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Shaping the Future

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REMEDIATION PROGRESS REPORT
First Quarter 2014

Phillips 66 Facility No. 255353
600 Westlake Avenue North
Seattle, Washington 98107

Submitted to:
Ed Ralston
Phillips 66 Company
Remediation Management
76 Broadway
Sacramento, California 95818

Submitted by:
Cardno
917 1st Avenue North, Suite 3
Billings, Montana 59101

Cardno ATC Job No. 76.75118.1396

July 2, 2014

Keith Fox Date: 2014.07.11 16:27:16 -06'00'

Keith Fox
Senior Project Engineer

Kyle Sattler
Senior Project Manager

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SITE INFORMATION

Cardno ATC Contact Person:	Kyle Sattler, Senior Project Manager
Department of Ecology Facility ID:	46445373
LUST Facility No.:	8463
Voluntary Cleanup Program No.	NW1714
Current Remediation Techniques:	Soil vapor extraction (SVE) and air sparging (AS)
Reporting Period:	12/27/13 through 3/31/14

REMEDIATION SYSTEM, UTILITIES, & PERMITS

Remediation Equipment:	SVE: Two Sutorbilt 10-HP blowers. AS: One Rietschle 10-HP compressor.
Utilities In Use:	Electrical Service, Seattle City Light, Meter # 849179
PSCAA Permit:	Registration No. 29548
KCIW Permit:	Discharge Authorization No. 4262-01

SVE SYSTEM OPERATIONAL DATA

Mercer-Westlake (Blower #B-701)		**Terry-Valley (Blower #B-801)**	
Hours Operated This Period:	2,056	Hours Operated This Period:	2,056
Percent Runtime This Period:	90.7%	Percent Runtime This Period:	90.7%
Cumulative Operating Hours:	2,056	Cumulative Operating Hours:	2,056
Cumulative Percent Runtime:	90.7%	Cumulative Percent Runtime:	90.7%

AS SYSTEM OPERATIONAL DATA

Hours Operated This Period:	2,054
Percent Runtime This Period:	90.6%
Cumulative Operating Hours:	2,054
Cumulative Percent Runtime:	90.6%

ESTIMATED REMOVAL RATES

TPHg Removed This Period:	1,686.41 pounds
TPHg Removal Rate This Period:	0.69 pounds per hour, average for the period
TPHg Removal Rate Previous Period:	NA – System start up on 12/27/13
Cumulative TPHg Removed:	1,686.41 pounds

Benzene Removed This Period:	1.25 pounds	Ethylbenzene Removed This Period:	14.13 pounds
Cumulative Benzene Removed:	1.25 pounds	Cumulative Ethylbenzene Removed:	14.13 pounds
Toluene Removed This Period:	10.37 pounds	Xylenes Removed Rate This Period:	111.83 pounds
Cumulative Toluene Removed:	10.37 pounds	Cumulative Xylenes Removed:	111.83 pounds

Comments:

The (SVE) system consists of two blowers that extract soil vapors from a total of 36 vertical wells (19 in Mercer Street, 17 in Terry Avenue) and 16 horizontal wells (7 in Valley Street, 9 in Westlake Avenue). The AS system supplies compressed air to a total of 62 air sparge wells (27 in Mercer Street, 14 in Valley Street, 21 in Westlake Avenue). The locations of the SVE and AS wells are shown on Figure 1. The SVE blowers discharge vapors to an off-gas treatment system that uses GAC to reduce air emissions to permitted levels. Water from SVE moisture separators is also treated with GAC before discharging to the King County sewer system. The system layout is shown on Figure 2.

System start-up was completed on December 27, 2013. The entire system was offline intermittently during the period due to an error in the SVE VFD settings. The motor current rating for a thermal protection parameter was too low, causing the VFD for the Valley-Terry VFD to fault when the motor amperage spiked to move a slug of water. The control panel programming caused the single VFD fault to shut down the entire system. The issue was corrected on March 5, no similar faults have occurred since.

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Compliance samples per a PSCAA permit (Authorization #4262-01, Expiration: 6/30/2018) were collected on December 27, January 27, February 19, and March 10. Laboratory analytical reports are included in Appendix A, and results are summarized in Table 1. The locations of the sample ports are shown on Figure 2. Total petroleum hydrocarbon (TPH) concentrations at the inlets to the GAC vessels are below the permit threshold of 200 ppmv, above which control efficiency of 97% must be demonstrated. Control efficiency has been above 97% except for one occasion when breakthrough occurred prior to a carbon change. Carbon in four of the six off-gas treatment vessels was replaced on February 13. Documentation for the 4,000 pounds of spent GAC removed during the February change out and 3,000 pounds removed during a subsequent change out is included in Appendix B.

Compliance samples per the KCIW permit (Registration #429548) were collected on December 27, January 27, February 20, and March 10. Laboratory analytical reports are included in Appendix A, and results are summarized in Table 2. The locations of the sample ports are shown on Figure 2. All samples demonstrated compliance with permit limits. BTEX results were below detection limits, with the exception of toluene detected in the influent sample collected on January 27, 2014, ethylbenzene detected in the influent sample collected on February 20, 2014, and total xylenes detected in the influent samples collected on January 27 and February 20, 2014. TPHg was detected at 2,250 mg/L (2.25 ppm) in the effluent discharge sample collected January 27, 2014. A total of 12,763 gallons of treated water were discharged to the King County sewer system. A significant portion of the discharged water can be attributed to precipitation captured by the containment pad.

Steps taken to optimize the system during the quarter included increasing pressures and flowrates in all AS wells, adjusting SVE VFD settings for energy efficiency, and shutting off all SVE wells on Westlake Avenue on March 24 due to low hydrocarbon recovery rates. The air sparge system was initially programmed to run in 5-minute intervals at maximum well pressures of approximately 5 psi. On March 14, the air sparge was reprogrammed to operate on 10-minute intervals, and over the period the well pressure was increased to approximately 8 psi. While certain AS wells had low flow rates throughout the period, the number of AS wells surrounding the SVE wells prevents any single SVE wells from not being influenced by injected air. The average calculated removal rate for the period was 0.69 pounds TPHg per hour; total estimated TPHg removal was 1,686.41 pounds.

Recommendations:
Cardno recommends continued optimization through adjustments to the system, such as:

- Increasing AS zone pressures and flows to increase flows in under-producing wells.
- Shut off key AS and /or SVE wells to optimize removal rates.
- Shut off portions of the system to reduce energy consumption and “rest” segments to check for rebound.
- Collect pre-adjustment and post-adjustment PID data to gauge optimization success.

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Table 1: Vapor Phase Analytical Results Summary

Sample Location	Sample Date	Analytical Vapor Results (EPA Method TO-15 for VOCs) (µg/m3)					
		THCg	Benzene	Toluene	Ethylbenzene	m&p Xylenes	o-Xylenes
V1 Influent	01/27/14	77,100	ND<12.6	121	86	411	81.8
V1 Intermediate	01/27/14	54,100	ND<21.9	128	ND<59.3	ND<119	ND<59.3
V1 Effluent	01/27/14	30,500	ND<12.2	ND<12.3	ND<12.4	ND<12.5	ND<12.6
V1 Influent	02/19/14	158,000	84	598	1,370	9,450	2,150.0
V1 Intermediate	02/19/14	ND<2040	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6
V1 Effluent	02/19/14	7,800	ND<10.9	38	ND<29.6	ND<59.1	ND<29.6
V1 Influent	03/10/14	181,000	227	2,380	3,110	21,000	9,420.0
V1 Intermediate	03/10/14	4,560	ND<11.3	27.6	ND<30.6	ND<61.2	ND<30.6
V1 Effluent	03/10/14	8,660	ND<13.6	40	ND<37.0	ND<73.9	ND<37.0
V2 Influent	01/27/14	179,000	ND<13.1	750	1,110	5,390	1,530
V2 Intermediate	01/27/14	62,300	ND<11.3	34.5	ND<30.6	ND<61.2	ND<30.6
V2 Effluent	01/27/14	32,500	ND<12.6	39.5	ND<34.1	ND<68.3	ND<34.1
V2 Influent	02/19/14	153,000	88	432	1,030	4,540	1,600
V2 Intermediate	02/19/14	5,700	ND<10.9	30.7	ND<29.6	ND<59.1	ND<29.6
V2 Effluent	02/19/14	7,750	ND<10.9	31.4	ND<29.6	ND<59.1	ND<29.6
V2 Influent	03/10/14	219,000	214	2,230	2,910	19,000	5,800
V2 Intermediate	03/10/14	9,140	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6
V2 Effluent	03/10/14	6,320	ND<12.2	ND<28.8	ND<32.9	ND<65.8	ND<32.9
V3 Influent	01/27/14	261,000	184	1,680	2,440	9,530	3,590
V3 Intermediate	01/27/14	108,000	ND<13.6	39.5	ND<37.0	ND<73.9	ND<37.0
V3 Effluent	01/27/14	31,800	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6
V3 Influent	02/19/14	165,000	85	456	1,070	4,550	1,650
V3 Intermediate	02/19/14	2,640	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6
V3 Effluent	02/19/14	3,220	ND<10.9	34.1	ND<29.6	ND<59.1	ND<29.6
V3 Influent	03/10/14	209,000	204	2,110	2,830	18,400	5,550
V3 Intermediate	03/10/14	8,010	ND<10.8	27.3	ND<29.5	ND<59.0	ND<29.5
V3 Effluent	03/10/14	4,980	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6

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Notes:

There are three sets (or trains) of two vapor phase carbon units (for a total of six) used to treat extracted vapors. The two carbon units associated with each train are plumbed in series. Samples V1 Influent, V1 Intermediate, and V1 Effluent were collected from sample ports associated with the first train of vapor phase carbon units. Samples V2 Influent, V2 Intermediate, and V2 Effluent were collected from sample ports associated with the second train of vapor phase carbon units. Samples V3 Influent, V3 Intermediate, and V3 Effluent were collected from sample ports associated with the third train of vapor phase carbon units. The influent sample ports for each train are located prior to the first carbon units. The intermediate sample ports for each train are located between the first and second carbon units. The effluent sample ports for each train are located after the second (and last) carbon units. The sample port locations are shown on Figure 2.

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Table 2: Liquid Phase Analytical Results Summary

Sample Location	Sample Date	Work Order No.	Analytical Water Results (NWTPH-Gx/8021 for THCg and EPA Method 8260 for VOCs) (µg/L)				
			THCg	Benzene	Toluene	Ethylbenzene	Total Xylenes
W-DSCHG	12/27/13	10258424	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INT	12/27/13	10258424	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF	12/27/13	10258424	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	01/27/14	10258179	2,250	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	01/27/14	10258179	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	01/27/14	10258179	ND (<100)	ND (<1.0)	1.5	ND (<1.0)	8.6
W-DSCHG	02/20/14	10258485	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	02/20/14	10258485	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	02/20/14	10258485	ND (<100)	ND (<1.0)	ND (<1.0)	1.3	11.4
W-DSCHG	03/10/14	10260082	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	03/10/14	10260082	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	03/10/14	10260082	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)

Notes:
There are a total of two liquid phase carbon units plumbed in series to treat water. Samples W-INF and W-INF-WS1 were collected from a sample port located prior to the first liquid phase carbon unit. Samples W-INT and W-OUT-WC1 were collected from a sample port located between the first and second liquid phase carbon units. Samples W-DSCHG were collected from the sample port located after the second (and final) liquid phase carbon unit. The sample port locations are shown on Figure 2.

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ATTACHMENTS
Acronym List
Figure I – Site Layout Diagram
Figure 2 - Remediation System Layout
Remediation System Operational Data Summary
Cumulative TPHg and BTEX Removal Graph
SVE PID Data Summary
AS Flow Data Summary
O&M Log Field Notes
Appendix A- Laboratory Analytical Reports and Chain of Custody Documents
Appendix B- Carbon Change Documentation

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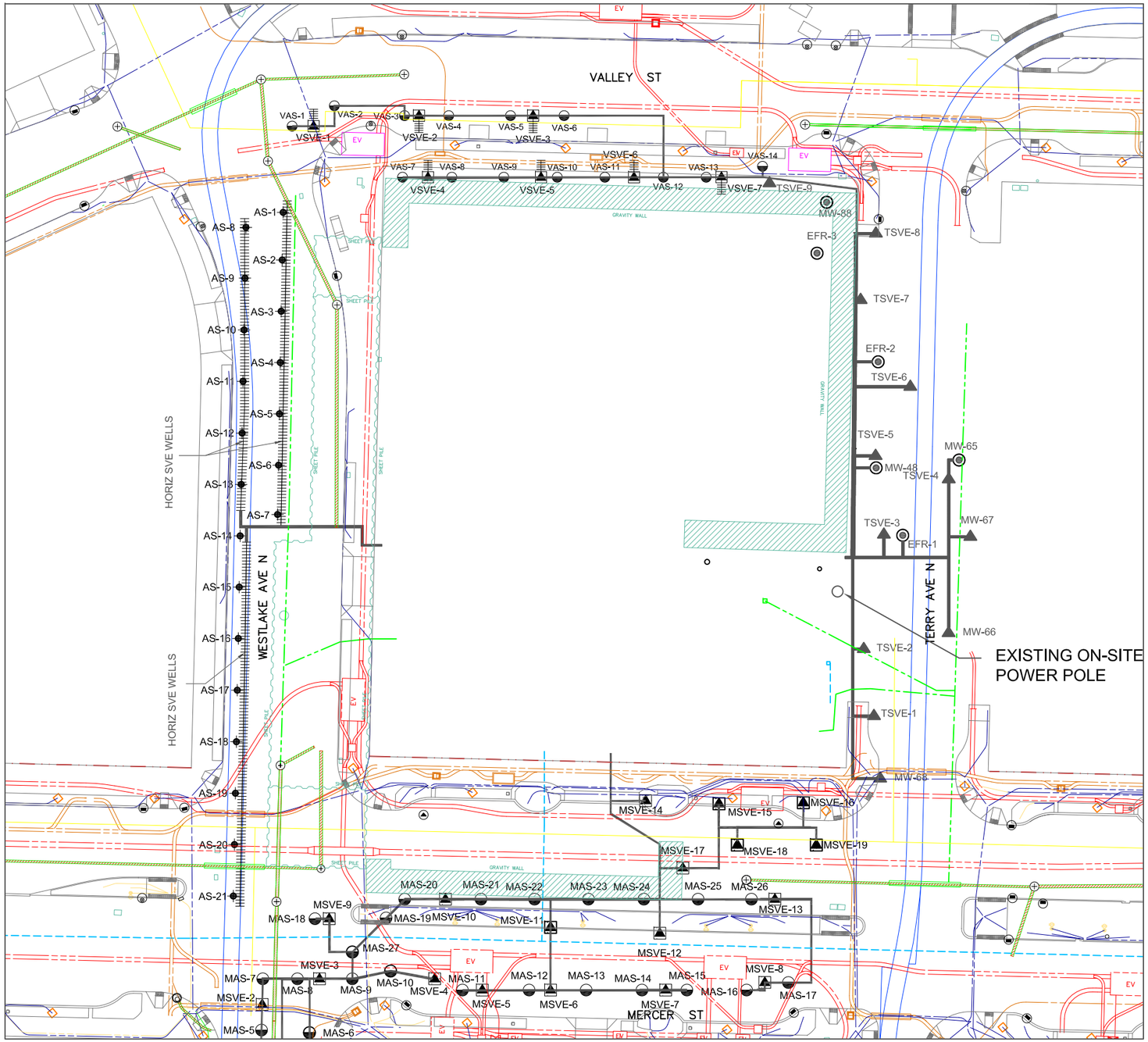
Acronym List

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

NOTES:

1. LOCATIONS OF SITE FEATURES CONSTRUCTED FOR THE P-66 REMEDIATION SYSTEM (REMEDIATION COMPOUND, ON-SITE TRENCHES, TERRY AVE. TRENCH EXTENSION) HAVE NOT BEEN SURVEYED AND ARE APPROXIMATE.

