shall include, at a minimum:

1. Proposed analytical parameters and rationale.
2. Description of sample collection methods, sampling equipment, and sample handling procedures.
3. Quality assurance and quality control procedures for both field and lab procedures, including a data quality objectives plan.
4. Chain of custody procedures.
5. Analytical methods for each parameter.
6. A methodology for determining background concentrations for all detected contaminants.
7. A methodology for determining statistically significant increases in concentrations for the sampling parameters.

E. HEALTH AND SAFETY PLAN (HASP)

The Health and Safety Plan shall:

1. Describe the known hazards and risks.
2. Identifying levels of protective clothing and equipment to be worn.
3. Describe decontamination procedures.
4. Identify any special requirements or training needs.
5. Provide a contingency plan for emergencies.

An existing Health and Safety Plan can be included by reference, if it adequately includes the above items.

F. ENDANGERMENT ASSESSMENT WORK PLAN

The Endangerment Assessment portion of the Work Plan shall be developed based on the *Risk Assessment Guidance for Superfund - Human Health Evaluation Manual Part A*, United States Environmental Protection Agency, Interim Final, July 1989, (RAGS-HHEM); *Risk Assessment Guidance for Superfund Volume II - Environmental Evaluation Manual (EEM)*, United States Environmental Protection Agency, Interim Final, March 1989; *EPA Region 10, Supplemental Risk Assessment Guidance for Superfund*, United States Environmental Protection Agency, August 1991, (SRAGS); and, *Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"*, United States Environmental Protection Agency, March 1991, (HHE-SG).

1. Human Health Evaluation

Objective: The human health evaluation (HHE) is an analysis of the potential adverse health effects caused by hazardous substance release(s) from a site in the absence of any actions to control or mitigate these releases (i.e., under an assumption of no action). It is used to document the magnitude of the potential risk at a site and to evaluate the cause(s) of that risk. It is also

used to support risk management decisions, and to set remediation goals, if necessary.

Scope: This section shall describe the different tasks involved in preparing the HHE portion of the endangerment assessment. A suggested outline for the human health evaluation is given in Exhibit 9-1 of the RAGS-HHEM. The Work Plan should use this outline as a framework for discussing the methodologies and assumptions to be used in assessing the potential human health risks at the site.

The HHE shall include an estimate of the reasonable maximum exposure (RME) expected to occur under both current and future land use conditions. Guidance on quantifying the RME is given in Chapter 6 of the RAGS-HHEM, SRAGS, and HHE-SG. Quantifying the potential risks associated with the RME shall be the overall goal of the Endangerment Assessment.

The Work Plan should include, but not be limited to the following:

- a. A conceptual site model for the site. This model should be an iterative flow chart based on available site information showing contaminant sources, release mechanisms, transport routes and media, potential receptors, and other important information as appropriate. Iterations of this model shall be carried through the work plan and the endangerment assessment as additional information is generated. Exhibit 4-1 of the RAGS-HHEM presents an example of a conceptual site model.
- b. The exposure parameters for the RME based on both current and future land use scenarios.
- c. A list of all chemicals identified at the site (by media).
- d. The analytical methods used during the site investigation, and the method detection limits that were used for all analytes. In addition, an explanation of how non-detect values and qualified data will be used to estimate exposure point concentrations should be provided.
- e. The rationale for selecting chemicals that will be carried through the HHE.
- f. A discussion of how the fate and transport of site-related chemicals will be evaluated. In addition, a description of the fate and transport model that will be used to estimate the potential infiltration (or contribution) of chemicals in soil to ground water should be included.
- g. A summary table of the chemicals found, and their respective critical toxicity values (reference doses - RfDs), slope factors, and other relevant critical toxicity factors) and citations for these values; data on absorption factors that will be used (e.g., dermal absorption factors) should also be included.

- h. The exposure points and exposure point concentrations to be used in the HHE (and/or how they will be estimated). A description of the model(s) that will be to estimate exposure point concentrations should be provided, if necessary.
- i. An explanation of how the uncertainty analysis will be conducted.

2. Environmental Evaluation

Objective: The environmental evaluation (EE) provides an assessment of the potential threat to ecological populations, communities or ecosystems in the absence of any remedial action. It can provide a basis for determining whether or not remedial action is necessary, and can also be used to support risk management decisions.

Scope: The EE and the HHE are parallel activities used in the evaluation of hazardous substance sites. Much of the data and analyses relating to the nature, fate, and transport of a site's contaminants can be used for both evaluations. Available data (from the HHE or previous investigations) can be utilized, whenever appropriate, and additional data should be generated whenever necessary in order to conduct the ecological assessment.

The EE shall follow the organization presented in Chapter 6 of the EEM, as applicable. The Work Plan shall discuss the different tasks involved in evaluating whether or not the potential ecological impacts of the contaminants at a site warrant remedial action.

The Work Plan should include, but not be limited to the following:

- a. A list of all chemicals identified at the site (by media). The HHE can be referenced, if appropriate.
- b. The rationale for selecting chemicals that will be carried through the EE.
- c. A description of the site and study area. A description of how the EE will account for the ecosystems and populations potentially exposed to chemicals at the site (e.g., a description of the habitat and lists of species either collected or observed), and how they will be evaluated should be included.
- d. A discussion of how the fate and transport of site-related chemicals will be evaluated (through both physical and biological means). The HHE can be referenced, if and/or where appropriate.
- e. The exposure points and exposure point concentrations that will be used in the EE (and/or how they will be estimated). A discussion of actual or potential exposure pathways (and the media involved) should also be included.
- f. A description of how the potential environmental impacts or threats will be characterized. This should include

a description of the ecological endpoints that will be considered measurements of potential impact or probability of potential impact (e.g., Water Quality Criteria).

- g. An explanation of how the uncertainty analysis will be conducted.

G. FEASIBILITY STUDY WORK PLAN

The Feasibility Study portion of the Work Plan shall be developed in accordance with OAR 340-122-080 and Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, OSWER Directive 9355.3-01, 1988. The Feasibility Study shall develop an appropriate range of alternatives which meet the standards listed in OAR 340-122-040, and 340-122-090. The Feasibility Study shall be developed in parallel with Remedial Investigation activities.

Objective: To present an outline of the Feasibility Study process and identify potential remedial alternatives in order to obtain sufficient analytical data during the RI.

Scope: The purpose of the Feasibility Study is to develop and evaluate remedial alternatives for each contaminated medium, and recommend remedial actions to be taken at the facility

Procedures: A Work Plan shall be submitted which will include, but not be limited to the following:

1. A description of any interim remediation activities which have been implemented to date and the relationship of the interim measures to the ultimate corrective action.
2. The remedial action objectives.
3. A discussion of how volumes or areas of media to which response actions may be applied will be identified.
4. A discussion of how screening criteria will be developed to identify and select treatment technologies and process options.
5. A description of how process options will be evaluated.
6. The criteria for and selection of remedial action alternatives.
7. A preliminary screening of remedial technologies and alternatives based on available data.

H. MAPS

The Work Plan shall include maps of the facility which clearly show:

1. Site topography and surface drainage.
2. On-site structures, including tanks, sumps, catch basins, utilities, and pipelines.

3. The location of past spills, disposal areas, and all other waste and product management areas.
4. All pertinent structures adjacent to or nearby the site such as drainage ditches, pipelines, roadways, wells and utility corridors.
5. The location of all existing and proposed surface soil sample points, soil borings, monitoring wells, surface drainage, sediment, surface water, and air sample points.
6. The locations of hydrogeologic cross-sections.
7. The drawing date, orientation, and scale.

IV. REPORTS

- A. **MONTHLY REPORTS:** Monthly reports shall be submitted to DEQ by the 10th day of the month following the reporting period. These reports shall include, but shall not be limited to, the following:
 1. Activities that occurred during the past month.
 2. Description of data results collected during the past month.
 3. Description of any problems or difficulties experienced during the past month.
 4. Description of activities planned for the coming month.
- B. **LETTER REPORTS:** Letter Reports are to be submitted to DEQ within 30 days following the completion of each phase of the remedial investigation. These reports shall include, but shall not be limited to, the following:
 1. Introduction.
 2. Summary of work completed to date.
 3. A presentation of all data collected during the investigation.
 4. Conclusions and recommendations.
- C. **REMEDIATION INVESTIGATION REPORT:** The results of the Remedial Investigation shall be submitted to the DEQ as draft and final report in accordance with the following format:
 1. Executive Summary
 2. Introduction
 - a. Purpose
 - b. Report Organization
 3. Site Background
 - a. Site Description
 - i. Location

- ii. Physical features such as building, roads, utilities, wells, etc., include map
 - iii. Site History
 - b. Facility Operations
 - i. Past production processes, waste identification, location of hazardous materials handling and storage areas
 - ii. Location, time, volume of releases of hazardous substances, include map
 - iii. Past and present waste treatment/disposal practices and areas
 - c. Site Setting
 - i. Regional land use and history
 - ii. Geology
 - iii. Hydrogeology
 - iv. Surface water
 - v. Climatology
 - d. Previous Investigations
 - i. Summary of previous investigations
 - ii. List of reports referenced
- 4. Study Area Investigation
 - a. Soil
 - i. A map and description of the location of soil borings or surface samples including depth of borings, sampling interval, sampling methods, analytical parameters, analytical methods, as well as quality assurance and quality control procedures
 - ii. Description of soil samples; all boring and lithologic logs
 - iii. A map showing the locations of hydrogeologic cross-sections
 - iv. An evaluation and analysis of all data submitted; use tabular and graphic presentation; include discussion of data limitations
 - b. Groundwater
 - i. The well installation plan including well locations (provide map), well depth, length of

- screened intervals, drilling methods, construction materials, and installation methods, well development and completion methods
- ii. All boring and lithologic logs; including well construction diagrams with surveyed location, elevation of top of casing, size and depth of well, screened interval
- iii. A characterization of the hydrogeology including a description of formation materials, the hydrogeology, and hydrogeologic properties of each pertinent aquifer
- iv. A description of the hydraulic influence from groundwater wells, and surface water bodies
- v. All areas of recharge/discharge
- vi. Results of the well inventory to identify all active and inactive water wells within a one-mile radius of the facility
- vii. Results and data analysis including data limitations; tabular and graphic presentations
- c. Surface Water and Sediments
 - i. A map with all relevant surface water bodies within 2 miles of the site
 - ii. A map with past and present surface drainage patterns and the stormwater collection system
 - iii. A map with all sample locations
 - iv. Results and data analysis including data limitations; tabular and graphic presentations
- d. Air
 - i. A wind rose and discussion of predominant wind direction
 - ii. A map indicating all sample locations and elevations of sample points
 - iii. Results and data analysis including data limitations; tabular and graphic presentations
- 5. Summary and Conclusions
 - a. A discussion of the nature and extent of contamination; discuss the data limitations
 - b. A discussion of the fate and transport of the contaminants of concern
 - c. Recommendations for further action

As part of the Remedial Investigation Report to DEQ, NWNG may incorporate existing data, reports or information, including data from any investigation activity conducted prior to the effective date of this Agreement, to the extent that such data is consistent with the procedures and quality assurance/quality control criteria approved by DEQ.

- C. **ENDANGERMENT ASSESSMENT REPORT:** The results of the Endangerment Assessment shall include the Human Health Evaluation and the Environmental Evaluation and shall follow the report formats described in the references cited in IV.F. of this Scope of Work. Any data limitations shall be noted in the report. If information is presented in sections of the RI Report, these may be referenced.
- D. **FEASIBILITY STUDY REPORT:** The results of the Feasibility Study shall be submitted to DEQ in a report which, at a minimum, includes a full evaluation of remedial action alternatives, giving a workable number of options which each appear to adequately address site problems and remedial action objectives. These alternatives shall include a no action option, at least one option which will achieve background, and at least one option which will achieve protection of public health, safety, and welfare and the environment. The report shall present the following for each alternative:
1. Description of the remedial action alternative, estimated cost, and rationale for selection.
 2. Performance expectation (i.e., reductions in contaminant concentration levels), reliability, and ability to implement.
 3. Design criteria and rationale.
 4. General operation and maintenance requirements.
 5. Monitoring program to assure both short-term and long-term performance of the alternative.
 6. Financial assurance mechanism to assure performance.
 7. Estimated time for implementation.
 8. Evaluation of the short-term and long-term effectiveness and risks of the alternative.
 9. Recommendation and justification of the remedial action selected from the developed alternatives.
 10. A schedule for implementation of the proposed remedial action.

AUG 08 2006

Schwabe, Williamson & Wyatt

**FIRST ADDENDUM
TO
VOLUNTARY AGREEMENT
FOR
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
DEQ NO. WMCVC-NWR-94-13**

The Oregon Department of Environmental Quality (DEQ) and NW Natural (NWN) agree to amend Voluntary Agreement No. WMCVC-NWR-94-13 dated August 8, 1994 (Agreement), as follows. All other terms of the Agreement remain in effect and apply to this First Addendum.

1. Recital I.B is amended, to read:

"The NWN Site is a "facility" within the meaning of ORS 465.200(13). The NWN Site includes property located at 7540 N.W. St. Helens Road, Portland, Oregon, currently owned by NWN (NWN Property), as well as adjacent property located at 7200 N.W. Front Avenue, Portland, Oregon, currently owned by Siltronic Corporation (Siltronic Property), to the extent the Siltronic Property is the location of or otherwise affected by wastes associated with manufactured gas process (MGP) operations on the NWN Site. This facility is generally referred to in this First Addendum as the "NWN Site". The general location of the NWN Site is shown on Attachment AA to the First Addendum."

2. Recital I.C is amended, to add:

"Waste management areas extended onto the northern portion of what is now the Siltronic Property, in areas of low elevation prone to flooding. The tar ponds at the NWN Property were periodically excavated and redeposited onto what is now the Siltronic Property. MGP operations ceased in 1956. NWN's predecessor sold the Siltronic Property to Victor Rosenfeld and H.A. Anderson in 1962. Thereafter, wastes associated with the MGP operations within the northern Siltronic Property area may have been redistributed across portions of the Siltronic Property when that property was filled between 1966 and 1975. Wastes within tar ponds on the NWN Property were used as fill or redistributed on the NWN Property when the eastern corner of the NWN Property was filled during the 1972/1973 time-frame."

3. Recital I.D is amended, to add:

"Investigations conducted to date on the Siltronic Property indicate that MGP waste (e.g., tar and oil, lampblack, and spent oxide) are present in subsurface soil and groundwater across the Siltronic Property, with the primary accumulation located on the northern portion of the property in the area of the former Gasco waste effluent ponds and the adjacent lowland. Dense nonaqueous phase liquid (DNAPL) in the vicinity of the former waste effluent ponds has been observed in four groundwater

monitoring wells on the Siltronic Property. Observed thicknesses ranged from two feet in monitoring well WS-10-27 to 12.5 feet in monitoring well WS-15-85. Approximately three to four feet of DNAPL is present in monitoring wells located adjacent to the Willamette River (WS-11-125 and WS-14-125). The location of the referenced monitoring wells is identified on Attachment BB to the First Addendum. Up to 25,000 ug/L benzene, 495,000 ug/L naphthalene, and 4,441 ug/L cyanide have been detected in groundwater at the Siltronic Property. Concentrations in soil have been detected up to: 35,432 mg/kg total PAH; 230 mg/kg dibenzofuran; 218 mg/kg benzene; and 15,000 mg/kg cyanide.

Investigations at the Siltronic Property have further identified elevated concentrations of chlorinated solvents in soil and groundwater. The chlorinated solvent contamination is being addressed by Siltronic Corporation and is outside the scope of this Agreement.”

4. A new Recital I.G is added, reading:

“The NWN Site is located within or adjacent to the Portland Harbor Superfund Site, which site was placed on the federal National Priorities List by the U.S. Environmental Protection Agency (EPA) in December 2000. By memorandum of understanding, EPA is the lead agency for implementing investigation and cleanup of in-water sediments contamination in the Willamette River in the Portland Harbor Superfund Site, and DEQ is the lead agency for implementing investigations and source control at upland facilities. This Agreement as amended is consistent with DEQ’s responsibilities at the Portland Harbor Superfund Site. Evaluation of the portions of the NWN Site located on the Siltronic Property as a potential source of contaminants to the Portland Harbor Superfund Site is also the subject of DEQ Order No. ECVN-NWR-00-27 issued by DEQ to NWN and Wacker Siltronic Corporation on October 4, 2000. DEQ separately issued Order No. VC-NWR-03-16 to Wacker Siltronic Corporation on February 5, 2004. This Agreement as amended does not supersede or affect obligations imposed under DEQ Orders No. ECVN-NWR-00-27 and VC-NWR-03-16.”

5. A new Recital I. H is added, reading:

“By entering into this First Addendum, NWN does not admit liability or responsibility for conditions that may be present at the NWN Site, including hazardous substance releases at or to the Siltronic Property resulting from or exacerbated by the acts or omissions of parties other than NWN.”

6. Section II.A.2 is deleted, and replaced with:

“2. DEQ Review and Approval

(a) Where DEQ review and approval is required for any plan or activity under the Agreement as amended, NWN may not proceed to implement the plan or activity until

DEQ approval is received. Any DEQ delay in granting or denying approval correspondingly extends the time for completion by NWN. For purposes of the Agreement as amended, "day" means calendar day unless otherwise specified.

(b) After review of any plan, report, or other item required to be submitted for DEQ approval under the Agreement as amended, DEQ shall in writing: (1) approve the deliverable in whole or in part; or (2) disapprove the deliverable in whole or in part and notify NWN of deficiencies and/or request modifications to cure the deficiencies.

(c) DEQ approvals, rejections, modifications, or identification of deficiencies shall be given as soon as practicable and state DEQ's reasons with reasonable specificity.

(d) In the event of DEQ disapproval or request for modification, NWN shall correct the deficiencies and resubmit the revised report or other item for approval within 30 days of receipt of the DEQ notice or within such other time as specified in the DEQ notice.

(e) In the event a deficiency identified by DEQ is not addressed by NWN in the revised deliverable, DEQ may modify the deliverable to cure the deficiency.

(f) In the event of approval or modification of the deliverable by DEQ, NWN shall implement the action required by the plan, report, or other item, as so approved or modified, or, as to any DEQ modifications, invoke dispute resolution under Section II.M of the Agreement."

7. Section II.A.3 is deleted, and replaced with:

"3. Additional Measures

(a) NWN may elect at any time during the term of the Agreement as amended to undertake measures, beyond those required under the Agreement and the SOW, necessary to address the release or threatened release of hazardous substances at the facility. Such additional measures (including but not limited to engineering or institutional controls and other removal or remedial measures) are subject to prior approval by DEQ, which approval shall be granted if DEQ determines that the additional measures will not compromise the validity of the RI/FS, will not threaten human health or the environment, and will comply with applicable laws.