2. LOCATIONS OF ALL OTHER SITE AND AREA FEATURES ARE BASED ON PLANS SUPPLIED BY SDOT, AND HAVE NOT BEEN VERIFIED BY THE PROJECT ENGINEER.



LEGEND:

- LAMP POST LOCATION
- WATER LINE LOCATION
- PROPERTY LINES
- TRENCH ROUTES
- AS-1 — AIR SPARGE WELL ON WESTLAKE AVENUE
- HORIZONTAL SVE WELL
- TSVE-1 — SVE WELLS ON TERRY AVENUE
- MW-67 — MONITORING WELL
- EFR-1 — ENHANCED FLUID RECOVERY WELL
- MAS-1 — AS WELL ON MERCER
- MSVE-7 — SVE WELLS ON MERCER
- VAS-13 — VALLEY STREET AS WELL
- VSVE-7 — VALLEY STREET HORIZONTAL SVE WELL
- ELECTRICAL LINE LOCATION FOR STREET LIGHTS
- SANITARY/ STORM SEWER LOCATION
- STORM SEWER MANHOLE/CATCH BASIN LOCATION
- ELECTRICAL LINE LOCATION (SCL)
- COMMUNICATION LINE LOCATION
- GAS LINE LOCATION
- STREET CAR LINE LOCATION

APPROXIMATE SCALE

0 60 120 Feet

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SITE LAYOUT DIAGRAM

PHILLIPS 66 Facility No. 255353
600 Westlake Avenue North
Seattle, Washington

EXPLANATION:

- SHEET PILE LOCATION
- GRAVITY WALL LOCATION

PROJECT NO.
03132603

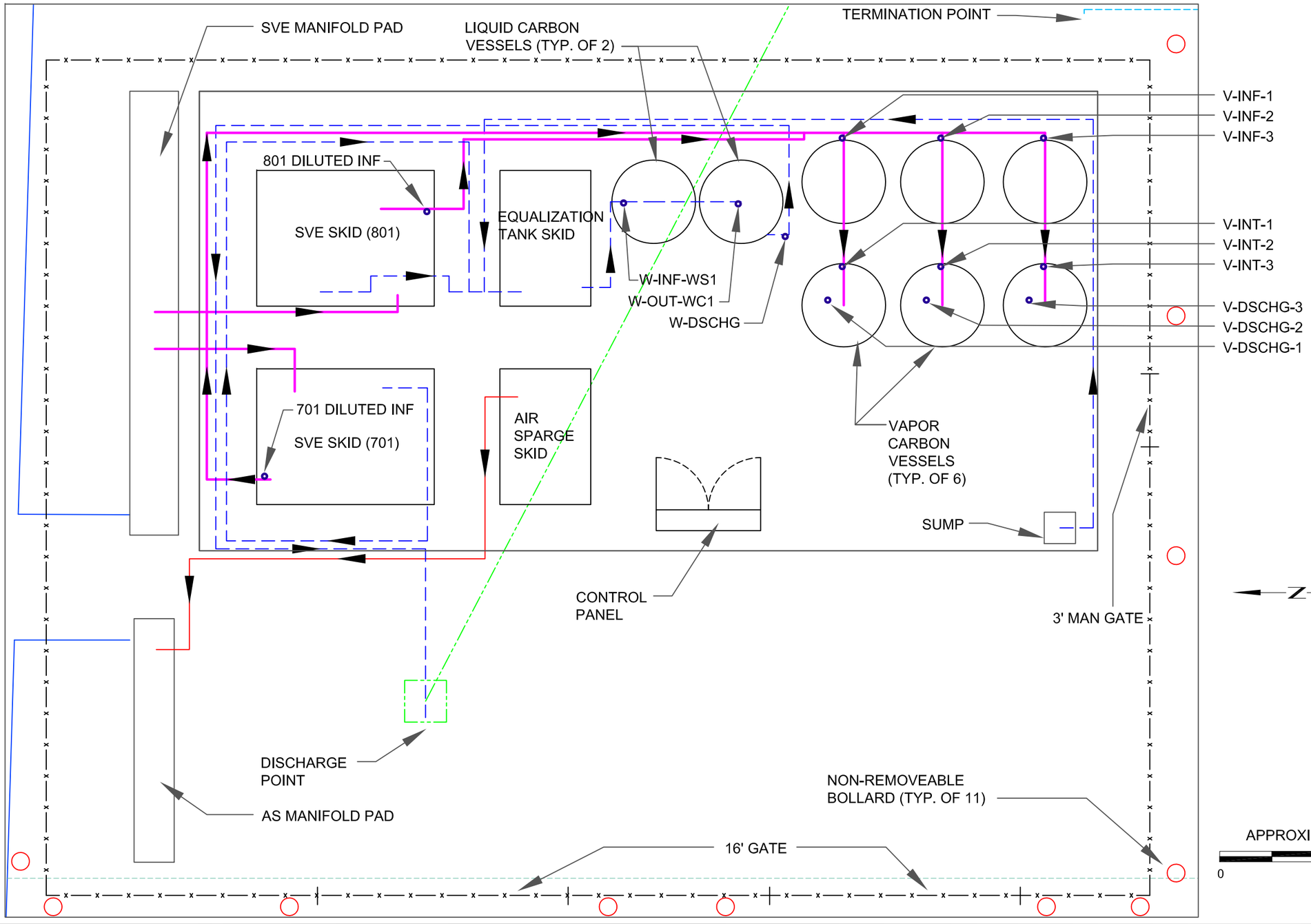
PLATE
1

EJB: 04/29/14

NOTES:

1. LOCATIONS OF SITE FEATURES CONSTRUCTED FOR THE P-66 REMEDIATION SYSTEM (REMEDIATION COMPOUND, ON-SITE TRENCHES) HAVE NOT BEEN SURVEYED AND ARE APPROXIMATE.

2. LOCATIONS OF ALL OTHER SITE AND AREA FEATURES ARE BASED ON PLANS SUPPLIED BY SDOT, AND HAVE NOT BEEN VERIFIED BY THE PROJECT ENGINEER.



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REMEDIATION SYSTEM LAYOUT

PHILLIPS 66 Facility No. 255353
600 Westlake Avenue North
Seattle, Washington

EXPLANATION:

- SVE TRENCHING
- APPROXIMATE SANITARY/ STORM SEWER LOCATION
- AIR SPARGE REMEDIATION PIPING
- COMPOUND FENCE LOCATION
- VAPOR REMEDIATION PIPING
- WATER REMEDIATION PIPING
- APPROXIMATE WATER UTILITIES LOCATION
- BOLLARD LOCATION

PROJECT NO.
03132603

FIGURE
2
EJB: 07/11/14

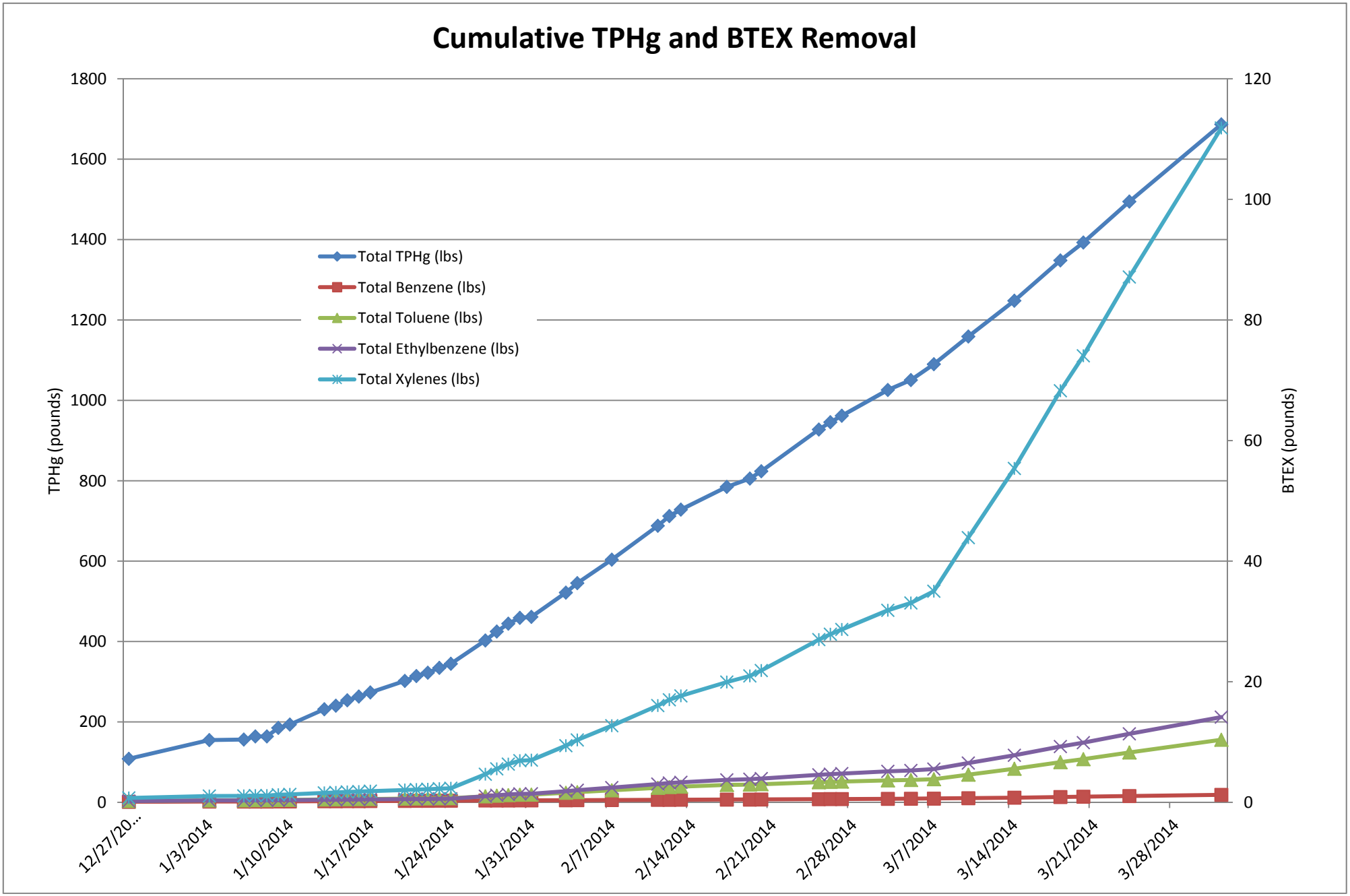
Remediation System Operational Data Summary
PHILLIPS 66 FACILITY #255353

	SVE System								AS System		Off-gas Treatment System									System Totals		
	Mercer-Westlake Wells				Valley-Terry Wells						VPC-1			VPC-2			VPC-3					
Date	Period Operating Hours	Wells On-line (count)	Applied Vaccum (in. H_2O)	Pre-dilution Discharge Conc. (ppm)	Period Operating Hours	Wells On-line (count)	Applied Vaccum (in. H_2O)	Pre-dilution Discharge Conc. (ppm)	Period Operating Hours	Applied Pressure (psi)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Estimated TPHg Removed (lbs.)	Estimated TPHg Removal Rate (lbs./hr)	Cumulative TPHg Removed (lbs.)
1/3/14	114	28	26	NM	114	23	26	NM	114	6.5	NM	95000	20.41	NM	74950	15.53	NM	54900	10.89	46.84	0.41	154.94
1/6/14	3	28	28	NM	3	23	26	NM	3	6	NM		0.54	NM		0.41	NM		0.29	1.23	0.41	156.17
1/7/14	19	28	18	NM	19	23	25	NM	19	6	503.07		3.40	485.37		2.59	464.73		1.82	7.81	0.41	163.98
1/8/14	28	28	18	NM	28	23	26	NM	28	5	NM		0.00	NM		0.00	NM		0.00	0.00	0.00	163.98
1/9/14	24	28	22	NM	24	23	26	NM	24	8	515.92		9.55	496.37		9.18	496.38		2.45	21.18	0.46	185.16
1/10/14	17	28	22	NM	18	23	27	NM	17	7.5	517.42		3.13	502.21		3.22	528.50		1.96	8.30	0.47	193.46
1/13/14	79	28	22	NM	79	23	26	NM	80	6.5	508.97		14.31	532.16		14.96	548.73		8.91	38.18	0.48	231.64
1/14/14	19	28	22	NM	18	23	27	NM	18	6.5	497.43		3.36	523.97		3.36	553.03		2.05	8.77	0.48	240.41
1/15/14	28	28	23	NM	28	23	27	NM	26	7	512.50		5.11	513.61		5.12	537.68		3.10	13.32	0.48	253.73
1/16/14	19	28	24	NM	19	23	28	NM	19	6	538.21		3.64	533.57		3.61	538.31		2.10	9.35	0.49	263.08
1/17/14	25	28	34	NM	26	23	44	NM	25	6	441.06		3.92	420.97		3.89	464.49		2.48	10.30	0.40	273.38
1/20/14	69	28	33	NM	69	23	44	NM	69	6.5	456.66		11.21	452.21		11.10	455.74		6.47	28.78	0.42	302.16
1/21/14	29	28	46	NM	29	23	53	NM	29	5.5	429.86		4.44	460.09		4.75	466.58		2.78	11.97	0.41	314.13
1/22/14	20	28	42	NM	19	23	33	NM	20	6.5	451.76		3.22	462.40		3.13	500.94		1.96	8.30	0.43	322.43
1/23/14	30	28	40	NM	30	23	32	NM	30	8.5	418.24		4.46	438.07		4.68	471.91		2.91	12.05	0.40	334.48
1/24/14	25	28	41	NM	25	23	32	NM	25	7	432.19		3.84	439.34		3.91	479.91		2.47	10.22	0.41	344.70
1/27/14	66	28	41	NM	66	23	31	NM	66	6.5	431.90	77100	8.23	431.15	179000	19.08	475.41	261000	30.68	57.99	0.88	402.68
1/28/14	25	28	40	NM	25	23	31	NM	25	8	439.45		3.17	441.02		7.39	475.41		11.62	22.18	0.89	424.87
1/29/14	23	28	44	NM	23	23	59	NM	23	8.5	450.89		2.99	406.78		6.27	454.55		10.22	19.49	0.85	444.36
1/30/14	17	28	44	NM	17	23	56	NM	17	7	452.30		2.22	433.34		4.94	444.43		7.39	14.55	0.86	458.90
1/31/14	3	28	46	34.4	3	23	47	27.5	3	8.5	429.59		0.37	433.34		0.83	414.10		1.21	2.42	0.81	461.32
2/3/14	69	28	40	NM	69	23	46	NM	69	8.7	464.08		9.25	413.24		19.90	463.12		31.24	60.39	0.88	521.71
2/4/14	28	28	46	35.9	28	23	48	24.9	28	8	399.93		3.23	430.25		7.91	448.73		12.28	23.43	0.84	545.14
2/7/14	69	28	48	36.9	69	23	47	21.7	69	8	409.47		8.16	421.40		19.63	456.33		30.78	58.57	0.85	603.71
2/11/14	97	28	50	35.5	97	23	51	25.7	98	6	449.75		12.60	424.23		28.90	451.16		42.78	84.28	0.87	687.99
2/12/14	26	28	47	34.9	26	23	51	22.8	25	6	438.41		3.29	444.32		8.42	483.94		12.30	24.01	0.92	712.00
2/13/14	19	28	48	29.8	19	23	51	18.6	20	6	422.95		2.32	482.88		5.26	458.18		8.51	16.09	0.85	728.09
2/17/14	67	28	51	28.7	67	23	52	18.2	66	7	415.17		8.03	412.96		19.21	449.94		29.47	56.71	0.85	784.80
2/19/14	25	28	49	25.6	25	23	49	17.5	26	7	432.53	158000	6.40	427.60	153000	6.71	487.13	165000	7.53	20.64	0.83	805.44
2/20/14	22	28	50	26.8	22	23	49	10.7	21	9	433.97		5.65	468.57		5.78	497.26		6.76	18.20	0.83	823.64
2/25/14	122	28	48	31.5	122	23	46	9.6	122	10	438.82		31.68	458.83		34.93	493.41		37.20	103.82	0.85	927.46
2/26/14	26	28	49	25.9	26	23	53	10.2	26	8.5	365.19		5.62	499.65		5.89	411.09		6.61	18.12	0.70	945.58
2/27/14	23	28	50	26.1	23	23	63	11.8	23	9	359.08		4.89	395.49		5.15	419.23		5.96	16.00	0.70	961.58
3/3/14	97	28	50	24.3	97	23	62	10.7	97	8	343.96		19.75	390.85		21.23	388.82		23.31	64.28	0.66	1025.86
3/5/14	38	28	50	30.4	38	23	67	9.8	38	12.2	339.24		7.63	381.85		8.07	374.87		8.80	24.50	0.64	1050.36
3/7/14	48	28	52	26.4	48	23	67	9.2	48	11.9	417.00		11.85	370.37		13.03	493.58		14.64	39.52	0.82	1089.87
3/10/14	74	28	65	31.2	74	23	71	8	74	11.8	376.48	181000	18.89	473.58	219000	25.20	430.89	209000	24.96	69.05	0.93	1158.93
3/14/14	91	28	70	34.3	90	23	73	9.4	91	13.4	400.74		24.72	415.20		31.62	463.82		32.68	89.03	0.99	1247.95
3/18/14	99	28	74	24.5	100	23	75	9.4	99	12.6	410.20		27.53	428.35		36.31	462.90		36.24	100.08	1.00	1348.04
3/20/14	45	28	71	31.4	44	23	74	10	45	12.3	416.64		12.71	442.68		15.81	468.67		16.14	44.67	1.01	1392.71
3/24/14	95	19	75	34.8	96	23	77	15.7	95	13.4	423.51		27.28	438.17		37.31	495.55		37.24	101.83	1.06	1494.54
4/1/14	194	19	73	37.1	194	23	74	22.1	194	15.1	399.25		52.51	473.84		68.26	468.17		71.10	191.87	0.99	1686.41

Notes:

SVE = Soil Vapor Extraction
AS = Air Sparge
VPC = Vapor Phase Carbon
in. H_2O = inches of water
psi = pounds per square inch
scfm = standard cubic feet per minute
ppm = parts per million
($\mu g/m^3$) = micrograms per cubic meter
TPHg = Total Petroleum Hydrocarbons (Gasoline)

Remediation System Removal Data
PHILLIPS 66 FACILITY #255353



SVE PID Data Summary
PHILLIPS 66 FACILITY #255353

Date	Westlake SVE Wells - PID Readings (ppm)								
	WC1	WC2	WC3	WB3	WB2	WB1	WA3	WA2	WA1
1/17/2014	6	8.6	3.4	5	10.9	3	0.2	1.2	0.5
1/20/2014	5.4	9	7.1	5.3	4.5	3.7	3.4	5.4	5.1
1/21/2014	1.8	1.7	2.7	2.2	1.6	1.3	1.3	2.3	2
1/27/2014	1	1.2	1.9	1.5	1.4	1.3	1.9	2.7	2.7
1/29/2014	1.5	1.6	2	3.2	1.9	3.2	2.3	5.8	3.3
2/3/2014	1.5	1.6	2	3.2	1.9	3.2	2.3	5.8	3.3
2/12/2014	0.2	0.1	1.7	0.8	0.1	0.1	0	0.1	0
2/19/2014	0.7	0.6	0.7	0.6	0.4	0.4	0.3	0.3	0.4
2/27/2014	0.9	1.2	1.2	1.3	1.3	1.4	1.6	1.8	1.9
3/7/2014	0.6	0.3	0.5	0.4	0.3	0.2	0.3	0.2	0.1
3/20/2014	0.7	0.6	0.5	0.4	0.4	0.4	0.3	0.2	0.3

Date	Mercer SVE Wells - PID Readings (ppm)																		
	M6	M7	M10	M9	M8	M1	M2	M3	M4	M5	M14	M13	M15	M12	M11	M16	M17	M18	M19
1/17/2014	0.1	0.4	0.3	1.2	184	3.5	22.3	0	9.9	10.5	13	13.5	13.7	430	260	31	107	220	200
1/20/2014	5.6	7.2	10.1	16.8	171	2.2	3.5	3.7	1.1	1.2	3.2	3.3	4.3	281	235	29.7	150	184	222
1/21/2014	3.2	3	2.2	1.7	145	6.5	4.1	3.4	2.4	2	2.6	3.1	4.6	184	267	46.2	153	161	226
1/27/2014	3.5	4.8	7.5	16	236	0.9	1.2	1.1	0.7	0.5	1.5	0.6	2.9	100	355	33.8	216	183	240
1/29/2014	2.8	3.7	7.6	13.9	191	0.6	0.9	1.1	0.7	0.7	1.9	0.7	4	40	302	23	193	156	160
2/3/2014	2.8	3.7	7.6	13.9	191	0.6	0.9	1.1	0.7	0.7	1.9	0.7	4	40	302	23	193	156	160
2/12/2014	0	0.1	0	0	98.9	2	2.3	2.5	2.6	3.1	6.1	4.3	8.9	15.5	237	16.9	159	97.5	36.1
2/19/2014	0.4	0.7	0.3	0.3	78.1	1.9	2.1	2.4	2.2	2.6	4	4	7.8	18.1	192	13.5	121	65	25.9
2/27/2014	2.3	2.7	3.8	6	63.9	0.5	0.4	0.3	0.1	0.2	1.6	0.4	1.6	0.2	179	8	139	70	21.5
3/7/2014	0.1	0.3	0.1	0.1	60.5	1.8	1.4	1.1	0.8	0.8	2	0.7	1.4	0.6	178	9.5	134	71.2	21.5
3/20/2014	0.3	0.7	0.2	0.2	58	3.1	1.8	1.4	0.8	0.8	1.6	0.7	1.3	0.6	156	16.1	146	101	14.2

Date	Terry SVE Wells - PID Readings (ppm)														
	TSVE3	TEFR1 AIR	TMW65 AIR	TSVE4	TSVE11-MW67	TSVE10 - MW66	TSVE2	TSVE1	TSVE7	TSVE12-MW68	TSVE5	TSVE6	TEFR2 AIR	TSVE8	TMW48 AIR
1/17/2014	19.2	9.5	11.8	2.6	4.6	107	4.1	1.7	1.5	1.3	20.1	6.4	0.4	0.3	131
1/20/2014	26.6	10.3	8.5	8.4	11.1	125	10	5.5	3.5	4.7	6.3	5.4	4.5	2	115
1/21/2014	17.1	3.1	4.1	3.4	5.8	115	1.7	1	1.2	1.4	6.5	4.9	3.8	4.5	100
1/27/2014	15.5	5.1	3.1	1.9	3.5	116	4.2	2.2	1.1	1.2	4.7	3.7	1.3	1	113
1/29/2014	14.3	1.1	1.7	2.3	7.2	138	0.5	0.5	0.6	0.7	7.3	3.6	2.9	5.7	97.1
2/3/2014	14.3	1.1	1.7	2.3	7.2	138	0.5	0.5	0.6	0.7	2.4	2.9	2.9	6.2	69.7
2/12/2014	3.6	1	1.1	1.9	7.2	120	0.4	0.5	0.6	0.4	3.4	3.2	2.5	6.2	77.3
2/19/2014	5.6	1	1.2	1.6	3.5	71.3	0.6	0.6	0.6	0.6	2.9	2.2	2.1	2.4	47
2/27/2014	3.4	1	0.9	1.2	4.1	58.7	0.3	0.3	0.3	0.4	0.7	1.2	0.9	1.6	29.8
3/7/2014	3.5	0.9	1	1	4	52.7	0.1	0.1	0.1	0.3	0.6	1.1	0.9	1.7	26.3
3/20/2014	2.8	2.2	1.5	0.9	2.6	44.9	0.9	4.4	0.7	0.7	0.3	0.4	0.2	0.5	18.4

Date	Valley SVE Wells - PID Readings (ppm)							
	V9	V7	V1	V6	V2	V5	V3	V4
1/17/2014	7.8	3.3	2.4	4.3	15.1	38.8	3.3	69.4
1/20/2014	4	1.8	2.3	1.6	2.3	35.8	3	2.8
1/21/2014	5.3	1.4	2.6	2.3	9	32	2.3	2.9
1/27/2014	4.6	1	1.1	0.8	3	42.5	2.4	5.3
1/29/2014	3.2	1.2	1.4	2	4.8	35.2	1.4	2.1
2/3/2014	1.4	1.2	1.7	1.4	3.3	26.9	1	1.1
2/12/2014	0.9	0.8	1.2	1.2	2.2	27.5	1.1	2
2/19/2014	0.8	1	0.9	1	1.5	17.3	1.3	1.1
2/27/2014	0.7	0.6	0.7	1	1.8	31.3	0.6	0.8
3/7/2014	0.7	0.6	0.6	0.9	1.9	31	0.4	0.8
3/20/2014	0.6	0.7	0.4	1.5	1.5	51.1	0.5	0.3

Notes:

SVE	=	Soil Vapor Extraction
PID	=	Photo Ionization Detector
ppm	=	parts per million

AS Flow Data Summary
PHILLIPS 66 FACILITY #255353

Date	Westlake AS Wells - Flow Rate Readings (scfm)																				
	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W-10	W-11	W-12	W-13	W-14	W-15	W-16	W-17	W-21	W-20	W-19	W-18
1/23/2014	0	3	0	0	3	0	0	0	0	0	0	0	0	5	0	0	0	0	0	3	0
1/31/2014	2	4	>25	2	3.5	5	<2	<2	4.5	<2	<2	3.5	14.5	6	4	3	7	7.5	7	3	8.5
2/4/2014	2	3	>25	3	3	7	<2	5	4	2	<2	4	11	7	3	3	7	7	7	4	8.5
2/12/2014	<2	5	>25	4	<2	11	6	9	7	<2	2	6	12	7	8	4	7.5	7	8	4	9
2/17/2014	2	6	9	3	2	9	4	8	5	3	3	6	16	8	6	4	8	10	13	4	10
2/26/2014	2	10	9	6	<2	12	7	9.5	9	3	3	6	13	9	6	3	11	14	7.5	4	11
3/3/2014	2	10	10	5	3	12	8	9	4	5	4	7	13.5	10	6	6	10	8	9.5	5	11
3/18/2014	2	11	<2	6	2	16	11	14	9	4	4	<2	15	11	17	8	9	15	10	5	11

Date	Mercer AS Wells - Flow Rate Readings (scfm)																										
	M-8	M-20	M-26	M-2	M-27	M-16	M-3	M-9	M-17	M-5	M-19	M-15	M-7	M-10	M-14	M-18	M-6	M-13	M-4	M-22	M-12	M-1	M-23	M-11	M-25	M-24	M-21
1/23/2014	9	0	0	0	0	0	0	0	7.5	0	0	0	6	0	0	1	0	0	5	0	0	0	0	0	0	0	0
1/31/2014	9	3.5	<2	<2	<2	4.5	3	5	7.5	7.5	3.5	6	5	6	>25	<2	<2	<2	5.5	5	<2	11.5	<2	<2	7.5	4	<2
2/4/2014	10	<2	<2	<2	<2	3.5	4	5	7.5	7	3	6	6	7	>25	2	<2	<2	6.5	5	<2	11.5	<2	<2	5.5	>25	7
2/12/2014	10	6	3	<2	<2	4	3.5	5	7	9	4	5.5	7	8	>25	3	<2	<2	8	6	<2	13	<2	<2	8.5	>25	7
2/17/2014	11	12	2	<2	<2	6	3.5	6	8	10	5	7	5	9	8	<2	<2	2	7	8	<2	14	2	<2	5.5	4	<2
2/26/2014	12	12	<2	<2	<2	5	4	8	8.5	11	6	6.5	6	10	9	3	2	3	8	9	3	12	2	<2	9	4	<2
3/3/2014	13	10	<2	<2	<2	5	4.5	7	9	12	5	6.5	7	11	10	4	2	3	11	9	3	13	<2	<2	8	4	2
3/18/2014	13	11	<2	<2	<2	7	5	9	10	13	8	9	8	11	11	7	<2	8	10	12	4	16	3	<2	11	6	8