(b) DEQ may determine that, in addition to work specified in the SOW or an approved work plan, additional work is necessary to complete the RI/FS in satisfaction of the SOW and OAR Chapter 340 Division 122, or is necessary to address unanticipated threats to human health or the environment. DEQ may require that such additional work be incorporated into the applicable work plan by modification or be performed in accordance with a DEQ-specified schedule. NWN shall modify the work plan or implement the additional work in accordance with DEQ's directions and schedule, or invoke dispute resolution under Section II.M of the Agreement within 14 days of receipt of DEQ's directions."

8. A new Section II.A.4 is added, reading:

"4. Source Control Measures

For any unpermitted discharge or release of hazardous substances at the NWN Property to the Willamette River or river sediments identified in the remedial investigation, NWN shall identify and evaluate source control measures in accordance with the SOW and the terms and schedule of a DEQ-approved work plan. DEQ will review and approve source control measures pursuant to OAR 340-122-0070 and in consultation with EPA. Upon DEQ approval of a source control measure, NWN shall develop a source control work plan in accordance with DEQ's directions and, upon DEQ approval, implement the work plan."

9. Section II. D is amended to update the current DEQ and NWN project managers:

DEQ Project Manager
[To Be Determined]
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201

NW Natural Project Manager
Robert J. Wyatt
NW Natural
220 N.W. Second Avenue
Portland, Oregon 97209
(503) 226-4211 Ext. 5425

10. Section II.N.3. is amended, to add:

"Except as expressly provided in this Agreement, NWN reserves all rights, claims, and defenses relating to the NWN Site."

11. A new Section II.S is added, reading:

"S. Stipulated Penalties

1. Subject to Sections II.K and M, upon any violation by NWN of any requirement of this Agreement as amended, and upon NWN's receipt from DEQ of written notice of violation, NWN shall pay the stipulated penalties set forth in the following schedule:

(a) Up to \$5,000 for the first week of violation or delay and up to \$ 2,500 per day of violation or delay thereafter, for failure to provide access or records in accordance with Section II.C or G.

(b) Up to \$ 2,500 for the first week of violation or delay and up to \$ 1,000 per day of violation or delay thereafter, for:

(i) failure to submit a final work plan, addressing DEQ's comments on the draft work plan or incorporating DEQ modifications to the work plan, in accordance with the SOW's schedule and terms;

(ii) failure to perform work in accordance with an approved work plan's schedule and terms;

(iii) failure to perform additional work required by DEQ under Section II.A.3; or

(iv) failure to submit a final report, addressing DEQ's comments on the draft report or incorporating DEQ modifications to the report, in accordance with an approved work plan's schedule and terms.

(c) Up to \$500 for the first week of violation or delay and up to \$500 per day of violation or delay thereafter, for:

(i) failure to submit a draft work plan in accordance with the SOW's schedule and terms;

(ii) failure to submit progress reports in accordance with Section II.H; or

(iii) any other violation of the Agreement as amended, SOW, or an approved work plan.

2. Within 30 days of receipt of DEQ's written notice of violation, NWN either shall pay the amount of such stipulated penalty assessed, by check made payable to the "State of Oregon, Hazardous Substance Remedial Action Fund", or request a contested case regarding the penalty assessment in accordance with Section II.T.3. NWN shall pay simple interest of 9% per annum on the unpaid balance of any stipulated penalties, which interest shall begin to accrue at the end of the 30-day payment period. Any unpaid amounts that are not the subject of a pending contested case, or that have been determined owing after a contested case, are a liquidated debt collectible under ORS 293.250 and other applicable law.

3. In assessing a penalty under this subsection, the Director may consider the factors set forth in OAR 340-12-045. NWN may request a contested case hearing regarding the penalty assessment in accordance with OAR Chapter 340 Division 11. The scope of any such hearing must be consistent with the stipulations set forth in Section 2 of the Agreement, must be limited to the occurrence or non-occurrence of the alleged violation, and may not review the amount of the penalty assessed. Penalties may not accrue pending any contested case regarding the alleged violation. Violations arising out of the same facts or circumstances or based on the same deadline are considered as one violation per day."

12. The Scope of Work (Attachment B to the Agreement) is amended in Section I.A.1.i., by revising the first sentence to read:

“Determine the magnitude, nature, and extent of apparent MGP waste-related contamination at the NW Natural (NWN) Site.”

13. The Scope of Work is amended in Section I.A.2, by adding the following objective:

”viii. Identify hot spots of contamination, if any, at the facility.”

14. The Scope of Work is amended in Section I.B, by adding:

“This schedule is applicable to the RI/FS for the portion of the NWN Site on the Siltronic Property. NWN shall compile and evaluate existing data on MGP-related constituents and provide to DEQ an outline of data needs to complete the remedial investigation for the portion of the NWN Site on the Siltronic Property including an RI proposal and schedule for the RI, within 120 days of execution of the First Addendum.”

15. The Scope of Work is amended in Section I.B, by adding:

“NWN shall provide DEQ with a work plan to identify and evaluate source control measures at the NWN Property. The work described in the work plan shall be consistent with the source control approach described in the December 2005 Portland Harbor Joint Source Control Strategy”.

16. For deliverables submitted after the date of execution of this First Addendum, the Scope of Work is amended in Section III.F, by deleting the entire section and replacing it with:

“F. Endangerment Assessment Work Plan

1. HUMAN HEALTH RISK ASSESSMENT PLAN

Objective: To evaluate the collective demographic, geographic, physical, chemical, and biological factors at the site, for the purposes of characterizing current and reasonably likely future risks to human health as a result of a threatened or actual release(s) of a hazardous substance. To document the magnitude of the potential risk at the site; support risk management decisions; and establish remedial action goals, if necessary.

Scope: The Human Health Risk Assessment shall evaluate risk in the context of current and reasonably likely future land and water uses, and in the absence of any actions to control or mitigate these risks (i.e., under an assumption of no action). The human health risk assessment portion of the work plan shall be developed based on the requirements specified in OAR 340-122-0084; DEQ guidance; and, as appropriate, the Risk Assessment Guidance for Superfund - Human Health Evaluation Manual Part A, United States Environmental Protection Agency (EPA), Interim Final, July 1989, (RAGS-HHEM); Human Health Evaluation Manual, Supplemental Guidance:

"Standard Default Exposure Factors", EPA, March 1991,(HHE-SG); and the Exposure Factors Handbook, EPA, 1996. A suggested outline for the human health evaluation is given in Exhibit 9-1 of the RAGS-HHEM. The work plan shall use this outline as a framework for discussing the methodologies and assumptions to be used in assessing the potential human health risks at the site.

Procedure: The work plan shall describe the different tasks involved in preparing the Human Health Risk Assessment. The Human Health Risk Assessment can be completed using either deterministic or probabilistic methodologies. If probabilistic methodologies are to be used, NWN shall discuss risk protocol with DEQ before the commencement of a probabilistic risk assessment. If deterministic methodologies will be used, then the Human Health Risk Assessment shall include an estimate of both the central tendency exposure (CTE) and the reasonable maximum exposure (RME) expected to occur under both current and future land use conditions. In general, RME exposures shall be based on the 90th percentile exposure case. Additional guidance on quantifying the RME is given in Chapter 6 of the RAGS-HHEM, SRAGS, and HHE-SG. Quantifying the potential risks associated with the RME shall be the overall goal of the risk assessment.

2. ECOLOGICAL RISK ASSESSMENT PLAN

Objective: To evaluate the collective demographic, geographic, physical, chemical, and biological factors at the site, for the purposes of characterizing current and reasonably likely future risks to the environment as a result of a threatened or actual release(s) of a hazardous substance; document the magnitude of the potential risk at a site; support risk management decisions; and establish remedial action goals, if necessary.

Scope: The Ecological Risk Assessment shall evaluate risk in the context of current and reasonably likely future land and water uses in the absence of any actions to control or mitigate these risks (i.e., under an assumption of no action). The Ecological Risk Assessment shall use a tiered approach (with four levels) to produce a focused and cost-effective assessment of risk. The Ecological Risk Assessment Work Plan shall be developed based on the requirements specified in OAR 340-122-0084; DEQ guidance; and, as appropriate, Proposed Guidelines for Ecological Risk Assessment, EPA, September 1996; Framework for Ecological Risk Assessment, EPA, February 1992; and Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual, Interim Final, EPA, March 1989 (RAGS-EEM).

Procedure: The plan shall describe the different tasks involved in preparing the ecological risk assessment. Ecological risk assessments may include a Level I Scoping plan; a Level II Screening plan; and a Level III Baseline plan or Level IV Field Baseline plan. The Level III and Level IV baseline plans shall include an exposure analysis, an ecological response analysis, a risk characterization and an uncertainty analysis as required by OAR 340-122-0084(3). The ecological risk assessment can be completed using either deterministic or probabilistic methodologies. If probabilistic methodologies are to be used, NWN shall discuss risk protocol with DEQ before the

commencement of a probabilistic risk assessment. If deterministic methodologies are to be used, then the ecological risk assessment shall include an estimate of both the central tendency exposure (CTE) and the reasonable maximum exposure (RME) expected to occur. Estimating the potential risks associated with the RME shall be the overall goal of the risk assessment."

STIPULATED, AGREED, AND APPROVED FOR ISSUANCE:

NW Natural

By: Sandra K. Hart Date: 9-13-06
(Signature)

Sandra K. Hart
(Name)

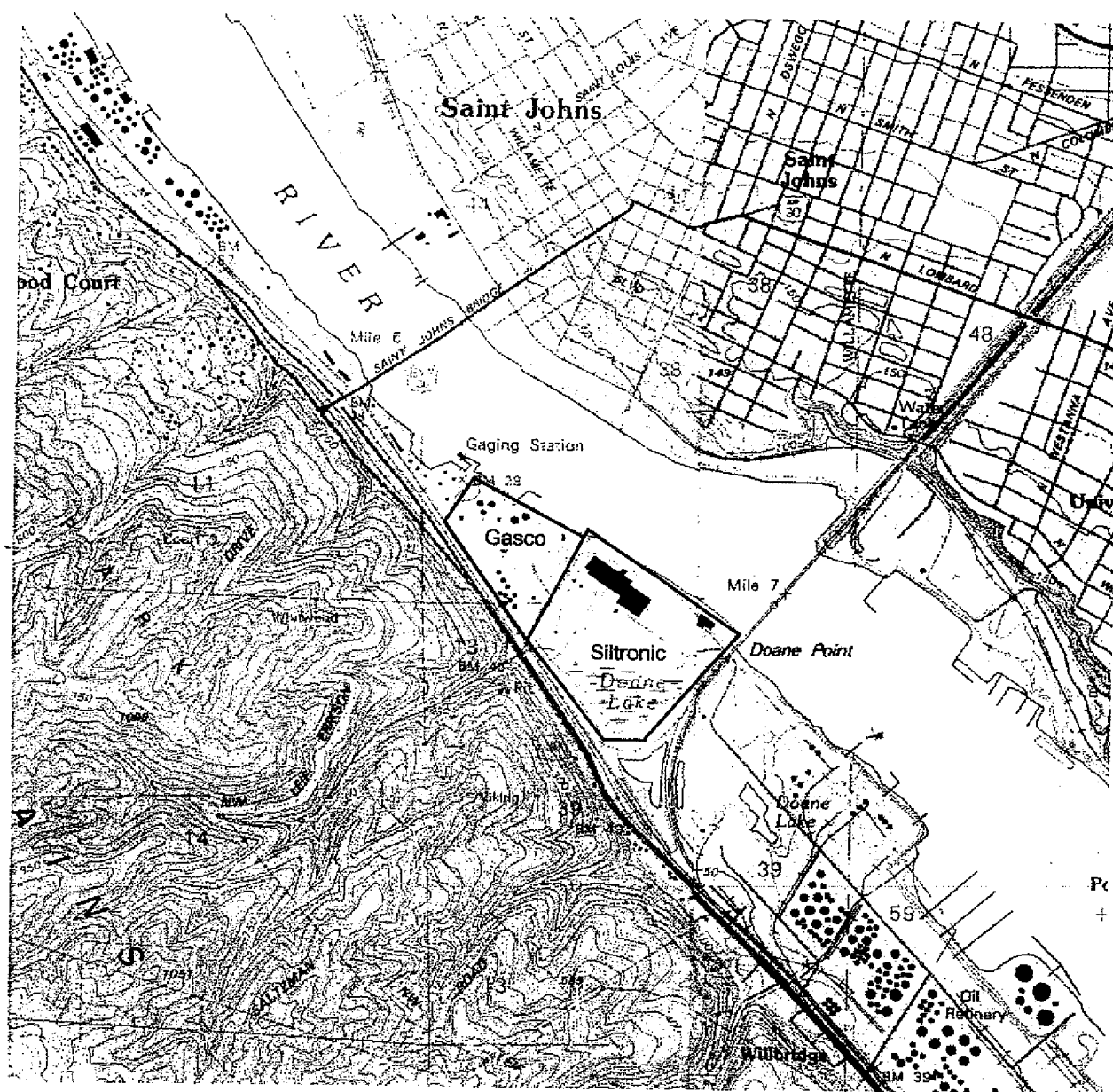
Director Risk Environment & Land
(Title)

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

By: Dick Pedersen Date: 7/19/06
(Signature)

Dick PEDERSEN
(Name)

REGIONAL ADMIN. STRATOR
(Title)



Note: Base Map from Linnton (1990) and Portland (1990), Oregon, USGS 7.5-Minute Quadrangles



0 2,000 4,000

Approximate Scale in Feet
Contour Interval = 10 feet

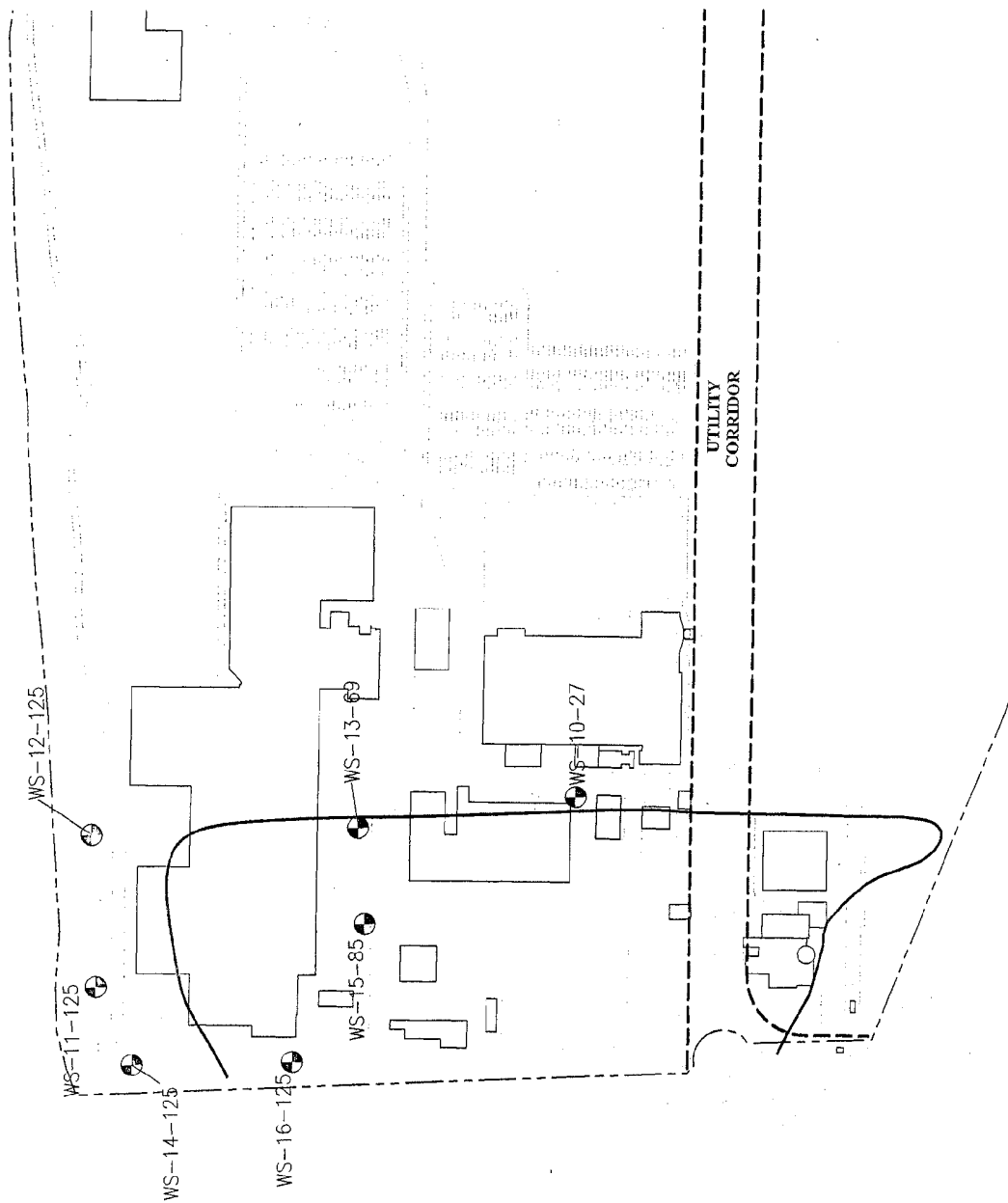
Attachment AA

NW Natural Site Location Map

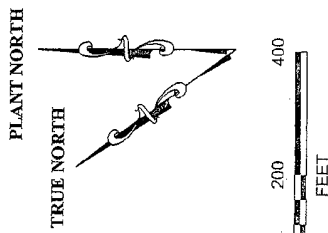
Site Includes

NW Natural Gasco Facility
7540 N.W. St. Helens Road

Siltronic Corporation Property
7200 N.W. Front Avenue
Portland, Oregon



LEGEND:
 - - - PROPERTY BOUNDARY
 ⊕ MONITORING WELL LOCATION
 - - - FORMER WASTE DISPOSAL LAGOON
 - - - OLYMPIC PIPELINE RIGHT OF WAY



Attachment BB
 Monitoring Well Location Map
 Siltronic Corporation Property

DATE	09/29/05
DWN.	JHG
APPR.	JGP
REVISED	
PROJECT NO.	8128.01.08

Vancouver (360) 694-2661
 Portland (503) 344-2139

**MAUL
 FOSTER
 ALONGI INC.**

**SECOND ADDENDUM
TO
VOLUNTARY AGREEMENT
FOR
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
DEQ NO. WMCVC-NWR-94-13**

The Oregon Department of Environmental Quality (DEQ) and NW Natural (NWN) agree to amend Voluntary Agreement No. WMCVC-NWR-94-13 dated August 8, 1994, as amended August 8, 2006 (Agreement), as follows. All other terms of the Agreement remain in effect and apply to this Second Addendum.