Date	Valley AS Wells - Flow Rate Readings (scfm)													
	V-6	V-7	V-8	V-9	V-10	V-5	V-11	V-4	V-12	V-3	V-13	V-2	V-14	V-1
1/23/2014	0	6	0	0	0	0	0	0	0	0	6	0	0	0
1/31/2014	4	8	6	<2	3	5	7.5	3	4	3.5	7.5	10	8.5	2
2/4/2014	3.5	8	5	<2	4	4	7.5	4	4	4	7	9.5	5	5
2/12/2014	4	8	8	<2	5	6	11	4	5	6	8	10	7	7
2/17/2014	4	6	7	2	6	5	9	5	5	6	8	12	2	4
2/26/2014	8	9	7	3	8	8	13.5	3.5	4	6	9	11	8	10
3/3/2014	10	10	8	2	10	<2	16.5	5	5	9	8	12	9	9
3/18/2014	4	12	7	4	7	<2	21	4	4	12	14	13	<2	7

Notes:
AS = Air Sparge
SCFM = Standard Cubic Feet per Minute

Operation and Maintenance Log Field Notes
PHILLIPS 66 FACILITY #255353

Date	Time	Name	Comments
12/27/13	12:00 PM	EJB	System down upon arrival and restarted. System down because of alarm PAH-401 VLS. AS readings taken. Monthly discharge samples collected. System operational upon departure.
1/3/14	12:30 PM	EJB	System down upon arrival and restarted. System down because of alarm PAH-401 VLS. AS readings taken. System operational upon departure.
1/6/14	4:45 PM	EJB	System down upon arrival and restarted. System down because of alarm PAH-401 VLS. System operational upon departure.
1/7/14	11:30 AM	EJB	System operational upon arrival/departure. AS readings taken.
1/8/14	4:30 PM	EJB	System operational upon arrival/departure. AS readings taken.
1/9/14	4:00 PM	EJB	System operational upon arrival/departure. SVE well vacuum gauges were adjusted. AS readings taken.
1/10/14	9:30 AM	EJB	System operational upon arrival/departure. AS readings taken.
1/13/14	4:40 PM	EJB	System operational upon arrival/departure. AS readings taken.
1/14/14	11:30 AM	EJB	System operational upon arrival/departure. AS readings taken.
1/15/14	3:20 PM	EJB	System operational upon arrival/departure. Sample ports were installed on 1/3 of the individual extraction well manifolds. Readings taken from wells with sample ports.
1/16/14	10:15 AM	NAG	Sample ports were installed on the individual extraction well manifolds. Readings taken from select wells. Insufficient water for pressure readings.
1/17/14	12:15 PM	NAG	Sample ports were installed on the inlet for each vapor phase carbon train. Manual dilution valves were closed slightly. Insufficient water for pressure readings.
1/20/14	9:00 AM	EJB	System operational upon arrival/departure. Insufficient water for pressure readings. Clear Creek Contractors onsite to connect system water discharge to the sewer. PID Readings taken.
1/21/14	2:15 PM	NAG	Attempted to reduce dilution air further, but persistent VFDW-8101 alarms prevented this. AS readings taken. PID Readings taken.
1/22/14	10:30 AM	EJB	System operational upon arrival/departure. Insufficient water for pressure readings.
1/23/14	4:30 PM	EJB	System operational upon arrival/departure. Insufficient water for pressure readings.
1/24/14	5:30 PM	EJB	System operational upon arrival/departure. Insufficient water for pressure readings.
1/27/14	12:00 PM	EJB	System operational upon arrival/departure. PID readings taken for 1/2 wells. Monthly discharge samples were collected.
1/28/14	1:15 PM	EJB	System operational upon arrival/departure. PID readings completed. Samples collected from specific wells (M12, M11, M16, M17, M18, M19, TSVE 10, V5, V4, and TMW48) Insufficient water for pressure readings.
1/29/14	10:40 AM	EJB	System operational upon arrival/departure. Reduced dilution air a bit on B-801. PID readings taken for 1/2 wells. Tank trans pump press went down after switching discharge to direct drain (not to Baker tank)
1/30/14	2:45 PM	NAG	System down upon arrival, restarted, opened dilution slightly on 801. Baker tank pumped out. Inf sample ports installed predilution for each blower. Samples taken. (V-INF-701, 801). PID was not operating properly.
1/31/14	11:30 AM	NAG	System down upon arrival, restarted, opened dilution slightly on 801. AS readings taken, Individual well PID Readings completed. Baker tank picked up.
2/3/14	9:00 AM	EJB	System operational upon arrival, Individual well PID Readings taken for 3/4 wells.
2/4/14	1:00 PM	NAG	System operational upon arrival/departure. PID readings completed. AS well readings taken.
2/7/14	10:00 AM	NAG	System operational upon arrival/departure. 'Stuck' rotometers were dissassembled, freed, then reassembled.

Operation and Maintenance Log Field Notes
PHILLIPS 66 FACILITY #255353

2/11/14	11:00 AM	NAG	System operational upon arrival/departure. 701 & 801 blowers reduced to 60% from 65%. Sparge compressor increased from 25% to 50%.
2/12/14	10:45 AM	NAG	system operational upon arrival/departure. 801 PID Readings completed. Sparge readings completed. 801 VLS pump had lost its prime and was found running dry. Reprimed=OK. Plumbling was modified to even out [ ] to VPCs.
2/13/14	1:30 PM	NAG	System operational upon arrival/departure. Siemens carbon change for VPCs 1-1, 2-1, 3-1, & 3-2. 701 PID Readings completed. Precarbon water filter replaced.
2/17/14	2:45 PM	NAG	System down upon arrival due to 801-VLS High-High.This caused HT pump to stop, so the containment area was full as a result. Containment pumped out, system restarted. Sparge manifold readings completed.
2/19/14	12:00 PM	NAG	System down upon arrival due to a VFD-8202 PNL alarm. Dilution air was increased slightly on 801 blower. Compliance air samples were taken in addition to influent samples. 701 PID Readings completed.
2/20/14	9:45 AM	NAG	System operational upon arrival/departure. Monthly water samples were taken. 801 PID Readings were completed. NOTE: 801 VLS transfer pump is still losing its prime.
2/25/14	12:00 PM	EJB	System operational upon arrival/departure. 701 PID Readings were completed.
2/26/14	2:00 PM	NAG	System operational upon arrival/departure. Blower VFDs were both reduced to 40%. Sparge VFD were increased to 80%. Dilution was decreased to both blowers. Sparge readings were taken.
2/27/14	12:30 PM	NAG	System operational upon arrival/departure. Dilution was closed for both blowers. 801 PID Readings completed.
3/3/14	2:00 PM	NAG	System operational upon arrival/departure. Sparge readings taken. Attempted unsuccessfully to upload program to the PLC-need to contact IT for priveledges. Skid Readings taken from PLC
3/5/14	12:00 PM	EJB	System down upon arrival due to a VFD-8202 PNL alarm (VFD alarm code OLF). System operational upon departure. 701 PID Readings were completed. VFD for blower 801 nominal motor amp rating increased from 11.6 to 14.0. Skid Readings taken from PLC
3/7/14	1:00 PM	NAG	System operational upon arrival/departure. 801 PID Readings were completed. 701 was raised to 45% power, 801 was raised to 40%. Both motors are running at 9 Amps, with max peaks of 10.8 Amps. Attempted unsuccessfully to upload program to the PLC-device does not recognize PLC, all settings are locked by admin.Skid Readings taken from PLC
3/10/14	3:30 PM	NAG	System operational upon arrival/departure. The 9 lateral wells on the 701 manifold were closed 1/2 way. Monthly vapor and water compliance samples were taken. Skid Readings taken from PLC
3/14/14	10:15 AM	NAG	System operational upon arrival/departure. The lateral wells on 701 were closed approx 60-70%. 701 was raised to 60%. 801 was raised to 50%. Both motors were running at 10.5 amps steadily. The sparge compressor was raised to 100% and the intervals were set to 10 minutes. Compliance punch list was completed with the exception of the unistrut caps (ran out). Skid Readings taken from PLC
3/18/14	1:45 PM	NAG	System operational upon arrival/departure. M9, M16, & M17 true union ball valves were tightened. Additional LOTO photos were taken for A&OI documents. Sparge readings were taken. Skid Readings taken from PLC
3/20/14	10:30 AM	NAG	System operational upon arrival/departure. 701 & 801 PID Readings were completed. Additional LOTO pics taken. Waited for PSCAA, but they did not show up. Skid Readings taken from PLC
3/24/14	10:00 AM	NAG	System operational upon arrival/departure. Westlake SVE & Sparge wells were shut-off. 701 reduced to 50%, 801 elevated to 58%. Waited for PSCAA, but they did not show up. Small breakthrough through primary carbons. Skid Readings taken from PLC

Operation and Maintenance Log Field Notes
PHILLIPS 66 FACILITY #255353

4/1/14	12:00 PM	NAG	System operational upon arrival/departure. 801 reduced to 50% (now both 701 & 801 are @ 50%). Breakthrough has reached over 10% in carbon trains 1 & 3.

Westlake/Mercer 1/16/14 0930 - 1400 (MSM till 1130)

well	Vac	Flow	temp	PID	TIME	701	801	Sparge
						0.04	0.07	118° / 7.5psi
WC1	13	1150	53.5	6.0		28" / 24"	36" / 28"	41° / 6.0psi
WC2	14	810	53.5	8.6	1248	76° / 37"	77° / 36"	5.0 Mag
WC3	19	835	50.3	3.4		14.8ppm	17.3ppm	
W B3	17	2750	47.1	5.0	1259			
W B2	13	310	44.9	10.9	1309			634
W B1	10	850	53.9	3.0	1314			597
W A3								631
								1/1/1
					PID carbons	0.0 all		2,462 gal

1/17/14 0745 - 1245 arrived onsite - safety meeting, could not park onsite, driveway flooded

350 = $\pi(\frac{1}{6})^2 \cdot X$

Reinstalled flow parts for each VPC train
Closed each manual d.l valve until just before ... in kinkle and d.l workday (set point 4" dg

0900	PID/FLOW				4850/80.7/0.0/0.1	701	801	Sparge		
					4600/77.3/0.4/0.2	0.08 mag	0.12 mag	118°/65psi		659
					5050/74.6/3.9/0.2	37"/34"	51/44	41°/6psi		623
	5619	5550	5423	5376		60°/36" outlet	85°/32" outlet	5.0" mag		656
						36.5ppm	15.0ppm			1
Soil	14	14	27	33	29					1
Sweet W					7	7	2,462 gal			1
Decon Water	-4	14			8	26				
	12/26	12/16	12/11	12/4						

2/11/14 0900 - 1115

Monday 7 Bham Proj # 121 waste

Blowers → 65% → 60%, closed dilution

701	801			VPC1	VPC2	VPC3
62" inlet	58" inlet	3823 gal / 12psi	DSCHG	0	0	0
50" AWS	51"	Sparge (25→50%)	INT	0.1	10.4	17.2
0.17	0.15	142/8	INF	14.7	25.0	35.5
87°/29"H2O	86°/27"H2O	49/6				
35.5 in	25.7 in	8.0 mag	@1100	701 = 1229		
37.6 out	15.2 out			801 = 1192		
				SP = 1227		
				HT = 3		

Rob/Paige 1/21 Spage Readings

100+160+500+150

M21			5/7	W17	6.5/4	6.5/7	6/7
M24	5/4		4/>25	W16	2/5	5/3	5/3
M25	4.5/5	6.5/7.5	6/5.5	W15	3/7	5/4	6/3
M11	<2/5	3.5/<2	? 4/<2	W14	5.5/4	4/6	4/7
M23	<2/4	4.5/<2	4/<2	W13	14/5	5.5/4.5	5/1
M1	11/	4/11.5	3/11.5	W12	4/5	5/3.5	5/4
M12	<2/4	7/<2	6.5/<2	W11	<2/5	5/<2	5/<2
M22	7/6	6/5	5.5/5	W10	<3/5	6.5/<2	6/2
M4	4/4	4/5.5	4/6.5	W9	2/4	5/4.5	4/4
M13	<3/7	6.5/<2	6/<2	W8	<3/5	5.5/<2	5/5
M6	<2/5	5/<2	5/<2	W7	<2/4	5/<2	4/<2
M18	8/2	4/<2	4/2	W6	>25/5	6/5	5/7
M14	>25/5	5/>25	5/>25	W5	2/4	4.5/3.5	5/3
M10	6/6	6/6	5.5/7	W4	<3/5	5.5/2	5/3
M7	6/4	4/5	4/6	W3	>25/5	6/>25	5/>25
M15	6/7	7/6	6.5/6				
M9	3/6	6.5/3.5	6/3	W2	3/4		4/3
M5	7/4	4/7.5	4/7	W1	<3/5	6/2	5/2
M17	8/5	4/7.5	4.5/7.5	V1	<3/5	6/2	5/5
M19	5/7	6/5	6/5	V14	5/5	6.5/8.5	6/5
M3	4/4	4/3	4/4	V2	8.5/5	6.5/10	6/9.5
M16	5/6	6.5/4.5	6/3.5	V13	8/3	3.5/7.5	3/7
M27	<2/5	4.5/<2	4/<2	V3	4/5	5/3.5	5/4
M2	3/6	6/<2	6/<2	V12	4/5	5.5/4	5/4
M26		4/<2	4/<2	V4	1/4	6/3	5.5/4
M20	7/7	6.5/3.5	6/<2	V11	5.5/4	5/7.5	4/7.5
M8	9/4	4/9	4/10	V5	2/4	4.5/5	4/4
M18	8.5/3	4/8.5	3/8.5	V10	3/5	6.5/3	6/4
M19	3/4	4/3	4/4	V9	<3/5	6/<2	6/<2
M20		6.5/7	6/7	V8	6/5	4.5/6	5/5
M21	8/5	4/7.5	5/7	V7	6.5/3.5	3/8	4/8
				V6	4/4	5/4	4/3.5

0945 sign in
1000-1045 Speak w/ Ed + Keith
1045-1130 AS Readings
1130- PID

2401 E Lynn St
Seattle, WA 98112
#14020555

retro
KC sewer
SCL
SPU water
SDOT
Qwest
Comcast
PSE-gas
SPU-VWW

Rite in the Rain

1/30/14 1100-1515

V-INF-701 1430
V-INF-801 1435

Leg1 = 5050/83.4 4625
Leg2 = 4800/79.1 4668.75
Leg3 = 4900/76.6 4675

1430
701 966
801 929
SPG 963

1/31

	VPC1	VPC2	VPC3
D	0	0	0
INT	0	1.9	7.0
INF	14.2	19.7	25.8
	4700/73.7	4500/71.2	4500/70.1
		701	801
INF		27.3 cfm	13.5 cfm
Pressure		31" H2O	30" H2O
Temp		80°	76°
AWS		46"	47"
Blowback		5#	5#
Mag		0.15	0.13

→ 34.4 27.5 1/31

3385 gal

Sparge

Pre	119/10		
Post	39/8.5		
Mag	5.5		

Leg1	Leg2	Leg3
4 = 5650	5050	5150
3 = 5000	4850	5050
2 = 4250	4625	4800
1 = 3750	4150	3700

	VAC	PID
TSVE3	35	14.3
TEFR1	48	1.1
TMW65	34	1.7
TSVE4	33	2.3
TSVE11	32	7.2
TSVE10	31	138
TSVE2	29	0.5
TSVE1	27	0.5
TSVE7	28	0.6
TSVE12	26	0.7
V9	32	3.2
V7	46	1.2
V1	33	1.4
V6	36	2.0
V2	36	4.8
V5	37	35.2
V3	36	1.4
V4	36	2.1
TSVE5	37	7.3
TSVE6	39	3.6
TEFR2	36	2.9
TSVE8	38	5.7
TMW48	38	97.1

1396 1145 - 1430?

2/7/14 0945 -

Sign in, safety, take readings

TMW48	38	69.4
TSVE8	38	6.2
TEFR2	37	2.9
TSVE6	39	2.9
TSVE5	37	2.4
V4	37	1.1
V3	37	1.0
V5	37	26.9
V2	36	3.3
V6	36	1.4
V1	34	1.7
V7	40	1.2
V9	33	1.4

1000
3418 gallons
0.17 — 0.13
57" inlet — 54" inlet
48" AWS — 47" AWS
81° — 76°
31.5" outlet — 30" outlet
35.1 ppm — 12.4 ppm
115°/8 ps — 5.5 may — 32°/8 ps

1132 = 701
1095 = 801
1129 = sp
1/1/2

	VPC1	VPC2	VPC3
	0	0	0
	0	4.2	14.8
	12.2	22.7	34.4

2/12

MJ 0.5
62t 1.0
620 1.75
62t 0.25
66t 0.75

go over docs
✓ mods
sparger
PID
✓ primed both AWS pumps

2/12/14 1045
pre cat #1 5100 ppm 90°
5000 - 85.8°
5050 - 82.9°

VPC post ① [redacted] 29.3 - 0.1 - 0 4900/87.7
② 24.5 - 13.1 - 0 5400 87.7
③ 24.5 - 21.0 - 0.8 5400 86.5

701	sparge	801
IN 34.9	7/145	22.8
OUT 36.1	6/56	13.0
1255 hr	1252 hr	1218 hr
VLS=1	8.5 may	VLS=13hr
62" IN		56" IN
47" VLS		51" VLS
0.16 may		0.15 may
94° 32.5"		95° 32

4318 gal

CPIDPT 0815 -
0830 59110.5
4941.3
4999.9
55552.1
103.3
497125 kWh
45792.9 cutox
329/339/340
36° inlet
8.5" Hg 9"H2O
187447.0 ft³
455930.2 gal
38° inside
18/10

21.5"

2/12

TMW48	42	77.3	
TSVE8	41	6.2	
TEFR2	40	2.5	
TSVE6	42	3.2	
TSVE5	40	3.4	
V4	40	2.0	
V3	39	1.1	
V5	41	27.5	
V2	39	2.2	
V6	39	1.2	
V1	36	1.2	
V7	43	0.8	
V9	36	0.9	
TSVE12	28	0.4	
TSVE7	29	0.6	
TSVE1	28	0.5	
TSVE2	32	0.4	
TSVE10	33	120	
TSVE11	34	7.2	
TSVE4	36	1.9	
TMW65	37	1.1	
TEFR1	50	1.0	
TSVE3	38	3.6	

WC1	17	0.2	
WC2	19	0.1	
WC3	24	1.7	
WB3	20	0.8	
WB2	17	0.1	
WB1	17	0.1	
WA3	27	0.0	
WA2	48	0.1	
WA1	24	0.0	
M6	19	0.0	
M7	21	0.1	
M10	21	0.0	
M9	20	0.0	
M8	28	98.9	

M19	38	36.1	
M18	31	97.5	
M17	26	159	
M16	26	16.9	
M11	25	237	
M12	23	15.5	
M15	27	8.9	
M13	27	4.3	
M14	25	6.1	
M5	18	5.1	
M4	21	26	
M3	21	25	
M2	19	2.3	
M1	20	2.0	

VPC #1	4700	82.7	24.7 ppm
	4600	84.0	22.6 ppm
	5100	83.6	21.2 ppm

	1330	401 VLS	2
		501 VLS	13
		Tank	3
		701	1274
		801	1237
		Sp	1272

	701	801
	62/48	58/51
	90°/31	91°/31
	0.18	0.15
	31.1	10.7
Sp —	144/9	
	55/6	
	8.5 mag	
	4350 gal	-12

2/12

V6	4/4	W3	5/>25	M21	5/7	M15	6/5.5
V7	5/4	W4	5/4	M20	5/8	M7	3.5/7
V8	5/8	W5	4/<2	M19	3/4	M10	5/8
V9	5/<2	W6	5/11	M18	3/7	M14	5/>25
V10	5/5	W7	5/6	M8	3/10	M18	3/3
V5	4.5/10	W8	5/9	M20	5/6	M6	5/<2
V11	4/11	W9	4/7	M26	4/3	M13	5/<2
V4	5/4	W10	5.5/<2	M2		M4	3/8
V12	5/5	W11	5/2	M27	4/<2	M22	5/6
V3	5/6	W12	5/6	M16	5/4	M12	6/<2
V13	3/8	W13	5/12	M3	4.5/3.5	M1	3/13
V2	5/10	W14	4/7	M9	5.5/5	M23	4/<2
V14	5/7	W15	6/8	M17	4/7	M11	
V1	5/7	W16	5/4	M5	3/9	M25	6/8.5
W1	5.5/<2	W17	5.5/7.5	M19	5/4	M24	
	<15					M21	3.5/<2

1145 V-INF-701
1150 V-INF-801

1100 V-DSCHG-1 1115 V-INT-1 1130 V-INF-1
1105 V-DSCHG-2 1120 V-INT-2 1135 V-INF-2
1110 V-DSCHG-3 1125 V-INT-3 1140 V-INF-3

1

2/17 1145-1515
down AWS HI, HT HI, CONTAIN HI
Pumped out containment, then AWS

V6	5/4	W3	6/9	W21	6/10	M15	7/7								
V7	6/6	W4	6/3	W20	6/13	M7	4/5								
V8	5.5/7	W5	5/2	W19	4/4	M10	6/9								
V9	6.5/2	W6	6/9	W18	5/10	M14	2/8								
V10	7/6	W7	5/4	M8	4.5/11	M18	4/<2								
V5	6/5	W8	6/8	M20	7/12	M6	6/<2								
V11	5/9	W9	5/5	M26	5/2	M13	7/2								
V4	6.5/5	W10	7/3	M2	6/<2	M4	4/7								
V12	6/5	W11	6/3	M27	4/<2	M22	6/8								
V3	6/6	W12	6/6	M16	6/6	M12	7/<2								
V13	5/8	W13	6/16	M3	5/3.5	M1	4/14								
V2	7/12	W14	5/8	M9	7/6	M23	5/2								
V14	7/2	W15	6.5/6	M17	5/8	M11	4/<2								
V1	6/4	W16	4/4	M5	4.5/10	M25	7/5.5								
W1	7/2	W17	6.5/8	M19	6.5/5	M24	4/4								
W2	5/6					M21	5/<2								

① 4600/81.1°/22.3 ppm 1.0/0 (1445) 701 1341
② 4750/82.5/19.5 ppm 801 1304
③ 5000/82.7/19.0 SP 1338
5377 gal VLS4 2
VLS5 27
HT 4

701		801		SP	
I 28.7	27.1°	I 18.2	11.1°	141	8
90°	31"	90°	31"	49	7
0.19		0.15		8.5	
66	57	56	52		

4800/81.4° - 22.3 107,040
5075/81.4° - 17.1 86,782
5500/81.4° - 16.8 92,400
64"/50" 58"/49" 144/9.5
87°/32" 85°/32" 47/9
0.18 0.18 (cleared lines) 9
26.8 ppm/30.4 10.7/6.2
5791 gallons

0945
1388 - 701
1351 - 801
1385 - SP

0.5 0.75

2/20 0800-1130

2/19 - 10:30 - 1400
down - VFD-8202 PWC (801 overcurrent)
restarted, increased Hz to both
V-DSCHG

VPC1	19.5/0/0	4800	82.9°		1200 Hours
VPC2	15.9/0/0	5200	82.9°		401 2
VPC3	16.4/0/0	5400	82.3°		501 27
701		801		5728 gal	201 1366
25.6 INF		17.5 INF		Sprays	801 1329
26.0 out		7.9 out		141°/8 ps.	SP 1364
49 AWS		49" AWS		47/7 ps.	HT 4
63		56" Blower		9 Mag	
89°/31.5"		86°/32"			
0.19		0.14			

WC1	16/6.7	M19	40/25.9	TMW48	36/47.0
WC2	20/8.6	M18	32/65.0	TSVE8	35/2.4
WC3	25/0.7	M17	26/121	TEFR2	34/2.1
WB3	20/0.6	M16	26/13.5	TSVE6	35/2.2
WB2	16/0.4	M11	24/192	SVE5	32/2.9
WB1	16/0.4	M12	25/18.1	V4	30/1.1
WA3	27/0.3	M15	28/7.8	V3	29/1.3
WA2	30/0.3	M13	28/4.0	V5	30/17.3
WA1	26/0.4	M14	25/4.0	V2	28/1.5
M6	21/0.4	M5	18/2.6	V6	28/1.0
M7	22/0.7	M4	21/2.2	V1	26/0.9
M10	21/0.3	M3	22/2.4	V7	31/1.0
M9	22/0.3	M2	20/2.1	V9	24/0.8
M8	28/78.1	M1	21/1.9	SVE12	26/0.6
				SVE7	28/0.6
				SVE1	27/0.6
				SVE2	29/0.6
				SVE10	31/71.3
				SVE11	32/3.5
				SVE4	33/1.6
				TMW65	34/1.2
				TEFR1	48/1.0
				TSVE3	34/5.6

2/20 1000

1245 - 1500

2/26

reduced blowers to 40%, sparge to 80%
closed dilution as necessary on both.
6061 gal

4150 | 86.1° | 24.3 ppm
4500 | 86.8° | 20.0 ppm
4675 | 86.5° | 19.7 ppm

701

68" in 49" vls | 57" in 53" vls
0.19 mag | 0.23 mag
24" / 91° | 24" / 92°
32.4 out / 25.9 | 8.6 out / 10.2

#100
V13 2/27
7: 1536
8: 1499
S: 1533
HT = 4

172° / 9 psi
89 / 8.5 psi
8.0 mag

V6	5/8	V12	5/4	W3	5/see prev	W11	5/3	W21	5/14	M27	5/<2	M15	6.5/6.5	M22	6/9
V7	6/9	V3	5/6	W4	5/6	W12	5/6	W20	5.5/7.5	M16	6/5	M7	4/6	M12	7/3
V8	5/7	V13	3.5/9	W5	4/<2	W13	5/13	WP	4/4	M3	5/4	M10	5/10	M1	4/12
V9	5/3	V2	6/11	W6	5/12	W14	4/9	W18	4/11	M9	6/8	M14	6/9	M23	?
V10	6/8	V14	6/8	W7	4/7	W15	6/6	M8	4/12	M17	4.5/8.5	M18	4/3	M11	4.5/<2
V5	5/8	V1	6/10	W8	5/9.5	W16	5/3	M20	6/12	M5	4/11	M6	6/2	M25	6/9
V11	4/13.5	W1	6/2	W9	4/9	W17	6/11	M26	4.5/<2	M19	6/6	M13	6/3	M24	see prev
V4	5/3.5	W2	4/10	W10	6/3			M2	5/<2			M4	4/8	M21	4/<2

2/27 @ 1145 - 1430

4100 | 86.8 | 23.2 ppm | 0 | 0
4475 | 88.3 | 19.1 ppm | 0.1 | 0
4800 | 88.3 | 19.8 ppm | 0.1 | 0

1230
1559
1522
1556

701

IN = 26.1 | OUT = 31.3
23" out / 90° | 0.8 psi / 90°
70" / 80° vls | 52" in
0.20 mag | 0.49 - 0.82

801

IN = 11.8 | OUT = 10.4
22" out / 95° | 9.7 psi / 95°
60" / 63" vls | 70" in
0.30 mag | 0.09 - 0.54

PLC

Sparge
169 / 10
58 / 9 → 61 / 12.2
Mag = 8 · 14 - 21"

701 801 sp

TMW48	48	29.8	53	SV12	35	0.4	36
TSVE4	47	1.6	51	SV7	36	0.3	38
TEFR2	43	0.9	48	SV1	35	0.3	37
SV6	45	1.2	48	SV2	38	0.3	40
SV5	40	0.7	45	SV10	39	58.7	42
V4	39	0.8	43	SV11	43	4.1	44
V3	38	0.6	42	SV4	44	1.2	47
V5	36	31.3	40	TMW65	45	0.9	48
V2	35	1.8	38	TEFR1	58	1.0	61
V6	34	1.0	38	SV3	47	3.4	49
V1	31	0.7	36				
V7	35	0.6	39				
V9	29	0.7	33				

3/3 1230-1445

Fd 497650
Sw 488179
Dec 477524
Nd 466073

installed patch from Newterra

701		801	Sp	3925 (85.2°) 21.3 ppm
~~Hdg~~ /53		~~Sdrag~~ 65	165°/10 sps	4375 (87.4°) 18.8 ppm
50 VLS		62 VLS	57°/8 sps	4450 (86.8) 18.7 ppm
~~Dec~~ -0.74		~~Dec~~ 0.32		
22"		21"	1400	
90°		94°	2/27/5	1656
24.3in/27.5out		10.7in/10.8out		1619
				1653