1. Recital I.B is amended, to read:

“The NWN Site is a “facility” within the meaning of ORS 465.200(13). The NWN Site includes property located at 7540 N.W. St. Helens Road, Portland, Oregon, currently owned by NWN (NWN Property), as well as adjacent property located at 7200 N.W. Front Avenue, Portland, Oregon and currently owned by Siltronic Corporation (Siltronic Property, or Siltronic Site). This facility is generally referred to in this Second Addendum as the “NWN Site”. The general location of the NWN Site is shown on Attachment AA to the First Addendum.”

2. Recital I.C is amended, to read:

“From 1913 until 1956, NWN, then known as the Portland Gas and Coke Company (GASCO) owned and operated an oil manufactured gas plant (MGP) on the NWN Property. GASCO’s property included approximately 40-acres of adjoining property known as the “Allen Tract” that is currently the northern portion of the Siltronic Property. The GASCO MGP produced oil gas. Byproducts of the GASCO MGP operation included lampblack briquettes, light oils, tars and electrode grade coke. Wastes generated at the facility included tar, lampblack, wastewater containing dissolved and suspended hydrocarbons, and spent oxide. These wastes were disposed of on the NWN Property in piles and “tar ponds.”

Spent oxide piles and tar ponds also extended onto the northern portion of the Allen Tract in areas of low elevation prone to flooding. The tar ponds at the NWN Property were periodically excavated and redeposited onto portions of the Allen Tract. GASCO MGP operations ceased in 1956. GASCO sold the Allen Tract to Mr. Victor Rosenfeld, Mr. H.A. Anderson, and Mr. Gilbert Schnitzer in 1962. Thereafter, wastes associated with the GASCO MGP operations within the Allen Tract were redistributed across portions of the current Siltronic Site when that property was filled between 1966 and 1975. Wastes within tar ponds on the NWN Property were used as fill or redistributed on the NWN Property when the southeastern corner of the NWN Property was filled during the 1972/1973 time-frame.

NWN currently operates a liquefied natural gas (LNG) plant on the NWN Property and currently leases portions of the former GASCO MGP to Pacific Terminal Services, Inc. and Koppers Industries Incorporated (Koppers)."

3. The second paragraph of Recital I.D, as shown in Addendum #1 to the agreement, is replaced by:

"In addition to contamination associated with historic MGP operations, investigations completed by Siltronic within the former Allen Tract have identified soil and groundwater contamination due to releases of chlorinated solvents from their former operations. Trichloroethene (TCE) was used by Siltronic for manufacturing purposes and that use ceased in 1988. Historic releases of TCE occurred in the northern Siltronic Site from a former solvent underground storage tank system and from an unknown source beneath the Central Facilities Building. Site investigations confirm that releases of TCE and its breakdown products and TCE DNAPL are commingled with MGP contamination and DNAPL in the Allen Tract. Furthermore, investigations by Rhone Poulenc of the Siltronic Site have detected hazardous substances (e.g., pesticides) in groundwater."

4. Recital I.G is amended to read:

"The NWN Site is located within or adjacent to the Portland Harbor Superfund Site, which site was placed on the federal National Priorities List by the U.S. Environmental Protection Agency (EPA) in December 2000. By memorandum of understanding, EPA is the lead agency for implementing investigation and cleanup of in-water sediments contamination in the Willamette River in the Portland Harbor Superfund Site, and DEQ is the lead agency for implementing investigations and source control at upland facilities. This Agreement as amended is consistent with DEQ's responsibilities at the Portland Harbor Superfund Site. Evaluation of the portions of the NWN Site located on the Siltronic Property as a potential source of contaminants to the Portland Harbor Superfund Site is also the subject of DEQ Order No. ECVC-NWR-00-27 (i.e., the "Joint Order") issued by DEQ to NWN and Wacker Siltronic Corporation on October 4, 2000. In situations where potential conflicts arise between this Agreement and the Joint Order, this Agreement takes precedence.

5. A new Recital I.I is added, reading:

"On November 20, 2015, DEQ determined that, in order to expedite remedial action planning of the most contaminated portions of the Siltronic Site, NWN will be responsible for completing integrated RI/FS work for the area of the Siltronic Site historically used by GASCO for MGP operations.

The Former Gasco MGP Operable Unit (i.e., "Gasco OU") within the NWN Site is defined to include the NWN Property, the approximately 40-acre portion of the current Siltronic Property formerly known as the Allen Tract, and the adjacent area of Doane Creek extending west to St. Helens Road from the southern boundary of the former Allen Tract. The location of the Gasco OU is shown on Attachment CC to

this Second Addendum. The Gasco OU does not include groundwater contamination not originating on the NWN Property or the Siltronic Property or the segment of Doane Creek extending beyond the southern Allen Tract boundary.

This Agreement defines the work NWN will perform within the Gasco OU. Except as expressly provided herein, nothing in this Agreement requires NWN to perform work beyond the boundaries of the Gasco OU. As used in this agreement, the “site” refers to the Gasco OU.”

6. Section II.A.1 is deleted, and replaced with:

“1. Remedial Investigation and Feasibility Study

(a) NWN shall complete a remedial investigation and feasibility study (RI/FS) for the Gasco OU satisfying OAR 340-122-080, the terms and schedule of DEQ approved work plans, and applicable elements of the general Scope of Work contained in Attachment B to this Agreement. NWN may propose in draft work plans, elements of the Scope of Work that NWN considers inapplicable or unnecessary to the RI/FS for the facility.

(b) As described in DEQ’s November 20, 2015 letter to NWN and Siltronic, NWN will complete an RI and human health and ecological risk assessment (HERA) for the Gasco OU. The RI and HERA for the portion of the Gasco OU beyond the NWN Property will be completed as an addendum to the approved *Remedial Investigation Report, NW Natural – Gasco Facility* (April 11, 2011) and *Human Health and Ecological Assessment Report – NW Natural Gasco Site* (December 2014 [as revised by DEQ’s letter dated May 22, 2015]) for the NWN Property. The results of the RI and HERA will be integrated into a single FS for the Gasco OU.

(c) NWN will submit to DEQ electronic data and backup laboratory reports for investigations on the Siltronic Property beyond the boundaries of the Gasco OU completed subsequent NWN’s submittal of the *Remedial Investigation Data Summary Report, Historical Manufactured Gas Plant Activities, Siltronic Corporation Property* (March 31, 2011).”

7. Section II.A.2(f) is amended to read:

“(f) In the event of approval or modification of the following deliverables by DEQ, NWN shall implement the action required by the deliverable, as so approved or modified, or, as to any DEQ conditions of approval or modification, invoke dispute resolution within 14-days under Section II.M of the Agreement:

- RI/HERA Addendum report
- FS Work Plan
- FS Report
- Other deliverables identified in advance and included as ‘Independent Deliverables’ on the Project Schedule established under Section 1.B.”

8. Section II.A.4 is amended to read:

“4. Source Control Measures

(a) For any unpermitted discharge or release of hazardous substances from the Gasco OU to the Willamette River or river sediments identified in the RI, NWN shall identify and evaluate source control measures in accordance with the SOW and the terms and schedule of a DEQ-approved work plan. DEQ will review and approve source control measures pursuant to OAR 340-122-0070 and in consultation with EPA. Upon DEQ approval of a source control measure, NWN shall develop a source control work plan in accordance with DEQ’s directions and, upon DEQ approval, implement the work plan.

(b) NWN shall continue operation of the hydraulic containment and control system for the Gasco OU as an interim source control measure.

(c) NWN shall complete the ongoing source control evaluation for Doane Creek. Nothing in this Agreement or in DEQ Order No. ECVN-NWR-00-27 shall obligate NWN to implement source control measures for Doane Creek.”

9. Section II. D is amended to update the current DEQ and NWN project managers:

DEQ Project Manager

Dana Bayuk
Department of Environmental Quality
Northwest Region
700 NE Multnomah Street
Portland, Oregon 97232

NW Natural Project Manager

Robert J. Wyatt
NW Natural
220 N.W. Second Avenue
Portland, Oregon 97209
(503) 226-4211 Ext. 5425

10. The Scope of Work (Attachment B to the Agreement) is amended in Section I.A.1.i. by revising the first sentence to:


“Determine the magnitude, nature, and extent of contamination at the Gasco OU.”

11. The Scope of Work is amended by revising the last paragraph of Section I.B. to:

"NWN shall propose for DEQ approval a schedule for the Gasco OU RI/FS (the "Project Schedule"). The Project Schedule may be modified by agreement of the parties.

STIPULATED, AGREED, AND APPROVED FOR ISSUANCE:

NW Natural

By:  Date: 7 October 2016
(Signature)

Thomas Imeson
(Name)

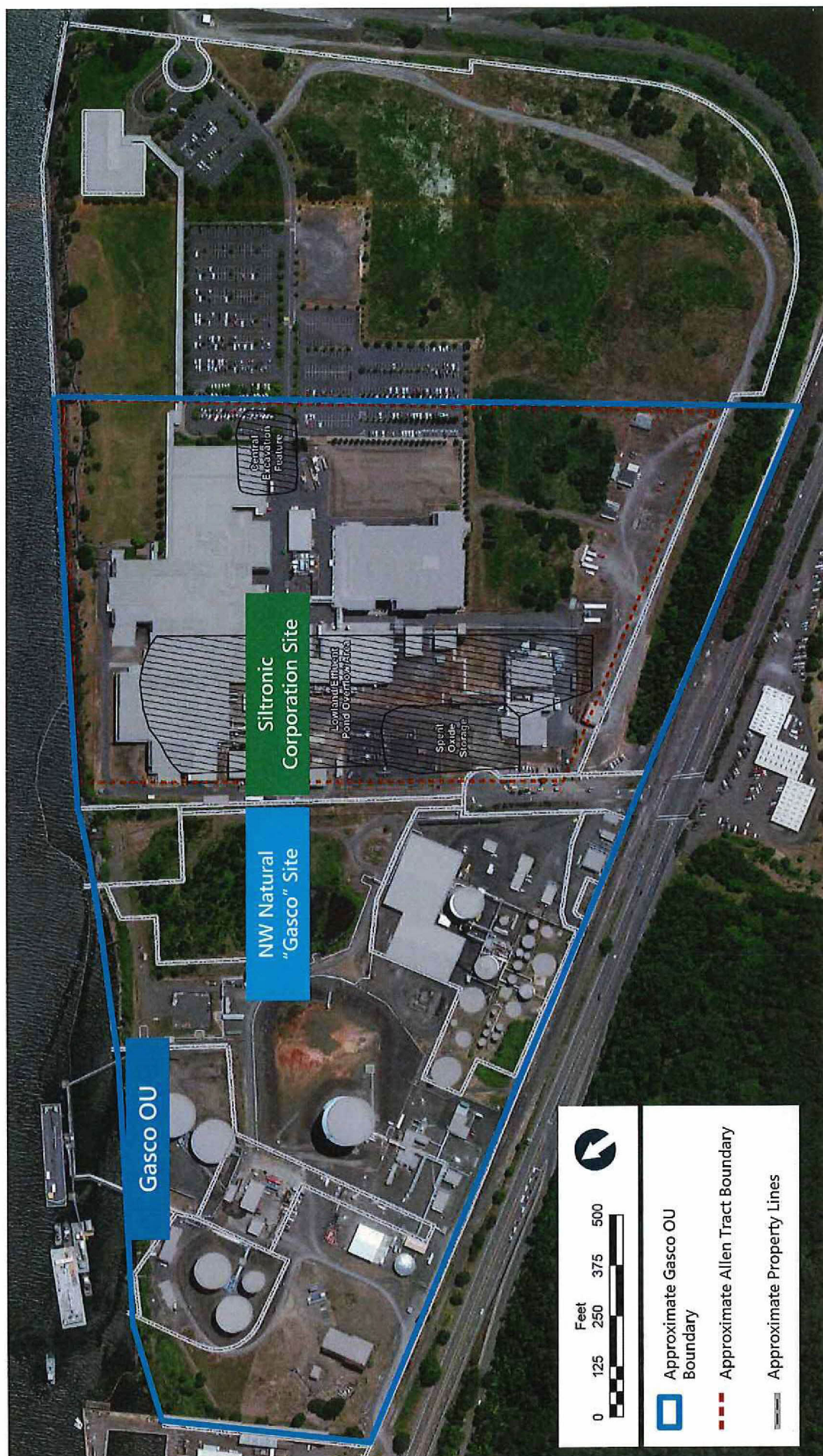
Vice President
(Title)

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

By:  Date: 11 October 2016
(Signature)

Nina DeConcini
(Name)

NW Region Administrator
(Title)



ATTACHMENT CC

Former Gasco Manufactured Gas Plant Operable Unit (Gasco OU)

DEQ No. WMCVC-NWR-94-13



ATTACHMENT CC
Former Gasco Manufactured Gas Plant Operable Unit (Gasco OU)

DEQ No. WMCVC-NWR-94-13

Attachment B

APEX Laboratory Report No. A9H0573



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Wednesday, February 26, 2020

John Renda
Anchor QEA, LLC
6720 SW Macadam Ave. Suite 125
Portland, OR 97219

RE: A0B0096 - Gasco - Siltronic Topsoil - 00029-02.65 T-07.706B

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A0B0096, which was received by the laboratory on 2/5/2020 at 8:23:00AM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: dthomas@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler#1	1.7 degC
----------	----------

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
STS-020420-1to8	A0B0096-01	Soil	02/04/20 13:40	02/05/20 08:23
STS-020420-9to16	A0B0096-02	Soil	02/04/20 14:00	02/05/20 08:23
STS-020420-17to24	A0B0096-03	Soil	02/04/20 14:25	02/05/20 08:23

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil		Batch: 0020146		
Diesel	115	12.5	25.1	mg/kg dry	1	02/06/20 01:09	NWTPH-Dx	F-24
Oil	140	25.1	50.1	mg/kg dry	1	02/06/20 01:09	NWTPH-Dx	F-24
Surrogate: o-Terphenyl (Surr)		Recovery: 87 %		Limits: 50-150 %	1	02/06/20 01:09	NWTPH-Dx	
STS-020420-9to16 (A0B0096-02)				Matrix: Soil		Batch: 0020146		
Diesel	185	12.2	25.0	mg/kg dry	1	02/06/20 01:30	NWTPH-Dx	F-24
Oil	176	24.4	50.0	mg/kg dry	1	02/06/20 01:30	NWTPH-Dx	F-24
Surrogate: o-Terphenyl (Surr)		Recovery: 82 %		Limits: 50-150 %	1	02/06/20 01:30	NWTPH-Dx	
STS-020420-17to24 (A0B0096-03)				Matrix: Soil		Batch: 0020146		
Diesel	365	12.2	25.0	mg/kg dry	1	02/06/20 01:50	NWTPH-Dx	F-24, Q-42
Oil	261	24.4	50.0	mg/kg dry	1	02/06/20 01:50	NWTPH-Dx	F-24
Surrogate: o-Terphenyl (Surr)		Recovery: 76 %		Limits: 50-150 %	1	02/06/20 01:50	NWTPH-Dx	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil		Batch: 0020181		
Gasoline Range Organics	5.65	3.49	6.97	mg/kg dry	50	02/06/20 19:51	NWTPH-Gx (MS)	J
Surrogate: 4-Bromofluorobenzene (Sur)		Recovery:	121 %	Limits:	50-150 %	1	02/06/20 19:51	NWTPH-Gx (MS)
1,4-Difluorobenzene (Sur)			102 %		50-150 %	1	02/06/20 19:51	NWTPH-Gx (MS)
STS-020420-9to16 (A0B0096-02)				Matrix: Soil		Batch: 0020181		
Gasoline Range Organics	6.43	3.34	6.69	mg/kg dry	50	02/06/20 20:18	NWTPH-Gx (MS)	J
Surrogate: 4-Bromofluorobenzene (Sur)		Recovery:	123 %	Limits:	50-150 %	1	02/06/20 20:18	NWTPH-Gx (MS)
1,4-Difluorobenzene (Sur)			103 %		50-150 %	1	02/06/20 20:18	NWTPH-Gx (MS)
STS-020420-17to24 (A0B0096-03)				Matrix: Soil		Batch: 0020181		
Gasoline Range Organics	9.12	3.33	6.66	mg/kg dry	50	02/06/20 20:45	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)		Recovery:	128 %	Limits:	50-150 %	1	02/06/20 20:45	NWTPH-Gx (MS)
1,4-Difluorobenzene (Sur)			103 %		50-150 %	1	02/06/20 20:45	NWTPH-Gx (MS)

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil		Batch: 0020181		
Acetone	ND	697	1390	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Acrylonitrile	ND	69.7	139	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Benzene	ND	6.97	13.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Bromobenzene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Bromochloromethane	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Bromodichloromethane	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Bromoform	ND	69.7	139	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Bromomethane	ND	697	697	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
2-Butanone (MEK)	ND	349	697	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
n-Butylbenzene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
sec-Butylbenzene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
tert-Butylbenzene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Carbon disulfide	ND	349	697	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Carbon tetrachloride	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Chlorobenzene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Chloroethane	ND	349	697	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Chloroform	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Chloromethane	ND	174	349	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
2-Chlorotoluene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
4-Chlorotoluene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Dibromochloromethane	ND	69.7	139	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	174	349	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Dibromomethane	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,2-Dichlorobenzene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,3-Dichlorobenzene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,4-Dichlorobenzene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Dichlorodifluoromethane	ND	69.7	139	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,1-Dichloroethane	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,2-Dichloroethane (EDC)	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,1-Dichloroethene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
cis-1,2-Dichloroethene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
trans-1,2-Dichloroethene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125

Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil		Batch: 0020181		
1,2-Dichloropropane	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,3-Dichloropropane	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
2,2-Dichloropropane	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,1-Dichloropropene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
cis-1,3-Dichloropropene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
trans-1,3-Dichloropropene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Ethylbenzene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Hexachlorobutadiene	ND	69.7	139	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
2-Hexanone	ND	349	697	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Isopropylbenzene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
4-Isopropyltoluene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Methylene chloride	ND	349	697	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
4-Methyl-2-pentanone (MIBK)	ND	349	697	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Methyl tert-butyl ether (MTBE)	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Naphthalene	189	69.7	139	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
n-Propylbenzene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Styrene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Tetrachloroethene (PCE)	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Toluene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,2,3-Trichlorobenzene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,2,4-Trichlorobenzene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,1,1-Trichloroethane	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,1,2-Trichloroethane	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Trichloroethene (TCE)	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Trichlorofluoromethane	ND	69.7	139	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,2,3-Trichloropropane	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,2,4-Trimethylbenzene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
1,3,5-Trimethylbenzene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
Vinyl chloride	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
m,p-Xylene	ND	34.9	69.7	ug/kg dry	50	02/06/20 19:51	5035A/8260C	
o-Xylene	ND	17.4	34.9	ug/kg dry	50	02/06/20 19:51	5035A/8260C	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil		Batch: 0020181		
Surrogate: 1,4-Difluorobenzene (Surr)		Recovery: 103 %	Limits: 80-120 %	1	02/06/20 19:51	5035A/8260C		
Toluene-d8 (Surr)		100 %	80-120 %	1	02/06/20 19:51	5035A/8260C		
4-Bromofluorobenzene (Surr)		100 %	80-120 %	1	02/06/20 19:51	5035A/8260C		
STS-020420-9to16 (A0B0096-02)				Matrix: Soil		Batch: 0020181		
Acetone	ND	669	1340	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Acrylonitrile	ND	66.9	134	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Benzene	ND	6.69	13.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Bromobenzene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Bromochloromethane	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Bromodichloromethane	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Bromoform	ND	66.9	134	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Bromomethane	ND	669	669	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
2-Butanone (MEK)	ND	334	669	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
n-Butylbenzene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
sec-Butylbenzene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
tert-Butylbenzene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Carbon disulfide	ND	334	669	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Carbon tetrachloride	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Chlorobenzene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Chloroethane	ND	334	669	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Chloroform	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Chloromethane	ND	167	334	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
2-Chlorotoluene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
4-Chlorotoluene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Dibromochloromethane	ND	66.9	134	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	167	334	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Dibromomethane	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,2-Dichlorobenzene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,3-Dichlorobenzene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,4-Dichlorobenzene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Dichlorodifluoromethane	ND	66.9	134	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,1-Dichloroethane	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-9to16 (A0B0096-02)				Matrix: Soil		Batch: 0020181		
1,2-Dichloroethane (EDC)	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,1-Dichloroethene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
cis-1,2-Dichloroethene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
trans-1,2-Dichloroethene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,2-Dichloropropane	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,3-Dichloropropane	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
2,2-Dichloropropane	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,1-Dichloropropene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
cis-1,3-Dichloropropene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
trans-1,3-Dichloropropene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Ethylbenzene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Hexachlorobutadiene	ND	66.9	134	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
2-Hexanone	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Isopropylbenzene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
4-Isopropyltoluene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Methylene chloride	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
4-Methyl-2-pentanone (MIBK)	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Methyl tert-butyl ether (MTBE)	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Naphthalene	257	66.9	134	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
n-Propylbenzene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Styrene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Tetrachloroethene (PCE)	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Toluene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,2,3-Trichlorobenzene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,2,4-Trichlorobenzene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,1,1-Trichloroethane	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,1,2-Trichloroethane	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Trichloroethene (TCE)	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Trichlorofluoromethane	ND	66.9	134	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,2,3-Trichloropropane	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
1,2,4-Trimethylbenzene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125

Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-9to16 (A0B0096-02)				Matrix: Soil		Batch: 0020181		
1,3,5-Trimethylbenzene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Vinyl chloride	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
m,p-Xylene	ND	33.4	66.9	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
o-Xylene	ND	16.7	33.4	ug/kg dry	50	02/06/20 20:18	5035A/8260C	
Surrogate: 1,4-Difluorobenzene (Surr)		Recovery: 104 %		Limits: 80-120 %	1	02/06/20 20:18	5035A/8260C	
Toluene-d8 (Surr)		99 %		80-120 %	1	02/06/20 20:18	5035A/8260C	
4-Bromofluorobenzene (Surr)		100 %		80-120 %	1	02/06/20 20:18	5035A/8260C	
STS-020420-17to24 (A0B0096-03)				Matrix: Soil		Batch: 0020181		
Acetone	ND	666	1330	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Acrylonitrile	ND	66.6	133	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Benzene	ND	6.66	13.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Bromobenzene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Bromochloromethane	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Bromodichloromethane	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Bromoform	ND	66.6	133	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Bromomethane	ND	666	666	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
2-Butanone (MEK)	ND	333	666	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
n-Butylbenzene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
sec-Butylbenzene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
tert-Butylbenzene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Carbon disulfide	ND	333	666	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Carbon tetrachloride	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Chlorobenzene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Chloroethane	ND	333	666	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Chloroform	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Chloromethane	ND	167	333	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
2-Chlorotoluene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
4-Chlorotoluene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Dibromochloromethane	ND	66.6	133	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	167	333	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Dibromomethane	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,2-Dichlorobenzene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-17to24 (A0B0096-03)				Matrix: Soil		Batch: 0020181		
1,3-Dichlorobenzene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,4-Dichlorobenzene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Dichlorodifluoromethane	ND	66.6	133	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,1-Dichloroethane	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,2-Dichloroethane (EDC)	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,1-Dichloroethene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
cis-1,2-Dichloroethene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
trans-1,2-Dichloroethene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,2-Dichloropropane	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	Q-42
1,3-Dichloropropane	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
2,2-Dichloropropane	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,1-Dichloropropene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
cis-1,3-Dichloropropene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
trans-1,3-Dichloropropene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Ethylbenzene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Hexachlorobutadiene	ND	66.6	133	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
2-Hexanone	ND	333	666	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Isopropylbenzene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
4-Isopropyltoluene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Methylene chloride	ND	333	666	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
4-Methyl-2-pentanone (MIBK)	ND	333	666	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Methyl tert-butyl ether (MTBE)	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Naphthalene	606	66.6	133	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
n-Propylbenzene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Styrene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Tetrachloroethene (PCE)	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Toluene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,2,3-Trichlorobenzene	ND	167	333	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,2,4-Trichlorobenzene	ND	167	333	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,1,1-Trichloroethane	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,1,2-Trichloroethane	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-17to24 (A0B0096-03)				Matrix: Soil		Batch: 0020181		
Trichloroethene (TCE)	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Trichlorofluoromethane	ND	66.6	133	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,2,3-Trichloropropane	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,2,4-Trimethylbenzene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
1,3,5-Trimethylbenzene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Vinyl chloride	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
m,p-Xylene	ND	33.3	66.6	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
o-Xylene	ND	16.7	33.3	ug/kg dry	50	02/06/20 20:45	5035A/8260C	
Surrogate: 1,4-Difluorobenzene (Surr)		Recovery: 105 %		Limits: 80-120 %	1	02/06/20 20:45	5035A/8260C	
Toluene-d8 (Surr)		98 %		80-120 %	1	02/06/20 20:45	5035A/8260C	
4-Bromofluorobenzene (Surr)		102 %		80-120 %	1	02/06/20 20:45	5035A/8260C	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil		Batch: 0020150		
Acenaphthene	1550	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Acenaphthylene	520	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Anthracene	1760	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Benz(a)anthracene	3000	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Benzo(a)pyrene	5030	---	509	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Benzo(b)fluoranthene	4240	---	509	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Benzo(k)fluoranthene	1530	---	509	ug/kg dry	100	02/05/20 21:49	EPA 8270D	M-05
Benzo(g,h,i)perylene	3840	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Chrysene	3730	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Dibenz(a,h)anthracene	416	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Fluoranthene	8920	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Fluorene	1040	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Indeno(1,2,3-cd)pyrene	3240	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
1-Methylnaphthalene	ND	---	678	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2-Methylnaphthalene	ND	---	678	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Naphthalene	ND	---	678	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Phenanthrene	6560	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Pyrene	10900	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Carbazole	ND	---	509	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Dibenzofuran	ND	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
4-Chloro-3-methylphenol	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2-Chlorophenol	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2,4-Dichlorophenol	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2,4-Dimethylphenol	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2,4-Dinitrophenol	ND	---	8490	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	---	8490	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2-Methylphenol	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
3+4-Methylphenol(s)	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2-Nitrophenol	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
4-Nitrophenol	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Pentachlorophenol (PCP)	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Phenol	ND	---	678	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Semivolatile Organic Compounds by EPA 8270D**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil		Batch: 0020150		
2,3,5,6-Tetrachlorophenol	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2,4,5-Trichlorophenol	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2,4,6-Trichlorophenol	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Bis(2-ethylhexyl)phthalate	ND	---	5090	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Butyl benzyl phthalate	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Diethylphthalate	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Dimethylphthalate	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Di-n-butylphthalate	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Di-n-octyl phthalate	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
N-Nitrosodimethylamine	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
N-Nitroso-di-n-propylamine	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
N-Nitrosodiphenylamine	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Bis(2-Chloroethoxy) methane	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Bis(2-Chloroethyl) ether	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2,2'-Oxybis(1-Chloropropane)	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Hexachlorobenzene	ND	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Hexachlorobutadiene	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Hexachlorocyclopentadiene	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Hexachloroethane	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2-Chloronaphthalene	ND	---	340	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
1,2-Dichlorobenzene	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
1,3-Dichlorobenzene	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
1,4-Dichlorobenzene	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
1,2,4-Trichlorobenzene	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
4-Bromophenyl phenyl ether	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
4-Chlorophenyl phenyl ether	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Aniline	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
4-Chloroaniline	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2-Nitroaniline	ND	---	6780	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
3-Nitroaniline	ND	---	6780	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
4-Nitroaniline	ND	---	6780	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Nitrobenzene	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
2,4-Dinitrotoluene	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125

Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Semivolatile Organic Compounds by EPA 8270D**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil		Batch: 0020150		
2,6-Dinitrotoluene	ND	---	3400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Benzoic acid	ND	---	42400	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Benzyl alcohol	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Isophorone	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Azobenzene (1,2-DPH)	ND	---	849	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Bis(2-Ethylhexyl) adipate	ND	---	8490	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
3,3'-Dichlorobenzidine	ND	---	6780	ug/kg dry	100	02/05/20 21:49	EPA 8270D	Q-52
1,2-Dinitrobenzene	ND	---	8490	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
1,3-Dinitrobenzene	ND	---	8490	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
1,4-Dinitrobenzene	ND	---	8490	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
Pyridine	ND	---	1690	ug/kg dry	100	02/05/20 21:49	EPA 8270D	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>								
		Recovery:	73 %	Limits:	37-122 %	100	02/05/20 21:49	EPA 8270D S-05
<i>2-Fluorobiphenyl (Surr)</i>								
			75 %		44-115 %	100	02/05/20 21:49	EPA 8270D S-05
<i>Phenol-d6 (Surr)</i>								
			65 %		33-122 %	100	02/05/20 21:49	EPA 8270D S-05
<i>p-Terphenyl-d14 (Surr)</i>								
			84 %		54-127 %	100	02/05/20 21:49	EPA 8270D S-05
<i>2-Fluorophenol (Surr)</i>								
			65 %		35-115 %	100	02/05/20 21:49	EPA 8270D S-05
<i>2,4,6-Tribromophenol (Surr)</i>								
			199 %		39-132 %	100	02/05/20 21:49	EPA 8270D S-05
STS-020420-9to16 (A0B0096-02)				Matrix: Soil		Batch: 0020150		
Acenaphthene	3620	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Acenaphthylene	576	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Anthracene	3370	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Benz(a)anthracene	3040	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Benzo(a)pyrene	4760	---	494	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Benzo(b)fluoranthene	3910	---	494	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Benzo(k)fluoranthene	1470	---	494	ug/kg dry	100	02/05/20 22:25	EPA 8270D	M-05
Benzo(g,h,i)perylene	3390	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Chrysene	3780	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Dibenz(a,h)anthracene	373	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Fluoranthene	11500	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Fluorene	2140	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Indeno(1,2,3-cd)pyrene	2890	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
1-Methylnaphthalene	ND	---	658	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2-Methylnaphthalene	ND	---	658	ug/kg dry	100	02/05/20 22:25	EPA 8270D	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-9to16 (A0B0096-02)				Matrix: Soil		Batch: 0020150		
Naphthalene	ND	---	658	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Phenanthrene	11500	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Pyrene	13300	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Carbazole	ND	---	494	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Dibenzofuran	ND	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
4-Chloro-3-methylphenol	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2-Chlorophenol	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2,4-Dichlorophenol	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2,4-Dimethylphenol	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2,4-Dinitrophenol	ND	---	8240	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	---	8240	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2-Methylphenol	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
3+4-Methylphenol(s)	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2-Nitrophenol	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
4-Nitrophenol	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Pentachlorophenol (PCP)	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Phenol	ND	---	658	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2,3,4,6-Tetrachlorophenol	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2,3,5,6-Tetrachlorophenol	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2,4,5-Trichlorophenol	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2,4,6-Trichlorophenol	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Bis(2-ethylhexyl)phthalate	ND	---	4940	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Butyl benzyl phthalate	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Diethylphthalate	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Dimethylphthalate	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Di-n-butylphthalate	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Di-n-octyl phthalate	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
N-Nitrosodimethylamine	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
N-Nitroso-di-n-propylamine	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
N-Nitrosodiphenylamine	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Bis(2-Chloroethoxy) methane	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Bis(2-Chloroethyl) ether	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2,2'-Oxybis(1-Chloropropane)	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-9to16 (A0B0096-02)				Matrix: Soil		Batch: 0020150		
Hexachlorobenzene	ND	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Hexachlorobutadiene	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Hexachlorocyclopentadiene	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Hexachloroethane	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2-Chloronaphthalene	ND	---	330	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
1,2-Dichlorobenzene	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
1,3-Dichlorobenzene	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
1,4-Dichlorobenzene	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
1,2,4-Trichlorobenzene	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
4-Bromophenyl phenyl ether	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
4-Chlorophenyl phenyl ether	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Aniline	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
4-Chloroaniline	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2-Nitroaniline	ND	---	6580	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
3-Nitroaniline	ND	---	6580	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
4-Nitroaniline	ND	---	6580	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Nitrobenzene	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2,4-Dinitrotoluene	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
2,6-Dinitrotoluene	ND	---	3300	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Benzoic acid	ND	---	41100	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Benzyl alcohol	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Isophorone	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Azobenzene (1,2-DPH)	ND	---	824	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Bis(2-Ethylhexyl) adipate	ND	---	8240	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
3,3'-Dichlorobenzidine	ND	---	6580	ug/kg dry	100	02/05/20 22:25	EPA 8270D	Q-52
1,2-Dinitrobenzene	ND	---	8240	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
1,3-Dinitrobenzene	ND	---	8240	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
1,4-Dinitrobenzene	ND	---	8240	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
Pyridine	ND	---	1640	ug/kg dry	100	02/05/20 22:25	EPA 8270D	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery:</i>	78 %	<i>Limits:</i>	37-122 %	100	02/05/20 22:25	EPA 8270D S-05
<i>2-Fluorobiphenyl (Surr)</i>			81 %		44-115 %	100	02/05/20 22:25	EPA 8270D S-05
<i>Phenol-d6 (Surr)</i>			65 %		33-122 %	100	02/05/20 22:25	EPA 8270D S-05
<i>p-Terphenyl-d14 (Surr)</i>			89 %		54-127 %	100	02/05/20 22:25	EPA 8270D S-05
<i>2-Fluorophenol (Surr)</i>			68 %		35-115 %	100	02/05/20 22:25	EPA 8270D S-05

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Semivolatile Organic Compounds by EPA 8270D**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-9to16 (A0B0096-02)				Matrix: Soil		Batch: 0020150		
Surrogate: 2,4,6-Tribromophenol (Surr)		Recovery: 206 %	Limits: 39-132 %	100	02/05/20 22:25	EPA 8270D	S-05	
STS-020420-17to24 (A0B0096-03)				Matrix: Soil		Batch: 0020150		
Acenaphthene	3250	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Acenaphthylene	645	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Anthracene	3070	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Benz(a)anthracene	3240	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Benzo(a)pyrene	5110	---	507	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Benzo(b)fluoranthene	4240	---	507	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Benzo(k)fluoranthene	1510	---	507	ug/kg dry	100	02/05/20 23:01	EPA 8270D	M-05
Benzo(g,h,i)perylene	3690	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Chrysene	4070	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Dibenz(a,h)anthracene	410	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Fluoranthene	11400	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Fluorene	1920	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Indeno(1,2,3-cd)pyrene	3110	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
1-Methylnaphthalene	ND	---	676	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
2-Methylnaphthalene	ND	---	676	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Naphthalene	ND	---	676	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Phenanthrene	10500	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Pyrene	13600	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Carbazole	ND	---	507	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Dibenzofuran	ND	---	339	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
4-Chloro-3-methylphenol	ND	---	3390	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
2-Chlorophenol	ND	---	1690	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
2,4-Dichlorophenol	ND	---	1690	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
2,4-Dimethylphenol	ND	---	1690	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
2,4-Dinitrophenol	ND	---	8460	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
4,6-Dinitro-2-methylphenol	ND	---	8460	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
2-Methylphenol	ND	---	846	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
3+4-Methylphenol(s)	ND	---	846	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
2-Nitrophenol	ND	---	3390	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
4-Nitrophenol	ND	---	3390	ug/kg dry	100	02/05/20 23:01	EPA 8270D	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****ANALYTICAL SAMPLE RESULTS****Semivolatile Organic Compounds by EPA 8270D**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-17to24 (A0B0096-03)				Matrix: Soil		Batch: 0020150		
4-Nitroaniline	ND	---	6760	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Nitrobenzene	ND	---	3390	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
2,4-Dinitrotoluene	ND	---	3390	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
2,6-Dinitrotoluene	ND	---	3390	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Benzoic acid	ND	---	42200	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Benzyl alcohol	ND	---	1690	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Isophorone	ND	---	846	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Azobenzene (1,2-DPH)	ND	---	846	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Bis(2-Ethylhexyl) adipate	ND	---	8460	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
3,3'-Dichlorobenzidine	ND	---	6760	ug/kg dry	100	02/05/20 23:01	EPA 8270D	Q-52
1,2-Dinitrobenzene	ND	---	8460	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
1,3-Dinitrobenzene	ND	---	8460	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
1,4-Dinitrobenzene	ND	---	8460	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
Pyridine	ND	---	1690	ug/kg dry	100	02/05/20 23:01	EPA 8270D	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery:</i> 67 %		<i>Limits:</i> 37-122 %	100	02/05/20 23:01	EPA 8270D	S-05
<i>2-Fluorobiphenyl (Surr)</i>		75 %		44-115 %	100	02/05/20 23:01	EPA 8270D	S-05
<i>Phenol-d6 (Surr)</i>		64 %		33-122 %	100	02/05/20 23:01	EPA 8270D	S-05
<i>p-Terphenyl-d14 (Surr)</i>		90 %		54-127 %	100	02/05/20 23:01	EPA 8270D	S-05
<i>2-Fluorophenol (Surr)</i>		63 %		35-115 %	100	02/05/20 23:01	EPA 8270D	S-05
<i>2,4,6-Tribromophenol (Surr)</i>		204 %		39-132 %	100	02/05/20 23:01	EPA 8270D	S-05