V6 4/10	V12 5/5	W3 5/prev	W11 5/4	~~W21~~ 5/8	M27 6/<2	M15 6/~~6.5~~	M22 5.5/9
V7 5/10	V3 5/9	W4 5/5	W12 5/7	~~W20~~ 6/9.5	M16 6/5	M7 4/7	M12 6/3
V8 5/8	V13 4/8	W5 5/3	W13 5/13.5	~~W19~~ 4/5	M3 5/4.5	M10 5/11	M1 4/13
V9 5/2	V2 5/12	W6 5/12	W14 ~~4~~/10	~~W18~~ 4/11	M9 6/7	M14 ~~5~~/10	M23 5/<2
V10 5/10	V14 5/9	W7 5/8	W15	M8 4/13	M17 4.5/9	M18 4/4	M11 4/<2
V5 5/<2	V1 5/9	W8 5/9	W16 4.5/6	M20 5/10	M5 5/12	M6 5/2	M25 6/8
V11 4/16.5	W1 5.5/2	W9 5/4	W17 5/10	M26 6/<2	M19 6/5	M13 6/3	M24 4/prev
V4 5/5	W2 5/prev	W10 5/5		M2 5.5/<2		M4 4/11	M21 4/2

fire ext | 1st Aid, Emergency stop
hand tools, opened vault, grounded power points, - threw bag next to drillers stand
HANDS free while attaching auger section to load line
HANDS free to remove remainder of vault grabbed by lip instead of skirt, slice collected
noted uneven terrain
power tools - drill wire brush to clean threads
shovel, good body positioning
BUENO

1300
2/28/6
1742/1705/1739

12/11.9/65°
16"
8477 gal

801	701
71"/67"	56"/52"
21.44	0.1-0.42
102°/225"	96°/24"
7.4 out/9.2 in	32.4 out/26.4 in

~~2/3 8AM 0500 — John Brut~~
~~Pick~~

3/7
1400-1645

4800/92.2°/23.6 ppm
5475/94.6°/20.1 ppm
5700/94.0°/19.4 ppm

1163	1115-1200	0.75
1162	1215-1345	0.25
Meter	1400-1645	1.5
		0.25

~~9 point~~ - 3/10/14
sample
8.5/8.5/9.5
34/33/16/10
476674.0 gal
191307.3 ~~ft~~ ft³
9.5" ~~Hg~~ / 8" H₂O
fpm / 510
530/339/341

49° interior
Sp 13/5

cat = 4639.7
CRP 59756.3
AWS 4969.4
HT 5001.4
SP 56197.8
507423

Installed 11 PSVI

1330-1545

1530

3/10

SP = 11.8 psi / 168° in / 57° out
13" magnahelic

10,888 gal

4325 / 89.5° / 32.7 ppm
4775 / 90.1° / 24.8 ppm
4950 / 89.5° / 25.2 ppm

4580 / 90.5° / 31.4 ppm
4900 / 91.0° / 23.8 ppm
5300 / 90.4° / 23.7 ppm

701
VLS = 65"
in = 68"
97° / 22" = out
0.2 - 0.48
44.7 out / 31.2 in

801
VLS = 71"
in = 74"
100° / 22" = out
0.15 - 0.53
7.8 out / 7.9 in

2/28/7
1816
1779
1813

3/14
845 onsite
1400 off

701
38.4 out / 34.3 in
VLS = 70" in = 73"
98° / 25"
0.3 - 0.67
60%
1015 Hours = 2/29/8
1907, 1869, 1904

801
9.2 out / 9.4 in
VLS 73" / 77" in
100° / 25"
0.27 - 0.67
50%

10,460 gal

SP
14/12.1
13.4/58
10-16 WC
100%
10 min interval

745-845 → 1400 → 1430
5.25

1280
860
2140

unistrut caps
HT skid - 4 - 1x1 totalizer
4 - 1x1 post pump
4 - 1x1 transfer
8 - 1x1 water manifold
801 skid - 6 - 1x1 near outlet
3 - 1x1 AWS
4 - 1x1 AWS transfer
1 - 1x1 next to blower
701 skid 3 - 1x1 AWS
4 - 1x1 AWS transfer
1 - 1x1 next to blower
6 - 1x1 near outlet
Sparge skid 2 - 1x1
2 - ½x1 near magnahelic

WC1	15	M19	67	14.2	~SV3	54	2.8
WC2	41	M18	54	101	TEFR1	67	2.2
WC3	38	M17	38	146	MW5	52	1.5
WB3	19	M16	41	16.1	SV4	51	0.9
WB2	38	M11	38	156	~SV11	48	2.6
WB1	20	M12	37	0.6	•SV10	46	44.9
WA3	47	M15	39	1.3	SV2	44	0.9
WA2	57	M13	39	0.7	SV1	39	4.4
WA1	20	M14	36	1.6	SV7	42	0.7
M6	25	-	M5	29	0.8	SV12	40	0.7
M7	39	0.7	M4	32	0.8	•MW4	57	18.4
M10	48	0.2	M3	34	1.4	SV8	55	0.5
M9	42	0.2	M2	32	1.8	TEFR2	54	0.2
•M8	47	58.0	M1	31	3.1	SV6	51	0.4
						SV5	48	0.3
						V4	32	0.3
						V3	31	0.5
						•V5	42	51.1
						V2	38	-
						V6	40	1.5
						V1	37	0.4
						V7	39	0.7
						V9	34	0.6

onsite @ 0900
1030 - 2/29/9

12039 gal
2051 / 2013 / 2048

701
75 in / 71 vls
0.40 - 0.86
27 out 99°
34.9 out / 31.4 in

167 / 13
448 / 12.3
0.18 neg

801
79 in / 74 in
0.29 - 0.67
24.5 out 99°
9.7 out / 10.0 in

4750 / 90.1° / 31.4 ppm
5000 / 90.6 / 26.0 ppm
5350 / 90.8 / 26.0 ppm

3/20

Rate in the Rain

SVE8

TIME	DTW	Purge ✓	PumpRate	Temp	Cond	pH	DO
1503	3.15	—	—	—	—	—	—
1550	3.27	960	320	11.25	0.245	5.74	4.92
1553	3.28	1920	↓	11.26	0.244	5.78	4.65
1556	3.28	2880		11.26	0.244	5.88	4.56
1559	3.29	3840		11.25	0.243	5.83	4.41
1603	3.30	4800		11.25	0.243	5.81	4.37
SW	1605	W-3-SVE8					

1345

3/18 1145-1400

tightened/tank gone MW9, MW6, MW7

800 264 5090

WA 11679

5/5 or 120,653

11796 gal 701 sparge 801

2/29/9 74"in 71"AWS 12-19 mag 80"in 75"AWS

2006 0.40-0.77 12.6psi 54° 0.25-0.65

1969 24.5in/38.8out 13.0in 176° 10.2out 9.4in

2003 26"/100° 24"/100°

4700/91.9°/29.2ppm MW3 MW7 SVE6 MW2 SVE3 SVE4 SVE1 SVE5 SVE2

5075/92.2°/23.5ppm

5300/91.5°/23.7ppm

Print Daily Meeting Forms

VFD + O&M Manuals

9/8.5/9.5

330/338/340

10" overall

8" H2O cator

52° wet

191940.04ft³

483006.4gal

49° inside

12.5psi/4.5scfm

2900cfm

C/21.5

5103656kWh

59947.1

4978.2

5001.5

56388.6

46629.5-cator

3/18↓

3/24 0900-1100

12420 gal

		50%	S	58%
4900/96.0°	0/0.9/31.4	701	SP	801
5500/97.8°	0/0.1/26.3	105°/24"	13.4/57	106°/24"
5750/97.6°	0/0.7/26.1	443out/34.8in	0.15	12.8out/15.7in
		76"/75"	14/182	80"/77"
2/30/9				B
2146		0.27-53		0.10-0.49
2109		0.40	-	0.30
2143				

11.25 Cardo

V6	7/4	V12	7/4	W3	9/<2	W11	7/4	W21	7/15	M2	7/<2	M15	8/9	M22	7/12
V7	7/12	V3	7/12	W4	7/6	W12	8/<2	W20	8/10	M27	6/<2	M7	6.5/8	M12	8/4
V8	7/7	V13	6/14	W5	7/<2	W13	7/15	W19	5/5	M16	7.5/7	M10	7/11	M1	5.5/16
V9	7.5/4	V2	8/13	W6	7/16	W14	6/11	W18	6/11	M3	6/5	M14	7/11	M23	6/3
V10	8/7	V14	8/<2	W7	7/11	W15	9/17	M8	5/13	M9	8/9	M18	5.5/7	M11	6/<2
V5	7.5/<2	V1	7/7	W8	7/14	W16	7/8	M20	7/11	M17	6/10	M6	7/<2	M25	8/11
V11	7/21	W1	8/2	W9	7/9	W17	8/9	M26	7.5/<2	M5	6/13	M13	8/8	M24	6/6
V4	7.5/4	W2	7/11	W10	8/4					M19	8/8	M4	6/10	M21	6/8

Rite in the Rain

P66 1045 - 1215

reduced 801 to 50% (both are @ 50% now)

updated binder placed back onsite

	701	sp	801	@1200
4600 / 92.4° / 33.2 ppm / 6.5	76" / 73"	15.5 / 193°	77" / 74"	2 / 30 / 10
4950 / 93.3° / 27.1 ppm / 1.6	0.21 - 0.49	15.1 / 62°	0.27 - 0.60	2840
5400 / 93.0° / 26.8 ppm / 4.7	105° / 23"	11 - 18"	103° / 23"	2303
	37.1 in / 49.5 out		22.1 in / 16.1 out	2337

13728 gal

			initial		
99D9T	4/1/14	1230-	7.3	7.7	7.7
60283.8 LRP			5.6	7.4	7.3
4995.5			6.5	7.6	7.6
5002.1	PCP		8.8	10.5	10.5
56725.3 sp	Sample				
46966.3 catax	Fire ext				
515524 kWh	trash				
495509.7 gal					
192734.46 ft³					
330 / 338 / 339					
7.5" WC out					
10.5" Hg in					
9 / 8.5 / 9.5					
1.1 in / 0.1 out					
2850 / 63.3°					
4.5 scfm / 12 psi					

Catalyst Ready @ ~~550°F~~ → 660 — 1745

615°F IN — 900°F OUT = SETPOINTS — 1750

1805

System up to temp @ — 1810

1815

4/11

V-ΔSCHG, 1
V-INT-1
V-INF-1

V-Inf 701

701		801	
0.5	13.0	0.5	2.9
1.5	15.0	1.5	3.5
~~2.5~~ 5	16.7	5	8.5
10	16.8	10	9.9
15	17.5	15	~~12.2~~ 11.3
20	19.3	20	12.2
25		25	
30		30	

701	801		1245
71" ns 74"	73" ns 76"	SP	14011 gal
24" 108°	23.5" out 109°	15.5/200°	2/30/11
.34-.62	.27-.~~45~~	18-34	2411
21.8	~~21.9~~ 13.3	15.4/68°	2373
5075/101.1°/18.2			2408
5600/102.5°/16.0			
5950/102.5°/16.0			

4/15/14 0700-0845 Hexcel

HY-7s	4.83	21.6	0720
HY-7ss	5.32	24.6	0715
HY-9	6.93	22.8	0728
HY-14s	10.49	29.5	0759
HY-15s	7.43	26.7	0753

7.2, 5.1, 5.3, 10.3

605389 ft³ @ 0835

2200 24th Ave E
98112

#14092758 - 45days (5/30)
- metro trans.t
- KC metro sewer
- SCL
- SPU water
- SDOT
- Qwest
- Comcast
- PSE gas
- SPU - WW

Alarm PAH-401 VLS 0523 - 12-21-13

on site system down

onsite @ 1020

offsite @ 1400

W - DSCHG → 1130

W - INT → 1140

W - INF → 1150

1300

5501 Pump - Dschg 10.1 psi
Flowrate → 965 gal

Motor run times

P-401 VLS	1 hr
P-501 VLS	1 hr
B-701 SVE	284 hrs
B-801 SVE	247 hrs
C-2201 SPG	283 hrs
P-5501 TNK	1 hr

Sparge

T into HX → 125 °F
P into HX → 7 psi
T out HX → 44 °F
P out HX → 8 psi
Mag 4.5" h_2O

SVE (B801)

P into VLS → 26" h_2O
Mag 0.07" h_2O
P into blower → 25" h_2O
T out to carbon → 78° F
P out to carbon → 35" h_2O
PID →

SVE (B701)

P into VLS → 26" h_2O
Mag 0.08" h_2O
P into blower → 29" h_2O
T out to Carbon → 78° F
P out to Carbon → 37" h_2O
PID →

AS

well	sctn	press
V6	5.5	5
V7	—	
V8	5.5	5
V9	—	
V10	—	
V5	—	
V11	6	5
V4	—	
V12	5	5
V3	—	
V13	5	4
V2	—	
V14	—	
V1	—	
W1	—	
W2	4	5
W3	—	
W4	—	
W5	—	
W6	—	
W7	—	
W8	—	
W9	—	
W10	—	
W11	—	
W12	—	
W13	—	
W14	—	
W15	—	
W16	—	
W17	—	
M21	—	
M20	—	
M19	—	
M18	?	4
M8	—	
M20	—	
M26	—	
M2	—	
M27	—	
M16	—	
M3	—	
M9	—	
M17	—	
M5	8	4
M19	—	
M15	—	
M7	—	
M10	—	
M14	—	
M18	—	
M6	—	
M13	—	
M4	4	4
M22	—	
M12	—	
M1	—	
M23	—	
M11	—	
M25	—	
M24	3	4
M21	—	

SVE

wcn	Vac "wc
M1	10
M2	10
M3	12
M4	12
M5	6
M14	17
M13	19
M15	18
M12	0
M11	15
M16	14
M17	16
M18	17
M19	22
M8	0
M9	10
M10	12
M7	42?
M6	12
WA1	42
WA2	45
WA3	10
WB1	8
WB2	11
WB3	12
WC3	16
WC2	11
WC1	8
TSUE 3	21
TEFR1 AN	33
TMW65 AN	31
TSUE 4	21
TSUE 11/MW67	19
TSUE16/MW66	20
TSUE 2	18
TSUE 1	17
TSUE 7	17
TSUE12/MW68	18
V9	46
V7	28
V1	0?
V6	21
V2	22
V5	22
V3	20
V4	20
TSUE 5	21
TSUE 6	25
TEFR2 AN	30
TSUE 8	21
TMW48 AN	21

PID

V-INF-1 → SUE B701 @ 1300 27.9

V-INF-2 → SUE B801 @ 1300 25,2

V-INT-1 → @ 1310 0.0

V-INT-2 → @ 1311 0.0

V-INT-3 → @ 1312 0.1

V-DSCHG-1 → @ 1325 0.0

V-DSCHG-2 → @ 1326 0.0

V-DSCHG-3 → @ 1327 0.0

1/13/14

Armed onsite @ 1635

System operational upon arrival

AS Press. Q

V6 ——
V7 2, 6.5
V8 ——
V9 ——
V10 ——
V5 3, 1
V11 ——
V4 ——
V12 ——
V3 ——
V13 ——
V2 ——
V14 ——
V1 ——
W1 ——
W2 ——
W3 ——
W4 ——
W5 3, 0
W6 ——
W7 1, 0
W8 ——
W9 3, 0
W10 ——
W11 2, 0
W12 ——
W13 ——
W14 2, 6
W15 ——
W16 ——
W17 ——
M21 ——
M20 2, 1
M19 1, 3
M18 ——