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

Page 19 of 56

NWN-PCI0778387



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil				
Batch: 0020164								
Arsenic	3.83	0.676	1.35	mg/kg dry	10	02/06/20 01:59	EPA 6020A	
Barium	98.0	0.676	1.35	mg/kg dry	10	02/06/20 01:59	EPA 6020A	
Cadmium	0.188	0.135	0.271	mg/kg dry	10	02/06/20 01:59	EPA 6020A	J
Chromium	21.7	0.676	1.35	mg/kg dry	10	02/06/20 01:59	EPA 6020A	
Lead	23.7	0.135	0.271	mg/kg dry	10	02/06/20 01:59	EPA 6020A	
Mercury	ND	0.0541	0.108	mg/kg dry	10	02/06/20 01:59	EPA 6020A	
Selenium	ND	0.676	1.35	mg/kg dry	10	02/06/20 01:59	EPA 6020A	
Silver	ND	0.135	0.271	mg/kg dry	10	02/06/20 01:59	EPA 6020A	
STS-020420-9to16 (A0B0096-02)				Matrix: Soil				
Batch: 0020164								
Arsenic	3.63	0.690	1.38	mg/kg dry	10	02/06/20 02:04	EPA 6020A	
Barium	72.7	0.690	1.38	mg/kg dry	10	02/06/20 02:04	EPA 6020A	
Cadmium	0.151	0.138	0.276	mg/kg dry	10	02/06/20 02:04	EPA 6020A	J
Chromium	20.9	0.690	1.38	mg/kg dry	10	02/06/20 02:04	EPA 6020A	
Lead	17.4	0.138	0.276	mg/kg dry	10	02/06/20 02:04	EPA 6020A	
Mercury	ND	0.0552	0.110	mg/kg dry	10	02/06/20 02:04	EPA 6020A	
Selenium	ND	0.690	1.38	mg/kg dry	10	02/06/20 02:04	EPA 6020A	
Silver	ND	0.138	0.276	mg/kg dry	10	02/06/20 02:04	EPA 6020A	
STS-020420-17to24 (A0B0096-03)				Matrix: Soil				
Batch: 0020164								
Arsenic	3.81	0.670	1.34	mg/kg dry	10	02/06/20 02:09	EPA 6020A	
Barium	72.9	0.670	1.34	mg/kg dry	10	02/06/20 02:09	EPA 6020A	
Cadmium	0.162	0.134	0.268	mg/kg dry	10	02/06/20 02:09	EPA 6020A	J
Chromium	27.6	0.670	1.34	mg/kg dry	10	02/06/20 02:09	EPA 6020A	Q-42
Lead	22.5	0.134	0.268	mg/kg dry	10	02/06/20 02:09	EPA 6020A	
Mercury	ND	0.0536	0.107	mg/kg dry	10	02/06/20 02:09	EPA 6020A	
Selenium	ND	0.670	1.34	mg/kg dry	10	02/06/20 02:09	EPA 6020A	
Silver	ND	0.134	0.268	mg/kg dry	10	02/06/20 02:09	EPA 6020A	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

ANALYTICAL SAMPLE RESULTS

Total Cyanide by UV Digestion/Gas Diffusion/Amperometric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01RE1)				Matrix: Soil		Batch: 0020173		
Total Cyanide	0.375	0.0645	0.129	mg/kg dry	1	02/06/20 11:35	D7511-12	
STS-020420-9to16 (A0B0096-02RE1)				Matrix: Soil		Batch: 0020173		
Total Cyanide	0.450	0.0632	0.126	mg/kg dry	1	02/06/20 11:43	D7511-12	
STS-020420-17to24 (A0B0096-03RE1)				Matrix: Soil		Batch: 0020173		
Total Cyanide	0.439	0.0652	0.130	mg/kg dry	1	02/06/20 11:45	D7511-12	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil				
Batch: 0020297								
Free Liquid	ND	---	0.00	mL	1	02/10/20 15:11	EPA 9095B	
STS-020420-9to16 (A0B0096-02)				Matrix: Soil				
Batch: 0020297								
Free Liquid	ND	---	0.00	mL	1	02/10/20 15:34	EPA 9095B	
STS-020420-17to24 (A0B0096-03)				Matrix: Soil				
Batch: 0020297								
Free Liquid	ND	---	0.00	mL	1	02/10/20 15:45	EPA 9095B	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
STS-020420-1to8 (A0B0096-01)				Matrix: Soil		Batch: 0020175		
% Solids	75.1	---	1.00	%	1	02/07/20 09:18	EPA 8000C	
STS-020420-9to16 (A0B0096-02)				Matrix: Soil		Batch: 0020175		
% Solids	77.1	---	1.00	%	1	02/07/20 09:18	EPA 8000C	
STS-020420-17to24 (A0B0096-03)				Matrix: Soil		Batch: 0020168		
% Solids	76.3	---	1.00	%	1	02/06/20 07:50	EPA 8000C	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Diesel and/or Oil Hydrocarbons by NWTPH-Dx**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020146 - EPA 3546 (Fuels)						Soil						
Blank (0020146-BLK1)			Prepared: 02/05/20 12:47 Analyzed: 02/05/20 21:03									
NWTPH-Dx												
Diesel	ND	9.09	18.2	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	18.2	36.4	mg/kg wet	1	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)		Recovery: 90 %		Limits: 50-150 %		Dilution: 1x						
LCS (0020146-BS1)			Prepared: 02/05/20 12:47 Analyzed: 02/05/20 21:23									
NWTPH-Dx												
Diesel	116	10.0	20.0	mg/kg wet	1	125	---	93	76-115%	---	---	
Surr: o-Terphenyl (Surr)		Recovery: 93 %		Limits: 50-150 %		Dilution: 1x						
Duplicate (0020146-DUP2)			Prepared: 02/05/20 12:47 Analyzed: 02/06/20 03:33									
QC Source Sample: STS-020420-17to24 (A0B0096-03)												
NWTPH-Dx												
Diesel	225	12.1	24.1	mg/kg dry	1	---	365	---	---	48	30%	F-24, Q-17
Oil	240	24.1	48.2	mg/kg dry	1	---	261	---	---	8	30%	F-24
Surr: o-Terphenyl (Surr)		Recovery: 89 %		Limits: 50-150 %		Dilution: 1x						
Duplicate (0020146-DUP3)			Prepared: 02/05/20 12:47 Analyzed: 02/06/20 08:14									
QC Source Sample: Non-SDG (A0B0060-04RE1)												
Diesel	4440	123	245	mg/kg dry	10	---	3790	---	---	16	30%	
Oil	ND	245	491	mg/kg dry	10	---	ND	---	---	---	30%	
Surr: o-Terphenyl (Surr)		Recovery: 85 %		Limits: 50-150 %		Dilution: 10x					S-05	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020181 - EPA 5035A						Soil						
Blank (0020181-BLK1)			Prepared: 02/06/20 09:00 Analyzed: 02/06/20 13:30									
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	1.67	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)		Recovery:		119 %		Limits:		50-150 %		Dilution:		1x
1,4-Difluorobenzene (Sur)				105 %				50-150 %				"
LCS (0020181-BS2)			Prepared: 02/06/20 09:00 Analyzed: 02/06/20 13:03									
NWTPH-Gx (MS)												
Gasoline Range Organics	28.3	2.50	5.00	mg/kg wet	50	25.0	---	113	80-120%	---	---	
Surr: 4-Bromofluorobenzene (Sur)		Recovery:		118 %		Limits:		50-150 %		Dilution:		1x
1,4-Difluorobenzene (Sur)				106 %				50-150 %				"
Duplicate (0020181-DUP1)			Prepared: 02/04/20 14:30 Analyzed: 02/06/20 16:41									
QC Source Sample: Non-SDG (A0B0087-01)												
Gasoline Range Organics	49.3	10.2	20.4	mg/kg dry	50	---	34.9	---	---	34	30%	Q-05
Surr: 4-Bromofluorobenzene (Sur)		Recovery:		127 %		Limits:		50-150 %		Dilution:		1x
1,4-Difluorobenzene (Sur)				103 %				50-150 %				"

Apex Laboratories

Darwin Thomas, Business Development Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020181 - EPA 5035A						Soil						
Blank (0020181-BLK1)			Prepared: 02/06/20 09:00 Analyzed: 02/06/20 13:30									
5035A/8260C												
Acetone	ND	333	667	ug/kg wet	50	---	---	---	---	---	---	
Acrylonitrile	ND	33.3	66.7	ug/kg wet	50	---	---	---	---	---	---	
Benzene	ND	3.33	6.67	ug/kg wet	50	---	---	---	---	---	---	
Bromobenzene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Bromochloromethane	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Bromodichloromethane	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Bromoform	ND	33.3	66.7	ug/kg wet	50	---	---	---	---	---	---	
Bromomethane	ND	333	333	ug/kg wet	50	---	---	---	---	---	---	
2-Butanone (MEK)	ND	167	333	ug/kg wet	50	---	---	---	---	---	---	
n-Butylbenzene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
sec-Butylbenzene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
tert-Butylbenzene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Carbon disulfide	ND	167	333	ug/kg wet	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Chlorobenzene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Chloroethane	ND	167	333	ug/kg wet	50	---	---	---	---	---	---	
Chloroform	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Chloromethane	ND	83.3	167	ug/kg wet	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Dibromochloromethane	ND	33.3	66.7	ug/kg wet	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	83.3	167	ug/kg wet	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Dibromomethane	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	33.3	66.7	ug/kg wet	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020181 - EPA 5035A						Soil						
Blank (0020181-BLK1)		Prepared: 02/06/20 09:00 Analyzed: 02/06/20 13:30										
1,2-Dichloropropane	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
2,2-Dichloropropane	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Ethylbenzene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	33.3	66.7	ug/kg wet	50	---	---	---	---	---	---	
2-Hexanone	ND	167	333	ug/kg wet	50	---	---	---	---	---	---	
Isopropylbenzene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
4-Isopropyltoluene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Methylene chloride	ND	167	333	ug/kg wet	50	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	167	333	ug/kg wet	50	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Naphthalene	ND	33.3	66.7	ug/kg wet	50	---	---	---	---	---	---	
n-Propylbenzene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Styrene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Toluene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	83.3	167	ug/kg wet	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	83.3	167	ug/kg wet	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	33.3	66.7	ug/kg wet	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
Vinyl chloride	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
m,p-Xylene	ND	16.7	33.3	ug/kg wet	50	---	---	---	---	---	---	
o-Xylene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr)

Recovery: 103 %

Limits: 80-120 %

Dilution: 1x

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020181 - EPA 5035A						Soil						
Blank (0020181-BLK1)			Prepared: 02/06/20 09:00 Analyzed: 02/06/20 13:30									
Surr: Toluene-d8 (Surr)		Recovery: 100 %		Limits: 80-120 %		Dilution: 1x						
4-Bromofluorobenzene (Surr)		100 %		80-120 %		"						
LCS (0020181-BS1)			Prepared: 02/06/20 09:00 Analyzed: 02/06/20 12:35									
5035A/8260C												
Acetone	1820	500	1000	ug/kg wet	50	2000	---	91	80-120%	---	---	
Acrylonitrile	1100	50.0	100	ug/kg wet	50	1000	---	110	80-120%	---	---	
Benzene	1110	5.00	10.0	ug/kg wet	50	1000	---	111	80-120%	---	---	
Bromobenzene	1030	12.5	25.0	ug/kg wet	50	1000	---	103	80-120%	---	---	
Bromochloromethane	1170	25.0	50.0	ug/kg wet	50	1000	---	117	80-120%	---	---	
Bromodichloromethane	1220	25.0	50.0	ug/kg wet	50	1000	---	122	80-120%	---	---	Q-56
Bromoform	1130	50.0	100	ug/kg wet	50	1000	---	113	80-120%	---	---	
Bromomethane	938	500	500	ug/kg wet	50	1000	---	94	80-120%	---	---	
2-Butanone (MEK)	2160	250	500	ug/kg wet	50	2000	---	108	80-120%	---	---	
n-Butylbenzene	1060	25.0	50.0	ug/kg wet	50	1000	---	106	80-120%	---	---	
sec-Butylbenzene	1040	25.0	50.0	ug/kg wet	50	1000	---	104	80-120%	---	---	
tert-Butylbenzene	1080	25.0	50.0	ug/kg wet	50	1000	---	108	80-120%	---	---	
Carbon disulfide	964	250	500	ug/kg wet	50	1000	---	96	80-120%	---	---	
Carbon tetrachloride	1040	25.0	50.0	ug/kg wet	50	1000	---	104	80-120%	---	---	
Chlorobenzene	977	12.5	25.0	ug/kg wet	50	1000	---	98	80-120%	---	---	
Chloroethane	1680	250	500	ug/kg wet	50	1000	---	168	80-120%	---	---	Q-56
Chloroform	1180	25.0	50.0	ug/kg wet	50	1000	---	118	80-120%	---	---	
Chloromethane	934	125	250	ug/kg wet	50	1000	---	93	80-120%	---	---	
2-Chlorotoluene	1040	25.0	50.0	ug/kg wet	50	1000	---	104	80-120%	---	---	
4-Chlorotoluene	1100	25.0	50.0	ug/kg wet	50	1000	---	110	80-120%	---	---	
Dibromochloromethane	1160	50.0	100	ug/kg wet	50	1000	---	116	80-120%	---	---	
1,2-Dibromo-3-chloropropane	987	125	250	ug/kg wet	50	1000	---	99	80-120%	---	---	
1,2-Dibromoethane (EDB)	1070	25.0	50.0	ug/kg wet	50	1000	---	107	80-120%	---	---	
Dibromomethane	1100	25.0	50.0	ug/kg wet	50	1000	---	110	80-120%	---	---	
1,2-Dichlorobenzene	1070	12.5	25.0	ug/kg wet	50	1000	---	107	80-120%	---	---	
1,3-Dichlorobenzene	1020	12.5	25.0	ug/kg wet	50	1000	---	102	80-120%	---	---	
1,4-Dichlorobenzene	970	12.5	25.0	ug/kg wet	50	1000	---	97	80-120%	---	---	
Dichlorodifluoromethane	926	50.0	100	ug/kg wet	50	1000	---	93	80-120%	---	---	
1,1-Dichloroethane	1060	12.5	25.0	ug/kg wet	50	1000	---	106	80-120%	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020181 - EPA 5035A						Soil						
LCS (0020181-BS1)			Prepared: 02/06/20 09:00		Analyzed: 02/06/20 12:35							
1,2-Dichloroethane (EDC)	1140	12.5	25.0	ug/kg wet	50	1000	---	114	80-120%	---	---	
1,1-Dichloroethene	1030	12.5	25.0	ug/kg wet	50	1000	---	103	80-120%	---	---	
cis-1,2-Dichloroethene	1100	12.5	25.0	ug/kg wet	50	1000	---	110	80-120%	---	---	
trans-1,2-Dichloroethene	1100	12.5	25.0	ug/kg wet	50	1000	---	110	80-120%	---	---	
1,2-Dichloropropane	1190	12.5	25.0	ug/kg wet	50	1000	---	119	80-120%	---	---	
1,3-Dichloropropane	1060	25.0	50.0	ug/kg wet	50	1000	---	106	80-120%	---	---	
2,2-Dichloropropane	1240	25.0	50.0	ug/kg wet	50	1000	---	124	80-120%	---	---	Q-56
1,1-Dichloropropene	1080	25.0	50.0	ug/kg wet	50	1000	---	108	80-120%	---	---	
cis-1,3-Dichloropropene	1120	25.0	50.0	ug/kg wet	50	1000	---	112	80-120%	---	---	
trans-1,3-Dichloropropene	1170	25.0	50.0	ug/kg wet	50	1000	---	117	80-120%	---	---	
Ethylbenzene	1040	12.5	25.0	ug/kg wet	50	1000	---	104	80-120%	---	---	
Hexachlorobutadiene	974	50.0	100	ug/kg wet	50	1000	---	97	80-120%	---	---	
2-Hexanone	2120	250	500	ug/kg wet	50	2000	---	106	80-120%	---	---	
Isopropylbenzene	1010	25.0	50.0	ug/kg wet	50	1000	---	101	80-120%	---	---	
4-Isopropyltoluene	1030	25.0	50.0	ug/kg wet	50	1000	---	103	80-120%	---	---	
Methylene chloride	944	250	500	ug/kg wet	50	1000	---	94	80-120%	---	---	
4-Methyl-2-pentanone (MiBK)	2360	250	500	ug/kg wet	50	2000	---	118	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	1160	25.0	50.0	ug/kg wet	50	1000	---	116	80-120%	---	---	
Naphthalene	945	50.0	100	ug/kg wet	50	1000	---	95	80-120%	---	---	
n-Propylbenzene	1040	12.5	25.0	ug/kg wet	50	1000	---	104	80-120%	---	---	
Styrene	964	25.0	50.0	ug/kg wet	50	1000	---	96	80-120%	---	---	
1,1,1,2-Tetrachloroethane	1090	12.5	25.0	ug/kg wet	50	1000	---	109	80-120%	---	---	
1,1,2,2-Tetrachloroethane	1150	25.0	50.0	ug/kg wet	50	1000	---	115	80-120%	---	---	
Tetrachloroethene (PCE)	931	12.5	25.0	ug/kg wet	50	1000	---	93	80-120%	---	---	
Toluene	983	25.0	50.0	ug/kg wet	50	1000	---	98	80-120%	---	---	
1,2,3-Trichlorobenzene	916	125	250	ug/kg wet	50	1000	---	92	80-120%	---	---	
1,2,4-Trichlorobenzene	901	125	250	ug/kg wet	50	1000	---	90	80-120%	---	---	
1,1,1-Trichloroethane	1090	12.5	25.0	ug/kg wet	50	1000	---	109	80-120%	---	---	
1,1,2-Trichloroethane	1090	12.5	25.0	ug/kg wet	50	1000	---	109	80-120%	---	---	
Trichloroethene (TCE)	974	12.5	25.0	ug/kg wet	50	1000	---	97	80-120%	---	---	
Trichlorofluoromethane	1440	50.0	100	ug/kg wet	50	1000	---	144	80-120%	---	---	Q-56
1,2,3-Trichloropropane	1090	25.0	50.0	ug/kg wet	50	1000	---	109	80-120%	---	---	
1,2,4-Trimethylbenzene	976	25.0	50.0	ug/kg wet	50	1000	---	98	80-120%	---	---	
1,3,5-Trimethylbenzene	1040	25.0	50.0	ug/kg wet	50	1000	---	104	80-120%	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020181 - EPA 5035A						Soil						
LCS (0020181-BS1)			Prepared: 02/06/20 09:00		Analyzed: 02/06/20 12:35							
Vinyl chloride	817	12.5	25.0	ug/kg wet	50	1000	---	82	80-120%	---	---	
m,p-Xylene	2050	25.0	50.0	ug/kg wet	50	2000	---	102	80-120%	---	---	
o-Xylene	1050	12.5	25.0	ug/kg wet	50	1000	---	105	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 101 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		99 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		98 %		80-120 %		"						