M8 2, 10
M20 ——
M26 ——
M2 ——
M27 4, 0
M16 ——
M3 2, 2
M9 ——
M17 2, 7.5
M5 ——
M19 2, 3
M15 5, 6
M7 ——
M10 5, 7.5
M14 ——
M18 ——
M6 ——
M13 4, 1
M4 ——
M22 5, 5.5
M12 1, 1
M1 ——
M23 ——
M11 ——
M25 ——
M24 ——
M21 ——

SUE

Date: 1/13/14

M1	11	TSUE3	21
M2	14	TEFR1 Ant	37
M3	16	Tmw65 Ant	21
M4	12	TSUE4	19
M5	10	TSUE11/mw67	20
M14	16	TSUE10/mw66	20
M13	18	TSUE2	19
M15	18	TSUE1	16
M12	13	TSUE7	18
M11	17	TSUE12/mw68	17
M16	14	V9	21
M17	13	V7	28
M18	17	V1	21
M19	21	V6	23
M8	16	V2	22
M9	11	V5	23
M10	12	V3	21
M7	12	V4	21
M6	11	TSUE5	23
WA1	18	TSUE6	26
WA2	45	TEFR2Ant	24
WA3	14	TSUE8	23
WB1	11	tmw68 Ant	23
WB2	12		
WB3	14		
WC3	19		
WC2	13		
WC1	11		

1-14-14 arrived onsite @ 1115
System operating upon arrival

AJ press, Q

V6 ——
V7 ——
V8 ——
V9 3, 0
V10 3, 1
V5 ——
V11 ——
V4 3, 10.5
V12 ——
V3 ——
V13 ——
V2 3, 9
V14 2, 5
V1 2, 0
W1 2, 1
W2 ——
W3 ——
W4 ——
W5 1, 0
W6 2, 1
W7 1, 0
W8 ——
W9 1, 0
W10 3, 0
W11 ——
W12 ——
W13 ——
W14 ——
W15 2, 0
W16 ——
W17 3, 25

M21 0, 0
M20 2, 0
M19 ——
M18 ——
M8 ——
M20 ——
M26 ——
M2 ——
M27 3, 0
M16 ——
M3 ——
M9 ——
M17 ——
M5 ——
M19 ——
M15 2, 1
M7 ——
M10 2, 0
M14 3, 1
M18 ——
M6 3, 1
M13 ——
M4 ——
M22 ——
M12 1, 0
M1 ——
M23 ——
M11 ——
M25 ——
M24 ——
M21 ——

SVE 1-14-14

M1 12
M2 11
M3 14
M4 12
M5 10
M14 18
M13 17
M15 18
M12 15
M11 16
M16 14
M17 13
M18 15
M19 22
M8 16
M9 12
M10 12
M7 16
M6 11
WA1 19
WA2 44
WA3 15
WD1 11
WB2 12
WB3 14
WC3 18
WC2 14
WC1 12
TSVE 3 21
TEFR1 Anr 35
TMW65 Anr 21
TSVE 4 22

TSVE 11 MW67 20
TSVE 10 MW66 20
TSVE 2 19
TSVE 1 17
TSVE 7 18
TSVE 12 MW68 16
V9 21
V7 27
V1 21
V6 23
V2 23
V5 25
V3 23
V4 21
TSVE 5 28
TSVE 6 26
TEFR2 Anr 23
TSVE 8 22
TMW48 Anr 23

1-15-14

Armed crew 1520
system checked upon arrival

AS press, Q

V6 ——
V7 ——
V8 ——
V9 ——
V10 ——
V5 ——
V11 ——
V4 ——
V12 ——
V3 ——
V13 ——
V2 ——
V14 ——
V1 3, 1
W1 4, 1
W2 ——
W3 ——
W4 ——
W5 2, 0
W6 5, 0
W7 2, 0
W8 ——
W9 4, 1
W10 5, 0
W11 1, 0
W12 ——
W13 ——
W14 ——
W15 4, 1
W16 ——
W17 5, ?
M21 ——
M20 4, 0
M19 ——
M18 ——
M8 ——

M20 5, 1
M26 ——
M2 ——
M27 5, 1
M16 4, 0
M3 ——
M9 ——
M17 ——
M5 ——
M19 ——
M15 4, 1
M7 ——
M10 2, 0
M14 4, 1
M18 ——
M6 5, 0
M13 ——
M4 ——
M22 ——
M12 2, 0
M1 ——
M23 ——
M11 2, 0
M25 ——
M24 ——
M21 ——

SVE

1-15-14

	Vac, PID
M1	11, 3.5
M2	15, 22.3
M3	14, 0.0
M4	13, 9.9
M5	8, 10.5
M14	17, 13.0
M13	19, 13.5
M15	18, 13.7
M12	14, 430
M11	15, 260
M16	14, 31.0
M17	15, 107
M18	17, 220
M19	24, 200
M8	17 —
M9	13 —
M10	14 —
M7	15 —
M6	16 —
WA1	20 —
WA2	45 —
WA3	18 —
WB1	14 —
WB2	10 —
WB3	16 —
WC3	21 —
WC2	17 —
WC1	13 —

	Vac, PID
TSVE 3	28, 19.2
TEFR1 Air	35, 9.5
TMW65 Air	21, 11.8
TSVE 4	22, —
TSVE11 MW67	20, —
TSVE10 MW66	20, —
TSVE 2	19 —
TSVE 1	18 —
TSVE 7	18 —
TSVE12 MW68	17 —
V9	22 —
V7	28 —
V1	22 —
V6	24 —
V2	23 —
V5	24 —
V3	22 —
V4	22 —
TSVE 5	24 —
TSVE 6	26 —
TEFR2 Air	23 —
TSVE 8	22 —
TMW48 Air	25 —

1-20-14

Arrived onsite @ 0845
System operational upon arrival
CCC arrived onsite @ 0905

AS

~~PSI~~, Q

V6	4, 3	W16	—	m23	3, 0
V7	—	W17	—	m11	—
V8	5, 5	m21	—	m25	—
V9	—	m20	—	m24	—
V10	—	m19	—	m21	2, 0
V5	—	m18	3, 7.5		
V11	4, 6.5	m8	—		
V4	—	m20	—		
V12	5, 4.	m26	3, 0		
V3	5, 3	m2	—		
V13	—	m27	2, 0		
V2	—	m16	1, 0		
V14	—	m3	—		
V1	—	m9	—		
W1	—	m17	—		
W2	—	m5	3, 8		
W3	—	m19	—		
W4	5, 0	m15	4, 0		
W5	4, 0	m7	—		
W6	—	m10	—		
W7	1, 0	m14	—		
W8	~~5, 0~~	m18	—		
W9	2, 0	m6	—		
W10	—	m13	—		
W11	—	m4	—		
W12	—	m22	—		
W13	—	m12	1, 0		
W14	—	m1	2, 11		
W15	—				

SUE Vac, PID, Q

m1 14, 2.2, 2600
m2 15, 3.5, 1250
m3 16, 3.7, 1415
m4 14, 1.1, 1200
m5 11, 1.2, 1470
m14 19, 3.2, 1240
m13 21, 3.3, 1330
m15 22, 4.3, 1050
m12 17, 281, 1440
m11 18, 235, 1220
m16 16, 29.7, 1560
m17 18, 150, 1010
m18 23, 184, 1190
m19 26, 222, 1380
m8 20, 171, 1270 Temp 49.9°
m9 15, 16.8, 1180
m10 18, 10.1, 1380
m7 17, 7.2, 1390
m6 14, 5.6, 1460
WA1 22, 5.1, 1250
WA2 47, 5.4, 1200
WA3 22, 3.4, 1220
WB1 14, 3.7, 1900
WB2 13, 4.5, 1180
WB3 20, 5.3, —
WC3 20, 7.1, 990
WC2 18, 9.0, 1100
WC1 12, 5.4, 1020
TSUE 3 35, 26.6, 2770
TEFR1 Air 47, 10.3, 2120
TMW68 Air 33, 8.5, 2150
TSUE 4 34, 8.4, 2180
TSUE 11/mw67 31, 11.1, 1640
TSUE 10/mw66 29, 125, 2040
TSUE 2 28, 10.0, 2100
TSUE 1 26, 5.5, 3150
TSUE 7 27, 3.5, 1985
TSUE 12/mw68 25, 4.7, 2205
V9 31, 4.0, 2160
V7 37, 1.8, 2140
V1 32, 2.3, 2340
V6 35, 1.6, 2450
V2 36, 2.3, 2220
V5 35, 35.8, 2980
V3 34, 3.0, 2230
V4 35, 2.8, 2380
TSUE 5 34, 6.3, 2310
TSUE 6 38, 5.4, 2420
TEFR2 35, 4.5, 2290
TSUE 8 36, 2.0, —
TMW48 Air 38, 115, —

P-66
1/22/14

Arrived onsite @ 0945
system operational upon arrival

AS ~~psi~~, Q

V6	4, 3
V7	—
V8	5, 4
V9	—
V10	—
V5	—
V11	4, 6
V4	—
V12	5, 3
V3	4, 4
V13	—
V2	—
V14	—
V1	1, 0
W1	—
W2	—
W3	—
W4	4, 0
W5	—
W6	—
W7	—
W8	3, 0
W9	—
W10	—
W11	—
W12	—
W13	5, 10.5
W14	—
W15	—
W16	4, 1
W17	—

M21	—
M20	—
M19	—
M18	1, 8.5
M8	—
M20	—
M26	—
M2	—
M27	2, 0
M16	—
M3	—
M9	—
M17	—
M5	1, 7
M19	—
M15	2, 0
M7	—
M10	—
M14	—
M18	—
M6	—
M13	—
M4	—
M22	—
M12	2, 0
M1	2, 11
M23	2, 0
M11	—
M25	—
M24	—
M21	2, 0

SUB

M1	16
M2	15
M3	18
M4	16
M5	13
M14	20
M13	22
M15	25
M12	20
M11	20
M16	22
M17	20
M18	26
M19	30
M8	23
M9	15
M10	16
M7	18
M6	17
WA1	21
WA2	45
WA3	24
WB1	12
WB2	13
WB3	16
WC3	20
WC2	15
WC1	13

TSUE3	24
TEFR1	39
TMW65	24
TSUE4	25
TSUE11	21
TSUE10	20
TSUE2	19
TSUE1	18
TSUE7	19
TSUE12	18
V9	24
V7	30
V1	23
V6	25
V2	26
V5	28
V3	25
V4	26
TSUE5	26
TSUE6	29
TEFR2	26
TSUE8	27
TMW48	28

P-66
1/23/14

System operational open around
onsite @ 1600

~~AS~~ psi, Q

V6	—	W15	—	M22	—
V7	4, 6	W16	—	M12	—
V8	—	W17	—	M1	—
V9	—	M21	—	M23	—
V10	—	M20	—	M11	—
V5	3, 0	M19	3, 3	M25	—
V11	—	M18	—	M24	—
V4	—	M8	4, 9	M21	—
V12	—	M20	—		
V3	—	M26	—		
V13	1, 6	M2	—		
V2	—	M27	4, 0		
V14	—	M16	—		
V1	—	M3	3, 0		
W1	—	M9	—		
W2	4, 3	M17	4, 7.5		
W3	—	M5	—		
W4	—	M19	—		
W5	5, 3	M15	—		
W6	—	M7	2, 6		
W7	—	M10	—		
W8	—	M14	—		
W9	5, 0	M18	2, 1		
W10	—	M6	—		
W11	—	M13	—		
W12	—	M4	2, 5		
W13	—				
W14	4, 5				

SVE

vae

M1	17
M2	16
M3	19
M4	16
M5	12
M14	21
M13	25
M15	24
M12	19
M11	21
M16	22
M17	21
M18	26
M19	32
M8	24
M9	16
M10	17
M7	18
M6	18
WA1	23
WA2	45
WA3	24
WB1	14
WB2	13
WB3	18
WC3	19
WC2	17
WC1	12

TSVE 3	25
TEFR1	39
TMW65	24
TSVE4	23
TSVE11	22
TSVE10	21
TSVE2	20
TSVE1	18
TSVE7	19
TSVE12	19
V9	24
V7	30
V1	24
V6	26
V2	25
V5	28
V3	25
V4	25
TSVE 5	26
TSVE6	28
TEFR2	26
TSVE8	27
TMW48	26

P-66
1/24/14

System operational upon arrival
arrived onsite @ 17:15

AS psi, @

V6 —
V7 —
V8 —
V9 —
V10 —
V5 —
V11 —
V4 —
V12 —
V3 —
V13 —
V2 —
V14 —
V1 —
W1 —
W2 —
W3 6, 10
W4 —
W5 2, 0
W6 —
W7 —
W8 —
W9 —
W10 —
W11 —
W12 5, 3
W13 —
W14 —
W15 1, 0
W16 —
W17 5, 7
W21 —
W20 —
W19 —
W18 —
M8 —
M20 4, 0
M26 —
M2 —
M27 3, 0
M16 3, 0
M3 —
M9 —
M17 —
M5 —
M19 —
M15 3, 0
M7 —
M10 —
M14 —
M18 —
M6 —
M13 —
M4 —
M22 —
M12 6, 1
M1 —
M23 —
M11 —
M25 5, 5
M24 —
M21 —

SUE vac

m1	17
m2	16
m3	19
m4	15
m5	13
m14	22
m13	25
m15	23
m12	20
m11	21
m16	21
m17	23
m18	27
m19	31
m8	23
m9	17
m10	16
m7	19
m6	17
WA1	23
WA2	47
WA3	24
WB1	11
WB2	15
WD3	17
WC3	21
WC2	16
WC1	14

TSUE3	25
TEFR1	38
Tmw65	24
TSUE4	23
TSUE11	22
TSUE10	22
TSUE2	20
TSUE1	19
TSUE7	18
TSUE12	20
V9	24
V7	29
V1	25
V6	26
V2	26
V5	28
V3	24
V4	26
TSUE5	25
TSUE6	28
TEFR2	25
TSUE8	26
Tmw48	27

P-66

1-27-14

Arrived onsite @ 1045

System operational upon arrival

051020M114
027
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Samples

Vapor

V-INT-3	@ 1250	V-INF-1	@ 1300
V-INT-2	@ 1240	V-INF-2	@ 1310
V-INT-1	@ 1230	V-INF-3	@ 1320
V-DSCHG-3	@ 1220	W-DSCHG	@ 1500
V-DSCHG-2	@ 1210	W-INT	@ 1510
V-DSCHG-1	@ 1200	W-INF	@ 1520