Duplicate (0020181-DUP1)

Prepared: 02/04/20 14:30 Analyzed: 02/06/20 16:41

QC Source Sample: Non-SDG (A0B0087-01)

Acetone	ND	5320	5320	ug/kg dry	50	---	ND	---	---	---	30%
Acrylonitrile	ND	204	409	ug/kg dry	50	---	ND	---	---	---	30%
Benzene	ND	20.4	40.9	ug/kg dry	50	---	ND	---	---	---	30%
Bromobenzene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%
Bromochloromethane	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
Bromodichloromethane	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
Bromoform	ND	204	409	ug/kg dry	50	---	ND	---	---	---	30%
Bromomethane	ND	2040	2040	ug/kg dry	50	---	ND	---	---	---	30%
2-Butanone (MEK)	ND	1020	2040	ug/kg dry	50	---	ND	---	---	---	30%
n-Butylbenzene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
sec-Butylbenzene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
tert-Butylbenzene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
Carbon disulfide	ND	1020	2040	ug/kg dry	50	---	ND	---	---	---	30%
Carbon tetrachloride	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
Chlorobenzene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%
Chloroethane	ND	1020	2040	ug/kg dry	50	---	ND	---	---	---	30%
Chloroform	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
Chloromethane	ND	511	1020	ug/kg dry	50	---	ND	---	---	---	30%
2-Chlorotoluene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
4-Chlorotoluene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
Dibromochloromethane	ND	204	409	ug/kg dry	50	---	ND	---	---	---	30%
1,2-Dibromo-3-chloropropane	ND	511	1020	ug/kg dry	50	---	ND	---	---	---	30%
1,2-Dibromoethane (EDB)	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
Dibromomethane	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%
1,2-Dichlorobenzene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020181 - EPA 5035A						Soil						
Duplicate (0020181-DUP1)			Prepared: 02/04/20 14:30 Analyzed: 02/06/20 16:41									
QC Source Sample: Non-SDG (A0B0087-01)												
1,3-Dichlorobenzene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	204	409	ug/kg dry	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
Ethylbenzene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	204	409	ug/kg dry	50	---	ND	---	---	---	30%	
2-Hexanone	ND	1020	2040	ug/kg dry	50	---	ND	---	---	---	30%	
Isopropylbenzene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
4-Isopropyltoluene	1070	102	204	ug/kg dry	50	---	720	---	---	39	30%	Q-04
Methylene chloride	ND	1020	2040	ug/kg dry	50	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	1020	2040	ug/kg dry	50	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
Naphthalene	ND	204	409	ug/kg dry	50	---	ND	---	---	---	30%	
n-Propylbenzene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
Styrene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
Toluene	112	102	204	ug/kg dry	50	---	ND	---	---		30%	Q-05, J
1,2,3-Trichlorobenzene	ND	511	1020	ug/kg dry	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	511	1020	ug/kg dry	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020181 - EPA 5035A						Soil						
Duplicate (0020181-DUP1)			Prepared: 02/04/20 14:30 Analyzed: 02/06/20 16:41									
QC Source Sample: Non-SDG (A0B0087-01)												
Trichloroethene (TCE)	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	204	409	ug/kg dry	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
Vinyl chloride	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
m,p-Xylene	ND	102	204	ug/kg dry	50	---	ND	---	---	---	30%	
o-Xylene	ND	51.1	102	ug/kg dry	50	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 103 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		99 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		101 %		80-120 %		"						
Matrix Spike (0020181-MS1)			Prepared: 02/04/20 14:25 Analyzed: 02/06/20 21:12									
QC Source Sample: STS-020420-17to24 (A0B0096-03)												
5035A/8260C												
Acetone	2880	666	1330	ug/kg dry	50	2670	ND	108	36-164%	---	---	
Acrylonitrile	1600	66.6	133	ug/kg dry	50	1330	ND	120	65-134%	---	---	
Benzene	1530	6.66	13.3	ug/kg dry	50	1330	ND	115	77-121%	---	---	
Bromobenzene	1410	16.7	33.3	ug/kg dry	50	1330	ND	105	78-121%	---	---	
Bromochloromethane	1610	33.3	66.6	ug/kg dry	50	1330	ND	121	78-125%	---	---	
Bromodichloromethane	1680	33.3	66.6	ug/kg dry	50	1330	ND	126	75-127%	---	---	Q-54
Bromoform	1440	66.6	133	ug/kg dry	50	1330	ND	108	67-132%	---	---	
Bromomethane	1210	666	666	ug/kg dry	50	1330	ND	91	53-143%	---	---	
2-Butanone (MEK)	3050	333	666	ug/kg dry	50	2670	ND	114	51-148%	---	---	
n-Butylbenzene	1470	33.3	66.6	ug/kg dry	50	1330	ND	110	70-128%	---	---	
sec-Butylbenzene	1400	33.3	66.6	ug/kg dry	50	1330	ND	105	73-126%	---	---	
tert-Butylbenzene	1440	33.3	66.6	ug/kg dry	50	1330	ND	108	73-125%	---	---	
Carbon disulfide	1260	333	666	ug/kg dry	50	1330	ND	95	63-132%	---	---	
Carbon tetrachloride	1360	33.3	66.6	ug/kg dry	50	1330	ND	102	70-135%	---	---	
Chlorobenzene	1280	16.7	33.3	ug/kg dry	50	1330	ND	96	79-120%	---	---	
Chloroethane	2930	333	666	ug/kg dry	50	1330	ND	220	59-139%	---	---	Q-54c
Chloroform	1600	33.3	66.6	ug/kg dry	50	1330	ND	120	78-123%	---	---	
Chloromethane	1260	167	333	ug/kg dry	50	1330	ND	95	50-136%	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020181 - EPA 5035A						Soil						
Matrix Spike (0020181-MS1)			Prepared: 02/04/20 14:25 Analyzed: 02/06/20 21:12									
QC Source Sample: STS-020420-17to24 (A0B0096-03)												
2-Chlorotoluene	1420	33.3	66.6	ug/kg dry	50	1330	ND	107	75-122%	---	---	
4-Chlorotoluene	1480	33.3	66.6	ug/kg dry	50	1330	ND	111	72-124%	---	---	
Dibromochloromethane	1530	66.6	133	ug/kg dry	50	1330	ND	115	74-126%	---	---	
1,2-Dibromo-3-chloropropane	1360	167	333	ug/kg dry	50	1330	ND	102	61-132%	---	---	
1,2-Dibromoethane (EDB)	1490	33.3	66.6	ug/kg dry	50	1330	ND	112	78-122%	---	---	
Dibromomethane	1520	33.3	66.6	ug/kg dry	50	1330	ND	114	78-125%	---	---	
1,2-Dichlorobenzene	1400	16.7	33.3	ug/kg dry	50	1330	ND	105	78-121%	---	---	
1,3-Dichlorobenzene	1380	16.7	33.3	ug/kg dry	50	1330	ND	103	77-121%	---	---	
1,4-Dichlorobenzene	1280	16.7	33.3	ug/kg dry	50	1330	ND	96	75-120%	---	---	
Dichlorodifluoromethane	1230	66.6	133	ug/kg dry	50	1330	ND	92	29-149%	---	---	
1,1-Dichloroethane	1560	16.7	33.3	ug/kg dry	50	1330	ND	117	76-125%	---	---	
1,2-Dichloroethane (EDC)	1530	16.7	33.3	ug/kg dry	50	1330	ND	115	73-128%	---	---	
1,1-Dichloroethene	1350	16.7	33.3	ug/kg dry	50	1330	ND	101	70-131%	---	---	
cis-1,2-Dichloroethene	1600	16.7	33.3	ug/kg dry	50	1330	ND	120	77-123%	---	---	
trans-1,2-Dichloroethene	1500	16.7	33.3	ug/kg dry	50	1330	ND	113	74-125%	---	---	
1,2-Dichloropropane	1680	16.7	33.3	ug/kg dry	50	1330	ND	126	76-123%	---	---	Q-01
1,3-Dichloropropane	1470	33.3	66.6	ug/kg dry	50	1330	ND	110	77-121%	---	---	
2,2-Dichloropropane	1440	33.3	66.6	ug/kg dry	50	1330	ND	108	67-133%	---	---	Q-54b
1,1-Dichloropropene	1490	33.3	66.6	ug/kg dry	50	1330	ND	111	76-125%	---	---	
cis-1,3-Dichloropropene	1540	33.3	66.6	ug/kg dry	50	1330	ND	116	74-126%	---	---	
trans-1,3-Dichloropropene	1530	33.3	66.6	ug/kg dry	50	1330	ND	115	71-130%	---	---	
Ethylbenzene	1360	16.7	33.3	ug/kg dry	50	1330	ND	102	76-122%	---	---	
Hexachlorobutadiene	1560	66.6	133	ug/kg dry	50	1330	ND	117	61-135%	---	---	
2-Hexanone	2910	333	666	ug/kg dry	50	2670	ND	109	53-145%	---	---	
Isopropylbenzene	1350	33.3	66.6	ug/kg dry	50	1330	ND	101	68-134%	---	---	
4-Isopropyltoluene	1400	33.3	66.6	ug/kg dry	50	1330	ND	105	73-127%	---	---	
Methylene chloride	1300	333	666	ug/kg dry	50	1330	ND	97	70-128%	---	---	
4-Methyl-2-pentanone (MiBK)	3290	333	666	ug/kg dry	50	2670	ND	123	65-135%	---	---	
Methyl tert-butyl ether (MTBE)	1640	33.3	66.6	ug/kg dry	50	1330	ND	123	73-125%	---	---	
Naphthalene	2060	66.6	133	ug/kg dry	50	1330	606	109	62-129%	---	---	
n-Propylbenzene	1380	16.7	33.3	ug/kg dry	50	1330	ND	104	73-125%	---	---	
Styrene	1340	33.3	66.6	ug/kg dry	50	1330	ND	100	76-124%	---	---	
1,1,1,2-Tetrachloroethane	1420	16.7	33.3	ug/kg dry	50	1330	ND	107	78-125%	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Volatile Organic Compounds by EPA 5035A/8260C**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020181 - EPA 5035A							Soil					
Matrix Spike (0020181-MS1)				Prepared: 02/04/20 14:25 Analyzed: 02/06/20 21:12								
QC Source Sample: STS-020420-17to24 (A0B0096-03)												
1,1,2,2-Tetrachloroethane	1480	33.3	66.6	ug/kg dry	50	1330	ND	111	70-124%	---	---	Q-54a
Tetrachloroethene (PCE)	1180	16.7	33.3	ug/kg dry	50	1330	ND	88	73-128%	---	---	
Toluene	1270	33.3	66.6	ug/kg dry	50	1330	ND	96	77-121%	---	---	
1,2,3-Trichlorobenzene	1340	167	333	ug/kg dry	50	1330	ND	101	66-130%	---	---	
1,2,4-Trichlorobenzene	1350	167	333	ug/kg dry	50	1330	ND	101	67-129%	---	---	
1,1,1-Trichloroethane	1440	16.7	33.3	ug/kg dry	50	1330	ND	108	73-130%	---	---	
1,1,2-Trichloroethane	1460	16.7	33.3	ug/kg dry	50	1330	ND	110	78-121%	---	---	
Trichloroethene (TCE)	1360	16.7	33.3	ug/kg dry	50	1330	ND	102	77-123%	---	---	
Trichlorofluoromethane	2310	66.6	133	ug/kg dry	50	1330	ND	173	62-140%	---	---	
1,2,3-Trichloropropane	1350	33.3	66.6	ug/kg dry	50	1330	ND	101	73-125%	---	---	
1,2,4-Trimethylbenzene	1290	33.3	66.6	ug/kg dry	50	1330	ND	97	75-123%	---	---	
1,3,5-Trimethylbenzene	1380	33.3	66.6	ug/kg dry	50	1330	ND	104	73-124%	---	---	
Vinyl chloride	1100	16.7	33.3	ug/kg dry	50	1330	ND	82	56-135%	---	---	
m,p-Xylene	2700	33.3	66.6	ug/kg dry	50	2670	ND	101	77-124%	---	---	
o-Xylene	1440	16.7	33.3	ug/kg dry	50	1330	ND	108	77-123%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 104 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		97 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		104 %		80-120 %		"						

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

Page 34 of 56

NWN-PCI0778402

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Semivolatile Organic Compounds by EPA 8270D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020150 - EPA 3546						Soil						
Blank (0020150-BLK1)			Prepared: 02/05/20 13:08 Analyzed: 02/05/20 18:47									
EPA 8270D												
Acenaphthene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Acenaphthylene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Anthracene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Benz(a)anthracene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	---	3.75	ug/kg wet	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	---	3.75	ug/kg wet	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	---	3.75	ug/kg wet	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Chrysene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Fluoranthene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Fluorene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
1-Methylnaphthalene	ND	---	5.00	ug/kg wet	1	---	---	---	---	---	---	
2-Methylnaphthalene	ND	---	5.00	ug/kg wet	1	---	---	---	---	---	---	
Naphthalene	ND	---	5.00	ug/kg wet	1	---	---	---	---	---	---	
Phenanthrene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Pyrene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Carbazole	ND	---	3.75	ug/kg wet	1	---	---	---	---	---	---	
Dibenzofuran	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
4-Chloro-3-methylphenol	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
2-Chlorophenol	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	
2,4-Dichlorophenol	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	
2,4-Dinitrophenol	ND	---	62.5	ug/kg wet	1	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	ND	---	62.5	ug/kg wet	1	---	---	---	---	---	---	
2-Methylphenol	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
3+4-Methylphenol(s)	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
2-Nitrophenol	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
4-Nitrophenol	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
Phenol	ND	---	5.00	ug/kg wet	1	---	---	---	---	---	---	
2,3,4,6-Tetrachlorophenol	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Semivolatile Organic Compounds by EPA 8270D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020150 - EPA 3546						Soil						
Blank (0020150-BLK1)			Prepared: 02/05/20 13:08		Analyzed: 02/05/20 18:47							
2,3,5,6-Tetrachlorophenol	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	B-02
2,4,5-Trichlorophenol	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	
2,4,6-Trichlorophenol	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	---	37.5	ug/kg wet	1	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
Diethylphthalate	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
Dimethylphthalate	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
Di-n-butylphthalate	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
N-Nitrosodimethylamine	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
N-Nitroso-di-n-propylamine	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
N-Nitrosodiphenylamine	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
Bis(2-Chloroethoxy) methane	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
Bis(2-Chloroethyl) ether	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
2,2'-Oxybis(1-Chloropropane)	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
Hexachlorobenzene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
Hexachlorocyclopentadiene	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	
Hexachloroethane	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
2-Chloronaphthalene	ND	---	2.50	ug/kg wet	1	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
4-Bromophenyl phenyl ether	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
4-Chlorophenyl phenyl ether	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
Aniline	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	
4-Chloroaniline	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
2-Nitroaniline	ND	---	50.0	ug/kg wet	1	---	---	---	---	---	---	
3-Nitroaniline	ND	---	50.0	ug/kg wet	1	---	---	---	---	---	---	
4-Nitroaniline	ND	---	50.0	ug/kg wet	1	---	---	---	---	---	---	
Nitrobenzene	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
2,4-Dinitrotoluene	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	
2,6-Dinitrotoluene	ND	---	25.0	ug/kg wet	1	---	---	---	---	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Semivolatile Organic Compounds by EPA 8270D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020150 - EPA 3546						Soil						
Blank (0020150-BLK1)			Prepared: 02/05/20 13:08 Analyzed: 02/05/20 18:47									
Benzoic acid	ND	---	312	ug/kg wet	1	---	---	---	---	---	---	
Benzyl alcohol	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	
Isophorone	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
Azobenzene (1,2-DPH)	ND	---	6.25	ug/kg wet	1	---	---	---	---	---	---	
Bis(2-Ethylhexyl) adipate	ND	---	62.5	ug/kg wet	1	---	---	---	---	---	---	
3,3'-Dichlorobenzidine	ND	---	50.0	ug/kg wet	1	---	---	---	---	---	---	Q-52
1,2-Dinitrobenzene	ND	---	62.5	ug/kg wet	1	---	---	---	---	---	---	
1,3-Dinitrobenzene	ND	---	62.5	ug/kg wet	1	---	---	---	---	---	---	
1,4-Dinitrobenzene	ND	---	62.5	ug/kg wet	1	---	---	---	---	---	---	
Pyridine	ND	---	12.5	ug/kg wet	1	---	---	---	---	---	---	
Surr: Nitrobenzene-d5 (Surr)		Recovery: 86 %		Limits: 37-122 %		Dilution: 1x						
2-Fluorobiphenyl (Surr)		81 %		44-115 %		"						
Phenol-d6 (Surr)		85 %		33-122 %		"						
p-Terphenyl-d14 (Surr)		103 %		54-127 %		"						
2-Fluorophenol (Surr)		81 %		35-115 %		"						
2,4,6-Tribromophenol (Surr)		66 %		39-132 %		"						

LCS (0020150-BS1)			Prepared: 02/05/20 13:08 Analyzed: 02/05/20 19:25						Q-18			
EPA 8270D												
Acenaphthene	448	---	2.67	ug/kg wet	1	533	---	84	40-122%	---	---	
Acenaphthylene	487	---	2.67	ug/kg wet	1	533	---	91	32-132%	---	---	
Anthracene	510	---	2.67	ug/kg wet	1	533	---	96	47-123%	---	---	
Benz(a)anthracene	504	---	2.67	ug/kg wet	1	533	---	94	49-126%	---	---	
Benzo(a)pyrene	501	---	4.00	ug/kg wet	1	533	---	94	45-129%	---	---	
Benzo(b)fluoranthene	505	---	4.00	ug/kg wet	1	533	---	95	45-132%	---	---	
Benzo(k)fluoranthene	492	---	4.00	ug/kg wet	1	533	---	92	47-132%	---	---	
Benzo(g,h,i)perylene	518	---	2.67	ug/kg wet	1	533	---	97	43-134%	---	---	
Chrysene	484	---	2.67	ug/kg wet	1	533	---	91	50-124%	---	---	
Dibenz(a,h)anthracene	506	---	2.67	ug/kg wet	1	533	---	95	45-134%	---	---	
Fluoranthene	546	---	2.67	ug/kg wet	1	533	---	102	50-127%	---	---	
Fluorene	495	---	2.67	ug/kg wet	1	533	---	93	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	494	---	2.67	ug/kg wet	1	533	---	93	45-133%	---	---	
1-Methylnaphthalene	473	---	5.33	ug/kg wet	1	533	---	89	40-120%	---	---	
2-Methylnaphthalene	475	---	5.33	ug/kg wet	1	533	---	89	38-122%	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Semivolatile Organic Compounds by EPA 8270D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020150 - EPA 3546						Soil						
LCS (0020150-BS1)						Prepared: 02/05/20 13:08 Analyzed: 02/05/20 19:25						Q-18
Naphthalene	437	---	5.33	ug/kg wet	1	533	---	82	35-123%	---	---	
Phenanthrene	460	---	2.67	ug/kg wet	1	533	---	86	50-121%	---	---	
Pyrene	529	---	2.67	ug/kg wet	1	533	---	99	47-127%	---	---	
Carbazole	523	---	4.00	ug/kg wet	1	533	---	98	50-122%	---	---	
Dibenzofuran	479	---	2.67	ug/kg wet	1	533	---	90	44-120%	---	---	
4-Chloro-3-methylphenol	541	---	26.7	ug/kg wet	1	533	---	101	45-122%	---	---	
2-Chlorophenol	505	---	13.3	ug/kg wet	1	533	---	95	34-121%	---	---	
2,4-Dichlorophenol	489	---	13.3	ug/kg wet	1	533	---	92	40-122%	---	---	
2,4-Dimethylphenol	520	---	13.3	ug/kg wet	1	533	---	97	30-127%	---	---	
2,4-Dinitrophenol	383	---	66.7	ug/kg wet	1	533	---	72	5-137%	---	---	
4,6-Dinitro-2-methylphenol	489	---	66.7	ug/kg wet	1	533	---	92	29-132%	---	---	
2-Methylphenol	549	---	6.67	ug/kg wet	1	533	---	103	32-122%	---	---	
3+4-Methylphenol(s)	522	---	6.67	ug/kg wet	1	533	---	98	34-120%	---	---	
2-Nitrophenol	458	---	26.7	ug/kg wet	1	533	---	86	36-123%	---	---	
4-Nitrophenol	575	---	26.7	ug/kg wet	1	533	---	108	30-132%	---	---	
Pentachlorophenol (PCP)	517	---	26.7	ug/kg wet	1	533	---	97	25-133%	---	---	
Phenol	501	---	5.33	ug/kg wet	1	533	---	94	34-120%	---	---	
2,3,4,6-Tetrachlorophenol	551	---	13.3	ug/kg wet	1	533	---	103	44-125%	---	---	
2,3,5,6-Tetrachlorophenol	527	---	13.3	ug/kg wet	1	533	---	99	40-120%	---	---	
2,4,5-Trichlorophenol	529	---	13.3	ug/kg wet	1	533	---	99	41-124%	---	---	
2,4,6-Trichlorophenol	488	---	13.3	ug/kg wet	1	533	---	91	39-126%	---	---	
Bis(2-ethylhexyl)phthalate	512	---	40.0	ug/kg wet	1	533	---	96	51-133%	---	---	B-02
Butyl benzyl phthalate	516	---	26.7	ug/kg wet	1	533	---	97	48-132%	---	---	
Diethylphthalate	540	---	26.7	ug/kg wet	1	533	---	101	50-124%	---	---	
Dimethylphthalate	517	---	26.7	ug/kg wet	1	533	---	97	48-124%	---	---	
Di-n-butylphthalate	511	---	26.7	ug/kg wet	1	533	---	96	51-128%	---	---	
Di-n-octyl phthalate	560	---	26.7	ug/kg wet	1	533	---	105	44-140%	---	---	
N-Nitrosodimethylamine	473	---	6.67	ug/kg wet	1	533	---	89	23-120%	---	---	
N-Nitroso-di-n-propylamine	556	---	6.67	ug/kg wet	1	533	---	104	36-120%	---	---	
N-Nitrosodiphenylamine	475	---	6.67	ug/kg wet	1	533	---	89	38-127%	---	---	
Bis(2-Chloroethoxy) methane	463	---	6.67	ug/kg wet	1	533	---	87	36-121%	---	---	
Bis(2-Chloroethyl) ether	457	---	6.67	ug/kg wet	1	533	---	86	31-120%	---	---	
2,2'-Oxybis(1-Chloropropane)	457	---	6.67	ug/kg wet	1	533	---	86	33-131%	---	---	
Hexachlorobenzene	455	---	2.67	ug/kg wet	1	533	---	85	44-122%	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Semivolatile Organic Compounds by EPA 8270D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020150 - EPA 3546						Soil						
LCS (0020150-BS1)						Prepared: 02/05/20 13:08 Analyzed: 02/05/20 19:25						Q-18
Hexachlorobutadiene	427	---	6.67	ug/kg wet	1	533	---	80	32-123%	---	---	Q-31
Hexachlorocyclopentadiene	405	---	13.3	ug/kg wet	1	533	---	76	5-140%	---	---	
Hexachloroethane	445	---	6.67	ug/kg wet	1	533	---	84	28-120%	---	---	
2-Chloronaphthalene	442	---	2.67	ug/kg wet	1	533	---	83	41-120%	---	---	
1,2-Dichlorobenzene	439	---	6.67	ug/kg wet	1	533	---	82	33-120%	---	---	
1,3-Dichlorobenzene	429	---	6.67	ug/kg wet	1	533	---	81	30-120%	---	---	
1,4-Dichlorobenzene	432	---	6.67	ug/kg wet	1	533	---	81	31-120%	---	---	
1,2,4-Trichlorobenzene	431	---	6.67	ug/kg wet	1	533	---	81	34-120%	---	---	
4-Bromophenyl phenyl ether	495	---	6.67	ug/kg wet	1	533	---	93	46-124%	---	---	
4-Chlorophenyl phenyl ether	504	---	6.67	ug/kg wet	1	533	---	95	45-121%	---	---	
Aniline	486	---	13.3	ug/kg wet	1	533	---	91	7-120%	---	---	
4-Chloroaniline	362	---	6.67	ug/kg wet	1	533	---	68	16-120%	---	---	
2-Nitroaniline	520	---	53.3	ug/kg wet	1	533	---	98	44-127%	---	---	
3-Nitroaniline	407	---	53.3	ug/kg wet	1	533	---	76	33-120%	---	---	
4-Nitroaniline	627	---	53.3	ug/kg wet	1	533	---	117	35-120%	---	---	
Nitrobenzene	498	---	26.7	ug/kg wet	1	533	---	93	34-122%	---	---	
2,4-Dinitrotoluene	543	---	26.7	ug/kg wet	1	533	---	102	48-126%	---	---	
2,6-Dinitrotoluene	507	---	26.7	ug/kg wet	1	533	---	95	46-124%	---	---	
Benzoic acid	142	---	100	ug/kg wet	1	1070	---	13	5-140%	---	---	
Benzyl alcohol	508	---	13.3	ug/kg wet	1	533	---	95	29-122%	---	---	
Isophorone	479	---	6.67	ug/kg wet	1	533	---	90	30-122%	---	---	
Azobenzene (1,2-DPH)	464	---	6.67	ug/kg wet	1	533	---	87	39-125%	---	---	
Bis(2-Ethylhexyl) adipate	517	---	66.7	ug/kg wet	1	533	---	97	60-121%	---	---	
3,3'-Dichlorobenzidine	1050	---	53.3	ug/kg wet	1	1070	---	98	22-121%	---	---	
1,2-Dinitrobenzene	523	---	66.7	ug/kg wet	1	533	---	98	44-120%	---	---	
1,3-Dinitrobenzene	530	---	66.7	ug/kg wet	1	533	---	99	42-127%	---	---	
1,4-Dinitrobenzene	527	---	66.7	ug/kg wet	1	533	---	99	37-132%	---	---	
Pyridine	414	---	13.3	ug/kg wet	1	533	---	78	5-120%	---	---	
<i>Surr: Nitrobenzene-d5 (Surr) Recovery: 97 % Limits: 37-122 % Dilution: 1x</i>												
<i>2-Fluorobiphenyl (Surr) 85 % 44-115 % "</i>												
<i>Phenol-d6 (Surr) 98 % 33-122 % "</i>												
<i>p-Terphenyl-d14 (Surr) 103 % 54-127 % "</i>												
<i>2-Fluorophenol (Surr) 93 % 35-115 % "</i>												
<i>2,4,6-Tribromophenol (Surr) 102 % 39-132 % "</i>												

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125

Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:**

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS**Semivolatile Organic Compounds by EPA 8270D**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020150 - EPA 3546						Soil						
Duplicate (0020150-DUP1)			Prepared: 02/05/20 13:08 Analyzed: 02/05/20 20:37									
QC Source Sample: Non-SDG (A0B0051-01)												
Acenaphthene	ND	---	382	ug/kg dry	100	---	213	---	---	***	30%	
Acenaphthylene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
Anthracene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
Benz(a)anthracene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
Benzo(a)pyrene	ND	---	572	ug/kg dry	100	---	ND	---	---	---	30%	
Benzo(b)fluoranthene	ND	---	572	ug/kg dry	100	---	ND	---	---	---	30%	
Benzo(k)fluoranthene	ND	---	572	ug/kg dry	100	---	ND	---	---	---	30%	
Benzo(g,h,i)perylene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
Chrysene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
Dibenz(a,h)anthracene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
Fluoranthene	ND	---	382	ug/kg dry	100	---	208	---	---	***	30%	Q-17
Fluorene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
1-Methylnaphthalene	ND	---	762	ug/kg dry	100	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	---	762	ug/kg dry	100	---	ND	---	---	---	30%	
Naphthalene	ND	---	762	ug/kg dry	100	---	982	---	---	***	30%	
Phenanthrene	ND	---	382	ug/kg dry	100	---	397	---	---	***	30%	
Pyrene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
Carbazole	ND	---	572	ug/kg dry	100	---	ND	---	---	---	30%	
Dibenzofuran	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
4-Chloro-3-methylphenol	ND	---	3820	ug/kg dry	100	---	ND	---	---	---	30%	
2-Chlorophenol	ND	---	1900	ug/kg dry	100	---	ND	---	---	---	30%	
2,4-Dichlorophenol	ND	---	1900	ug/kg dry	100	---	ND	---	---	---	30%	
2,4-Dimethylphenol	ND	---	1900	ug/kg dry	100	---	ND	---	---	---	30%	
2,4-Dinitrophenol	ND	---	9530	ug/kg dry	100	---	ND	---	---	---	30%	
4,6-Dinitro-2-methylphenol	ND	---	9530	ug/kg dry	100	---	ND	---	---	---	30%	
2-Methylphenol	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
3+4-Methylphenol(s)	4940	---	953	ug/kg dry	100	---	6210	---	---	23	30%	
2-Nitrophenol	ND	---	3820	ug/kg dry	100	---	ND	---	---	---	30%	
4-Nitrophenol	ND	---	3820	ug/kg dry	100	---	ND	---	---	---	30%	
Pentachlorophenol (PCP)	ND	---	3820	ug/kg dry	100	---	2330	---	---	***	30%	
Phenol	1630	---	762	ug/kg dry	100	---	2400	---	---	38	30%	Q-17

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020150 - EPA 3546						Soil						
Duplicate (0020150-DUP1)			Prepared: 02/05/20 13:08 Analyzed: 02/05/20 20:37									
QC Source Sample: Non-SDG (A0B0051-01)												
2,3,4,6-Tetrachlorophenol	ND	---	1900	ug/kg dry	100	---	ND	---	---	---	30%	Q-17
2,3,5,6-Tetrachlorophenol	ND	---	1900	ug/kg dry	100	---	954	---	---	***	30%	
2,4,5-Trichlorophenol	ND	---	1900	ug/kg dry	100	---	ND	---	---	---	30%	
2,4,6-Trichlorophenol	ND	---	1900	ug/kg dry	100	---	ND	---	---	---	30%	
Bis(2-ethylhexyl)phthalate	ND	---	5720	ug/kg dry	100	---	ND	---	---	---	30%	
Butyl benzyl phthalate	ND	---	3820	ug/kg dry	100	---	2170	---	---	***	30%	
Diethylphthalate	ND	---	3820	ug/kg dry	100	---	ND	---	---	---	30%	
Dimethylphthalate	ND	---	3820	ug/kg dry	100	---	ND	---	---	---	30%	
Di-n-butylphthalate	ND	---	3820	ug/kg dry	100	---	ND	---	---	---	30%	
Di-n-octyl phthalate	ND	---	3820	ug/kg dry	100	---	ND	---	---	---	30%	
N-Nitrosodimethylamine	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
N-Nitroso-di-n-propylamine	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
N-Nitrosodiphenylamine	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
Bis(2-Chloroethoxy) methane	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
Bis(2-Chloroethyl) ether	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
2,2'-Oxybis(1-Chloropropane)	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
Hexachlorobenzene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
Hexachlorocyclopentadiene	ND	---	1900	ug/kg dry	100	---	ND	---	---	---	30%	
Hexachloroethane	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
2-Chloronaphthalene	ND	---	382	ug/kg dry	100	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
4-Bromophenyl phenyl ether	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
4-Chlorophenyl phenyl ether	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
Aniline	ND	---	1900	ug/kg dry	100	---	ND	---	---	---	30%	
4-Chloroaniline	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
2-Nitroaniline	ND	---	7620	ug/kg dry	100	---	ND	---	---	---	30%	
3-Nitroaniline	ND	---	7620	ug/kg dry	100	---	ND	---	---	---	30%	
4-Nitroaniline	ND	---	7620	ug/kg dry	100	---	ND	---	---	---	30%	
Nitrobenzene	ND	---	3820	ug/kg dry	100	---	ND	---	---	---	30%	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020150 - EPA 3546						Soil						
Duplicate (0020150-DUP1)			Prepared: 02/05/20 13:08 Analyzed: 02/05/20 20:37									
QC Source Sample: Non-SDG (A0B0051-01)												
2,4-Dinitrotoluene	ND	---	3820	ug/kg dry	100	---	ND	---	---	---	30%	Q-52
2,6-Dinitrotoluene	ND	---	3820	ug/kg dry	100	---	ND	---	---	---	30%	
Benzoic acid	ND	---	47600	ug/kg dry	100	---	ND	---	---	---	30%	
Benzyl alcohol	ND	---	1900	ug/kg dry	100	---	ND	---	---	---	30%	
Isophorone	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
Azobenzene (1,2-DPH)	ND	---	953	ug/kg dry	100	---	ND	---	---	---	30%	
Bis(2-Ethylhexyl) adipate	ND	---	9530	ug/kg dry	100	---	ND	---	---	---	30%	
3,3'-Dichlorobenzidine	ND	---	7620	ug/kg dry	100	---	ND	---	---	---	30%	
1,2-Dinitrobenzene	ND	---	9530	ug/kg dry	100	---	ND	---	---	---	30%	
1,3-Dinitrobenzene	ND	---	9530	ug/kg dry	100	---	ND	---	---	---	30%	
1,4-Dinitrobenzene	ND	---	9530	ug/kg dry	100	---	ND	---	---	---	30%	
Pyridine	ND	---	1900	ug/kg dry	100	---	ND	---	---	---	30%	
Surr: Nitrobenzene-d5 (Surr)		Recovery: 60 %		Limits: 37-122 %		Dilution: 100x		S-05				
2-Fluorobiphenyl (Surr)		59 %		44-115 %		"		S-05				
Phenol-d6 (Surr)		57 %		33-122 %		"		S-05				
p-Terphenyl-d14 (Surr)		62 %		54-127 %		"		S-05				
2-Fluorophenol (Surr)		50 %		35-115 %		"		S-05				
2,4,6-Tribromophenol (Surr)		201 %		39-132 %		"		S-05				

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020164 - EPA 3051A												
Soil												
Blank (0020164-BLK1)												
Prepared: 02/05/20 15:32 Analyzed: 02/06/20 01:36												
EPA 6020A												
Arsenic	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Barium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Cadmium	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
Chromium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Lead	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
Mercury	ND	0.0385	0.0769	mg/kg wet	10	---	---	---	---	---	---	
Selenium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Silver	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
LCS (0020164-BS1)												
Prepared: 02/05/20 15:32 Analyzed: 02/06/20 01:41												
EPA 6020A												
Arsenic	48.4	0.500	1.00	mg/kg wet	10	50.0	---	97	80-120%	---	---	
Barium	49.8	0.500	1.00	mg/kg wet	10	50.0	---	100	80-120%	---	---	
Cadmium	48.0	0.100	0.200	mg/kg wet	10	50.0	---	96	80-120%	---	---	
Chromium	47.7	0.500	1.00	mg/kg wet	10	50.0	---	95	80-120%	---	---	
Lead	51.1	0.100	0.200	mg/kg wet	10	50.0	---	102	80-120%	---	---	
Mercury	0.983	0.0400	0.0800	mg/kg wet	10	1.00	---	98	80-120%	---	---	
Selenium	24.0	0.500	1.00	mg/kg wet	10	25.0	---	96	80-120%	---	---	
Silver	26.0	0.100	0.200	mg/kg wet	10	25.0	---	104	80-120%	---	---	
Duplicate (0020164-DUP1)												
Prepared: 02/05/20 15:32 Analyzed: 02/06/20 02:13												
QC Source Sample: STS-020420-17to24 (A0B0096-03)												
EPA 6020A												
Arsenic	3.93	0.642	1.28	mg/kg dry	10	---	3.81	---	---	3	40%	
Barium	91.6	0.642	1.28	mg/kg dry	10	---	72.9	---	---	23	40%	
Cadmium	0.191	0.128	0.257	mg/kg dry	10	---	0.162	---	---	16	40%	J
Chromium	18.3	0.642	1.28	mg/kg dry	10	---	27.6	---	---	41	40%	Q-04
Lead	16.8	0.128	0.257	mg/kg dry	10	---	22.5	---	---	29	40%	
Mercury	ND	0.0514	0.103	mg/kg dry	10	---	ND	---	---	---	40%	
Selenium	ND	0.642	1.28	mg/kg dry	10	---	ND	---	---	---	40%	
Silver	ND	0.128	0.257	mg/kg dry	10	---	ND	---	---	---	40%	

Matrix Spike (0020164-MS1)

Prepared: 02/05/20 15:32 Analyzed: 02/06/20 02:18

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020A (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020164 - EPA 3051A							Soil					
Matrix Spike (0020164-MS1)			Prepared: 02/05/20 15:32 Analyzed: 02/06/20 02:18									
QC Source Sample: STS-020420-17to24 (A0B0096-03)												
EPA 6020A												
Arsenic	66.4	0.678	1.36	mg/kg dry	10	67.8	3.81	92	75-125%	---	---	
Barium	140	0.678	1.36	mg/kg dry	10	67.8	72.9	99	75-125%	---	---	
Cadmium	63.2	0.136	0.271	mg/kg dry	10	67.8	0.162	93	75-125%	---	---	
Chromium	88.7	0.678	1.36	mg/kg dry	10	67.8	27.6	90	75-125%	---	---	
Lead	84.3	0.136	0.271	mg/kg dry	10	67.8	22.5	91	75-125%	---	---	
Mercury	1.30	0.0543	0.109	mg/kg dry	10	1.36	ND	96	75-125%	---	---	
Selenium	31.4	0.678	1.36	mg/kg dry	10	33.9	ND	93	75-125%	---	---	
Silver	33.8	0.136	0.271	mg/kg dry	10	33.9	ND	100	75-125%	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Cyanide by UV Digestion/Gas Diffusion/Amperometric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020173 - ASTM D7511-12mod (S)						Soil						
Blank (0020173-BLK1)			Prepared: 02/06/20 07:31		Analyzed: 02/06/20 10:57							
D7511-12												
Total Cyanide	ND	0.0500	0.100	mg/kg wet	1	---	---	---	---	---	---	
LCS (0020173-BS1)			Prepared: 02/06/20 07:31		Analyzed: 02/06/20 10:59							
D7511-12												
Total Cyanide	0.398	0.0500	0.100	mg/kg wet	1	0.400	---	99	84-116%	---	---	
Matrix Spike (0020173-MS2)			Prepared: 02/06/20 07:31		Analyzed: 02/06/20 11:37							
QC Source Sample: STS-020420-1to8 (A0B0096-01)												
D7511-12												
Total Cyanide	0.574	0.0652	0.130	mg/kg dry	1	0.521	0.401	33	64-136%	---	---	Q-02, Q-16
Matrix Spike Dup (0020173-MSD2)			Prepared: 02/06/20 07:31		Analyzed: 02/06/20 11:39							
QC Source Sample: STS-020420-1to8 (A0B0096-01)												
D7511-12												
Total Cyanide	0.630	0.0660	0.132	mg/kg dry	1	0.528	0.401	43	64-136%	9	47%	Q-02, Q-16

Apex Laboratories

Darwin Thomas, Business Development Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020297 - Paint Filter							Sediment					
Duplicate (0020297-DUP1)			Prepared: 02/10/20 15:16 Analyzed: 02/10/20 15:21									
QC Source Sample: STS-020420-1to8 (A0B0096-01)												
EPA 9095B												
Free Liquid	ND	---	0.00	mL	1	---	ND	---	---	---	20%	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020168 - Total Solids (Dry Weight)							Soil					
Duplicate (0020168-DUP1)			Prepared: 02/05/20 18:19 Analyzed: 02/06/20 07:50									
QC Source Sample: Non-SDG (A0A1031-01)												
% Solids	67.2	---	1.00	%	1	---	70.4	---	---	5	10%	
Duplicate (0020168-DUP2)			Prepared: 02/05/20 18:19 Analyzed: 02/06/20 07:50									
QC Source Sample: Non-SDG (A0A1042-05)												
% Solids	90.5	---	1.00	%	1	---	89.7	---	---	0.8	10%	
Duplicate (0020168-DUP3)			Prepared: 02/05/20 18:19 Analyzed: 02/06/20 07:50									
QC Source Sample: Non-SDG (A0B0062-04)												
% Solids	86.3	---	1.00	%	1	---	86.4	---	---	0.2	10%	
Duplicate (0020168-DUP4)			Prepared: 02/05/20 18:19 Analyzed: 02/06/20 07:50									
QC Source Sample: Non-SDG (A0B0126-02)												
% Solids	76.5	---	1.00	%	1	---	77.0	---	---	0.6	10%	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

Apex Laboratories

Darwin Thomas, Business Development Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****QUALITY CONTROL (QC) SAMPLE RESULTS****Percent Dry Weight**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020175 - Total Solids (Dry Weight)							Soil					
Duplicate (0020175-DUP1)			Prepared: 02/06/20 07:52 Analyzed: 02/07/20 09:18									
<u>QC Source Sample: Non-SDG (A0B0027-02)</u>												
% Solids	85.5	---	1.00	%	1	---	86.1	---	---	0.6	10%	
Duplicate (0020175-DUP2)			Prepared: 02/06/20 07:52 Analyzed: 02/07/20 09:18									
<u>QC Source Sample: Non-SDG (A0B0062-13)</u>												
% Solids	86.9	---	1.00	%	1	---	87.1	---	---	0.2	10%	
Duplicate (0020175-DUP3)			Prepared: 02/06/20 07:52 Analyzed: 02/07/20 09:18									
<u>QC Source Sample: Non-SDG (A0B0131-12)</u>												
% Solids	82.5	---	1.00	%	1	---	83.3	---	---	0.9	10%	
Duplicate (0020175-DUP4)			Prepared: 02/06/20 17:24 Analyzed: 02/07/20 09:18									
<u>QC Source Sample: Non-SDG (A0B0136-01)</u>												
% Solids	72.4	---	1.00	%	1	---	72.6	---	---	0.3	10%	
Duplicate (0020175-DUP5)			Prepared: 02/06/20 17:24 Analyzed: 02/07/20 09:18									
<u>QC Source Sample: Non-SDG (A0B0179-02)</u>												
% Solids	77.7	---	1.00	%	1	---	77.8	---	---	0.2	10%	
Duplicate (0020175-DUP6)			Prepared: 02/06/20 18:01 Analyzed: 02/07/20 09:18									
<u>QC Source Sample: Non-SDG (A0B0186-02)</u>												
% Solids	77.9	---	1.00	%	1	---	77.5	---	---	0.4	10%	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director

**Apex Laboratories, LLC**

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**Project Number: **00029-02.65 T-07.706B**Project Manager: **John Renda****Report ID:****A0B0096 - 02 26 20 1419****SAMPLE PREPARATION INFORMATION****Diesel and/or Oil Hydrocarbons by NWTPH-Dx****Prep: EPA 3546 (Fuels)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 0020146							
A0B0096-01	Soil	NWTPH-Dx	02/04/20 13:40	02/05/20 12:47	10.62g/5mL	10g/5mL	0.94
A0B0096-02	Soil	NWTPH-Dx	02/04/20 14:00	02/05/20 12:47	10.65g/5mL	10g/5mL	0.94
A0B0096-03	Soil	NWTPH-Dx	02/04/20 14:25	02/05/20 12:47	10.73g/5mL	10g/5mL	0.93

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx**Prep: EPA 5035A**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 0020181							
A0B0096-01	Soil	NWTPH-Gx (MS)	02/04/20 13:40	02/04/20 13:40	6.26g/5mL	5g/5mL	0.80
A0B0096-02	Soil	NWTPH-Gx (MS)	02/04/20 14:00	02/04/20 14:00	6.24g/5mL	5g/5mL	0.80
A0B0096-03	Soil	NWTPH-Gx (MS)	02/04/20 14:25	02/04/20 14:25	6.41g/5mL	5g/5mL	0.78

Volatile Organic Compounds by EPA 5035A/8260C**Prep: EPA 5035A**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 0020181							
A0B0096-01	Soil	5035A/8260C	02/04/20 13:40	02/04/20 13:40	6.26g/5mL	5g/5mL	0.80
A0B0096-02	Soil	5035A/8260C	02/04/20 14:00	02/04/20 14:00	6.24g/5mL	5g/5mL	0.80
A0B0096-03	Soil	5035A/8260C	02/04/20 14:25	02/04/20 14:25	6.41g/5mL	5g/5mL	0.78

Semivolatile Organic Compounds by EPA 8270D**Prep: EPA 3546**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 0020150							
A0B0096-01	Soil	EPA 8270D	02/04/20 13:40	02/05/20 13:08	15.69g/2mL	15g/2mL	0.96
A0B0096-02	Soil	EPA 8270D	02/04/20 14:00	02/05/20 13:08	15.76g/2mL	15g/2mL	0.95
A0B0096-03	Soil	EPA 8270D	02/04/20 14:25	02/05/20 13:08	15.5g/2mL	15g/2mL	0.97

Total Metals by EPA 6020A (ICPMS)**Prep: EPA 3051A**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 0020164							

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- B-02** Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
- F-24** The chromatographic pattern does not resemble the fuel standard used for quantitation. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.
- J** Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
- M-05** Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- Q-01** Spike recovery and/or RPD is outside acceptance limits.
- Q-02** Spike recovery is outside of established control limits due to matrix interference.
- Q-04** Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-17** RPD between original and duplicate sample is outside of established control limits.
- Q-18** Matrix Spike results for this extraction batch are not reported due to the high dilution necessary for analysis of the source sample.
- Q-31** Estimated Results. Recovery of Continuing Calibration Verification sample below lower control limit for this analyte. Results are likely biased low.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- Q-52** Due to erratic or low blank spike recoveries, results for this analyte are considered Estimated Values.
- Q-54** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +2%. The results are reported as Estimated Values.
- Q-54a** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +24%. The results are reported as Estimated Values.
- Q-54b** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +4%. The results are reported as Estimated Values.
- Q-54c** Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +48%. The results are reported as Estimated Values.
- Q-56** Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260C
- S-05** Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

DET Analyte DETECTED at or above the detection or reporting limit.
ND Analyte NOT DETECTED at or above the detection or reporting limit.
NR Result Not Reported
RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.

"dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.

"wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.

" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
--------	----------	--------	---------	--------	---------------

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.

Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darwin Thomas, Business Development Director



Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125

Portland, OR 97219

Project: Gasco - Siltronic Topsoil

Project Number: 00029-02.65 T-07.706B

Project Manager: John Renda

Report ID:

A0B0096 - 02 26 20 1419

CHAIN OF CUSTODY

APEX LABS

6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Lab # A0B0096 COC 1 of 1

Company: Anchor OEA	Project Mgr: John Renda	Project Name: Gasco - Siltronic Top Soil	Project #: 00029-02.65
Address: 6720 SW Macadam FZS, Portland	Phone: 503-600-1108	Email: jrenda@anchoroea.com	PO # T-07.706B
Sampled by: Dory Laffoon	ANALYSIS REQUEST		
Site Location: (OR) WA CA AK ID			
SAMPLE ID	LAB ID #	DATE	TIME
STS-02-420-14.8	2/4/20	1340	S
STS-02-420-17.16	1400	S	4
STS-02-420-17.22	1425	S	4
# OF CONTAINERS			
MATRIX			
NWTPH-HCID			
NWTPH-DX			
NWTPH-GX			
8260 BTEX			
8260 RUDM VOCs			
8260 Halo VOCs			
8260 VOCs Full List			
8270 SIM PAHs			
8270 Semi-Vols Full List			
8082 PCBs			
8081 Pest			
RCRA Metals (8)			
Priority Metals (13)			
Al, Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Se, Ag, Na, Ti, V, Zn			
TOTAL DISS. TCLP			
TCLP Metals (8)			
Free Liquids			
Total Cyanide			
Archive			

SPECIAL INSTRUCTIONS:
Copy to T. Stone & D. Laffoon

TAT Requested (circle)
1 Day 2 Day 3 Day 4 DAY 5 DAY Other: As Soon As Possible

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: <u>Casey Montgomery</u> Date: <u>2/5/20</u> Printed Name: <u>Casey Montgomery</u> Company: <u>Anchor OEA</u>	RECEIVED BY: Signature: <u>Dory Laffoon</u> Date: <u>2/5/20</u> Printed Name: <u>Dory Laffoon</u> Company: <u>Apex</u>
RELINQUISHED BY: Signature: <u>Casey Montgomery</u> Date: <u>2/5/20</u> Printed Name: <u>Casey Montgomery</u> Company: <u>Anchor OEA</u>	RECEIVED BY: Signature: <u>Dory Laffoon</u> Date: <u>2/5/20</u> Printed Name: <u>Dory Laffoon</u> Company: <u>Apex</u>

Apex Laboratories

Darwin Thomas

Darwin Thomas, Business Development Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Anchor OEA, LLC

6720 SW Macadam Ave. Suite 125
Portland, OR 97219

Project: **Gasco - Siltronic Topsoil**

Project Number: **00029-02.65 T-07.706B**

Project Manager: **John Renda**

Report ID:

A0B0096 - 02 26 20 1419

APEX LABS COOLER RECEIPT FORM

Client: Anchor OEA Element WO#: A0 B0096

Project/Project #: Gasco - Siltronic Top Soil / 00029-02.65 T-07.706B

Delivery Info:

Date/time received: 2/5/20 @ 823 By: RL

Delivered by: Apex ☒ Client ☐ ESS ☐ FedEx ☐ UPS ☐ Swift ☐ Senvoy ☐ SDS ☐ Other ☐

Cooler Inspection Date/time inspected: 2/5/20 @ 911 By: (SL)

Chain of Custody included? Yes ☒ No ☐ Custody seals? Yes ☐ No ☒

Signed/dated by client? Yes ☒ No ☐

Signed/dated by Apex? Yes ☒ No ☐

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>17</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>Y</u>						
Ice type: (Gel/Real/Other)	<u>real</u>						
Condition:	<u>good</u>						

Cooler out of temp? (Y/N) Possible reason why: (N)

If some coolers are in temp and some out, were green dots applied to out of temperature samples? Yes/No/NA

Out of temperature samples form initiated? Yes/No/NA

Samples Inspection: Date/time inspected: 2/5/20 @ 920 By: 80

All samples intact? Yes ☒ No ☐ Comments: _____

Bottle labels/COCs agree? Yes ☒ No ☐ Comments: _____

COC/container discrepancies form initiated? Yes ☐ No ☐ NA ☒

Containers/volumes received appropriate for analysis? Yes ☒ No ☐ Comments: _____

Do VOA vials have visible headspace? Yes ☐ No ☐ NA ☒

Comments: _____

Water samples: pH checked: Yes ☐ No ☐ NA ☒ pH appropriate? Yes ☐ No ☐ NA ☒

Comments: _____

Additional information: _____

Labeled by: (Signature) Witness: RLK Cooler Inspected by: (Signature) See Project Contact Form: Y

Apex Laboratories

(Signature)

Darwin Thomas, Business Development Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Attachment C

Waste Management, Inc., Disposal Profile

Requested Facility: Hillsboro, OR Landfill ☒ Unsure Profile Number: _____
☐ Multiple Generator Locations (Attach Locations) ☐ Request Certificate of Disposal ☐ Renewal? Original Profile Number: _____

A. GENERATOR INFORMATION (MATERIAL ORIGIN)

1. Generator Name: NW Natural - Gasco
2. Site Address: 7900 NW St. Helens Rd.
(City, State, ZIP) Portland, OR, 97210
3. County: Multnomah
4. Contact Name: Robert Wyatt
5. Email: rjw@nwnatural.com
6. Phone: (503)-860-3451 7. Fax: (503)-273-4815
8. Generator EPA ID: OR 0000204701 ☐ N/A
9. State ID: _____ ☒ N/A

C. MATERIAL INFORMATION

1. Common Name: Investigation Derived Waste (IDW)
Describe Process Generating Material: ☐ See Attached

IDW generated during spill of ruptured flange, clean up of affected soil, 24 55-gallon drums.

2. Material Composition and Contaminants: ☐ See Attached

1. Soil, gravel, organic debris (grass)	98-100%
2. Plastic, nitrile gloves, absorbant	0-2%
3.	
4.	
Total composition must be equal to or greater than 100% ≥100%	

3. State Waste Codes: _____ ☒ N/A
4. Color: Brown and gray
5. Physical State at 70°F: ☒ Solid ☐ Liquid ☐ Other: _____
6. Free Liquid Range Percentage: _____ to _____ ☒ N/A
7. pH: _____ to _____ ☒ N/A
8. Strong Odor: ☐ Yes ☒ No Describe: _____
9. Flash Point: ☐ <140°F ☐ 140°–199°F ☐ ≥200° ☒ N/A

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION

1. Analytical attached ☒ Yes
Please identify applicable samples and/or lab reports:

Apex Lab report A0B0096

2. Other information attached (such as MSDS)? ☐ Yes

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)

By signing this EZ Profile™ form, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 – Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e., changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): Robert Wyatt Date: 3/25/20
Title: Director of Legacy Environmental Program
Company: NW Natural

B. BILLING INFORMATION
☐ SAME AS GENERATOR

1. Billing Name: Terra Hydr, Inc.
2. Billing Address: 11670 SW Waldo Way
(City, State, ZIP) Sherwood, OR, 97140
3. Contact Name: Hank Stukey
4. Email: corporate@terrahydr.com
5. Phone: (503)-720-6590 6. Fax: _____
7. WM Hauled? ☐ Yes ☒ No
8. P.O. Number: _____
9. Payment Method: ☐ Credit Account ☐ Cash ☐ Credit Card

D. REGULATORY INFORMATION

1. EPA Hazardous Waste? ☐ Yes* ☒ No
Code: _____
2. State Hazardous Waste? ☐ Yes ☒ No
Code: _____
3. Is this material non-hazardous due to Treatment, Delisting, or an Exclusion? ☐ Yes* ☒ No
4. Contains Underlying Hazardous Constituents? ☐ Yes* ☒ No
5. Contains benzene and subject to Benzene NESHAP? ☐ Yes* ☒ No
6. Facility remediation subject to 40 CFR 63 GGGGG? ☐ Yes* ☒ No
7. CERCLA or State-mandated clean-up? ☒ Yes* ☐ No
8. NRC or State-regulated radioactive or NORM waste? ☐ Yes* ☒ No
***If Yes, see Addendum (page 2) for additional questions and space.**
9. Contains PCBs? → If Yes, answer a, b and c. ☐ Yes ☒ No
a. Regulated by 40 CFR 761? ☐ Yes ☐ No
b. Remediation under 40 CFR 761.61 (a)? ☐ Yes ☐ No
c. Were PCB imported into the US? ☐ Yes ☐ No
10. Regulated and/or Untreated Medical/Infectious Waste? ☐ Yes ☒ No
11. Contains Asbestos? ☐ Yes ☒ No
→ If Yes: ☐ Non-Friable ☐ Non-Friable – Regulated ☐ Friable

F. SHIPPING AND DOT INFORMATION

1. ☒ One-Time Event ☐ Repeat Event/Ongoing Business
2. Estimated Quantity/Unit of Measure: 24
☐ Tons ☐ Yards ☒ Drums ☐ Gallons ☐ Other: _____
3. Container Type and Size: Metal Drum, 55-gallon
4. USDOT Proper Shipping Name: ☒ N/A

Certification Signature