SVE

Vac, PID

M1	17, 0.9	WA1	23, 2.7	V9	24,
M2	15, 1.2	WA2	48, 2.7	V7	29,
M3	18, 1.1	WA3	25, 1.9	V1	24,
M4	18, 0.7	WB1	13, 1.3	V6	25,
M5	14, 0.5	WB2	14, 1.4	V2	25,
M14	21, 1.5	WB3	18, 1.5	V5	27,
M13	24, 0.6	WC3	22, 1.9	V3	23,
M15	23, 2.9	WC2	17, 1.2	V4	25,
M12	21, 100	WC1	18, 1.0	TSVE 5	25,
M11	22, 355	TSVE 3	24,	TSVE 6	28,
M16	22, 338	TEFR1	39,	TEFR2	25,
M17	21, 216	TMW65	24,	TSVE 8	25,
M18	27, 183	TSVE 4	23,	TMW 48	27,
M19	33, 240	TSVE 11	21,		
M8	25, 236	TSVE 10	22,		
M9	17, 16.0	TSVE 2	20,		
M10	16, 7.5	TSVE 1	19,		
M7	19, 4.8	TSVE 7	19,		
M6	17, 3.5	TSVE 12	20,		

P-66 Annual onsite @ 1230
1/28/14 System operational upon arrival

SVE vac, PID @ sample tm

M1	15	—
M2	14	—
M3	19	—
M4	17	—
M5	14	—
M14	22	—
M13	24	—
M15	13	—
M12	25	— @ 1610
M11	22	— @ 1600
M16	21	20.0 @ 1550
M17	21	— @ 1540
M18	26	— @ 1530
M19	33	— @ 1520
M8	24	—
M9	17	—
M10	18	—
M7	19	—
M6	16	—
WA1	22	—
WA2	46	—
WA3	26	—
WB1	14	—
WB2	15	—
WB3	17	—
WC3	20	—
WC2	15	—
WC1	16	—

TSVE 3	24,	15.5
TEFR1	38,	5.1
TMW 65	23,	3.1
TSVE 4	13,	1.9
TSVE 11	21,	3.5
TSVE 10	22,	116 @ 1515
TSVE 2	20,	4.2
TSVE 1	18,	2.2
TSVE 7	19,	1.1
TSVE 12	18,	1.2
V9	22,	4.6
V7	29,	1.0
V1	24,	1.1
V6	25,	0.8
V2	25,	3.0
V5	26,	42.5 @ 1500
V3	24,	2.4
V4	24,	5.3 @ 1450
TSVE 5	25,	4.7
TSVE 6	28,	3.7
TEFR2	25,	1.3
TSVE 8	26,	1.0
TMW 48	27,	113 @ 1440

P-66

2-25-14

Arrived onsite @ 1130
System operational upon arrival

M1 20, 0.5
M2 19, 0.4
M3 22, 0.3
M4 21, 0.1
M5 17, 0.2
M14 25, 1.6
M13 28, 0.4
M15 25, 1.6
M12 23, 0.2
M11 25, 179
M16 23, 8.0
M17 25, 139
M18 30, 70.0
M19 38, 21.5
M8 26, 63.9
M9 19, 6.0
M10 18, 3.8
M7 21, 2.7
M6 18, 2.3
WA1 23, 1.9
WA2 46, 1.8
WA3 26, 1.6
WB1 15, 1.4
WB2 16, 1.3
WB3 20, 1.3
WC3 21, 1.2
WC2 17, 1.2
WC1 13, 0.9
TSVE 3 34 —
TEFR 1 Anc 46 —
TMW65 Anc 32 —
TSVE 4 32 —
TSVE11 MW67 30 —
TSVE 10 MW66 29 —
TSVE2 28 —
TSVE1 25 —
TSVE7 26 —
TSVE 12 25 —
V9 22 —
V7 28 —
V1 24 —
V6 26 —
V2 25 —
V5 28 —
V3 29 —
V4 28 —
TSVE 5 30 —
TSVE6 34 —
TEFR2 Anc 31 —
TSVE8 33 —
TMW48 Anc 35 —

SYSTEM LOG SHEET

PHILLIPS 66 FACILITY #255353
600 Westlake Avenue
ERI Job No. 03132603B

			VPC Array																
Date	Time	Name	Stack Air Temp	Stack Air Velocity	Flowrate	Stack Air Temp	Stack Air Velocity	Flowrate	Stack Air Temp	Stack Air Velocity	Flowrate	HC Into 1st VPC1	HC Into 1st VPC2	HC Into 1st VPC3	HC Into 2nd VPC1	HC Into 2nd VPC2	HC Into 2nd VPC3	HC out Stack 1	HC out Stack 2	HC out Stack 3	Samples Collected?
			VPC-1	VPC-1	VPC-1	VPC-2	VPC-2	VPC-2	VPC-3	VPC-3	VPC-3	INF-1	INF-2	INF-3	INT-1	INT-2	INT-3	DSCHG-1	DSCHG-2	DSCHG-3	
			°F	ft/min	SCFM	°F	ft/min	SCFM	°F	ft/min	SCFM	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv	Y/N
12/27/2013	12:00	EJB	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.0	0.1	0.0	0.0	0.0	y
1/3/2014	12:30	EJB	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.4	0.5	0.5	0.0	0.0	0.0	n
1/6/2014	16:45	EJB	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	na	na	na	na	na	na	n
1/7/2014	11:30	EJB	72	5400	503.1	72	5210	485.4	71.1	4980	464.7	NM	NM	NM	0.3	0.5	0.4	0.0	0.0	0.0	n
1/8/2014	16:30	EJB	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.2	0.3	0.4	0.0	0.0	0.0	n
1/9/2014	16:00	EJB	71	5540	515.9	69	5310	496.4	68.0	5300	496.4	NM	NM	NM	0.2	0.3	1.0	0.0	0.0	0.0	n
1/10/2014	9:30	EJB	75.8	5600	517.4	73.3	5410	502.2	73.0	5690	528.5	NM	NM	NM	1.6	2.1	3.1	0.2	0.3	0.5	n
1/13/2014	16:40	EJB	80.2	5560	509.0	77.1	5780	532.2	76.2	5950	548.7	NM	NM	NM	1.0	1.4	3.2	0.5	0.8	0.9	n
1/14/2014	11:30	EJB	79.8	5430	497.4	77	5690	524.0	76.5	6000	553.0	NM	NM	NM	0.0	0.1	0.6	0.0	0.0	0.0	n
1/15/2014	15:20	EJB	81.3	5610	512.5	78.2	5590	513.6	77.1	5840	537.7	NM	NM	NM	0.0	0.5	3.6	0.4	0.7	0.6	n
1/16/2014	10:15	NAG	72.9	5800	538.2	72.9	5750	533.6	72.8	5800	538.3	NM	NM	NM	0.0	0.0	0.0	0.0	0.0	0.0	n
1/17/2013	12:15	NAG	80.7	4850	441.1	77.3	4600	421.0	74.6	5050	464.5	NM	NM	NM	0.0	0.4	3.9	0.1	0.2	0.2	n
1/20/2014	9:00	EJB	79.6	5000	456.7	76.2	4920	452.2	74.2	4940	455.7	NM	NM	NM	0.0	0.8	6.5	0.2	0.0	0.1	n
1/21/2014	14:15	NAG	87.2	4800	429.9	83.2	5100	460.1	80.9	5150	466.6	NM	NM	NM	3.1	7.8	16.3	0.1	0.4	0.5	n
1/22/2014	10:30	EJB	80.0	4950	451.8	79.3	5060	462.4	81.1	5500	500.9	NM	NM	NM	0.0	2.2	11.5	0.0	0.1	0.2	n
1/23/2014	16:30	EJB	75.5	4560	418.2	74.8	4770	438.1	76.0	5150	471.9	NM	NM	NM	0.0	2.5	12.5	0.1	0.2	0.2	n
1/24/2013	17:30	EJB	76.4	4720	432.2	75.5	4790	439.3	77.3	5250	479.9	NM	NM	NM	0.0	2.6	14.0	0.3	0.2	0.1	n
1/27/2014	12:00	EJB	74.4	4710	431.9	74.2	4700	431.1	76.0	5200	475.4	NM	NM	NM	0.0	3.2	14.7	0.0	0.0	0.1	y
1/28/2014	13:15	EJB	78.6	4830	439.5	77.8	4840	441.0	79.1	5230	475.4	NM	NM	NM	0.1	4.1	15.5	0.0	0.2	0.3	n
1/29/2014	10:40	EJB	85.1	5050	450.9	79.6	4510	406.8	77.5	5020	454.6	NM	NM	NM	0.2	4.4	13.9	0.1	0.1	0.1	n
1/30/2014	14:45	NAG	83.4	5050	452.3	79.1	4800	433.3	76.6	4900	444.4	NM	NM	NM	0.1	3.1	10.1	0.0	0.0	0.0	y
1/31/2014	11:30	NAG	73.7	4700	429.6	71.2	4500	413.2	70.1	4500	414.1	14.2	19.7	25.8	0.0	1.9	7.0	0.0	0.0	0.0	n
2/3/2014	9:00	EJB	77.3	5100	464.1	74.1	4700	430.2	74.2	5060	463.1	NM	NM	NM	0.0	3.7	10.3	0.0	0.0	0.0	n
2/4/2014	13:00	NAG	77.3	4400	399.9	76	4625	421.4	76.0	4925	449	11.5	23.3	35	0.0	4.6	12.0	0.0	0.3	0.2	n
2/11/2014	11:00	NAG	90	5100	449.7	85.8	5000	444.3	82.9	5050	451	14.7	25	35.5	0.1	10.4	17.2	0.0	0.0	0.0	n
2/12/2014	10:45	NAG	87.4	4900	438.4	87.7	5400	482.9	86.5	5400	484	29.3	24.5	24.5	0.1	13.1	21.0	0.0	0.0	0.8	n
2/13/2014	13:30	NAG	82.7	4700	422.9	84	4600	413.0	83.6	5100	458	24.7	22.6	21.2	0.0	0.0	0.0	0.0	0.0	0.0	n
2/17/2014	14:45	NAG	81.1	4600	415.2	82.5	4750	427.6	82.7	5000	450	22.3	18.5	19	0.0	0.0	0.0	0.0	0.0	0.0	n
2/19/2014	12:00	NAG	82.9	4800	432.5	82.9	5200	468.6	82.3	5400	487	19.5	15.9	16.4	0.0	0.0	0.0	0.0	0.0	0.0	y
2/20/2014	9:45	NAG	81.4	4800	434.0	81.4	5075	458.8	81.4	5500	497	22.3	17.1	16.8	0.0	0.0	0.0	0.0	0.0	0.0	n
2/25	1200	EJB	88.8	4920		88.6	[redacted] 5600		88.6	5530		20.6	16.2	17.2	[redacted] 0	0	0	0	0	0	

	DPE System Skid (B-701)							DPE System Skid (B-801)						
VPC Line Drain Qty	Magnahelic Gauge	Vac into VLS	Vac into Blower	Temp Blower Dischg	Press Blower Dischg	Blower Inlet HC (pre-dil)	Blower Outlet HC	Magnahelic Gauge	Vac into VLS	Vac into Blower	Temp Blower Dischg	Press Blower Dischg	Blower Inlet HC (pre-dil)	Blower Outlet HC
gal	"H_2O	"H_2O	"H_2O	°F	"H_2O	ppmv	ppmv	"H_2O	"H_2O	"H_2O	°F	"H_2O	ppmv	ppmv
	0.08	26	29	78	37	NM	29.9	0.07	26	25	78	35	NM	25.2
	0.06	26	31	80	37	NM	16.0	0.06	26	26	78	35	NM	17.9
	0.06	28	32	78	37	NM	21.1	0.07	26	25	73	35	NM	17.2
	0.03	18	22	78	38	NM	19.3	0.06	25	26	78	37	NM	16.4
	0.04	18	21	77	38	NM	25.4	0.06	26	26	78	36	NM	16.3
	0.04	22	25	76	38	NM	34.1	0.07	26	27	76	35	NM	31.8
	0.05	22	26	79	38	NM	20.6	0.07	27	29	79	36	NM	12.0
	0.05	22	26	82	37	NM	21.5	0.08	26	30	83	36	NM	15.7
	0.05	22	26	82	37	NM	20.2	0.08	27	32	82	36	NM	18.0
	0.04	23	27	83	37	NM	22.5	0.07	27	33	84	36	NM	14.4
	0.04	24	28	76	37	NM	14.8	0.07	28	36	77	36	NM	17.3
	0.08	34	37	80	36	NM	36.5	0.12	44	51	85	32	NM	15.0
	0.08	33	37	79	37	NM	37.9	0.11	44	59	82	33	NM	12.8
	0.14	46	50	91	34	NM	42.8	0.17	53	65	89	31	NM	15.9
	0.14	42	48	88	36	NM	53.2	0.10	33	52	81	34	NM	14.6
	0.14	40	48	85	34	NM	56.6	0.10	32	50	80	33	NM	16.2
	0.14	41	49	85	34	NM	52.5	0.09	32	100	80	33	NM	14.5
	0.12	41	50	84	33	NM	52.8	0.09	31	100	77	32	NM	15.2
	0.12	40	51	88	33	NM	43.5	0.09	31	50	81	32	NM	13.5
	0.14	44	55	88	31	NM	41.5	0.13	59	60	90	28	NM	16.5
	0.15	44	54	85	31	NM	NM	0.17	56	61	88	28	NM	NM
	0.15	46	57	80	31	34.4	27.3	0.13	47	56	76	30	27.5	13.5
	0.12	40	53	78	33	NM	45.1	0.12	46	52	78	30	NM	14.2
	0.15	46	57	83	32	35.9	33.1	0.13	48	54	81	30	24.9	13
	0.17	50	62	87	29	35.5	37.6	0.15	51	58	86	27	25.7	15.2
	0.16	47	62	94	32.5	34.9	36.1	0.15	51	56	95	32	22.8	13
	0.18	48	62	90	31	29.8	31.1	0.15	51	58	91	31	18.6	10.7
	0.19	51	66	90	31	28.7	27.1	0.15	52	56	90	31	18.2	11.1
	0.19	49	63	89	31.5	25.6	26.0	0.14	49	55	88	32	17.5	7.9
	0.19	50	64	87	32	26.8	30.4	0.18	49	58	85	32	10.7	6.2
2/25	0.17	46	66	94	32	31.5	29.1	0.19	46	54	93	32	9.6	6.5

Conversions 6.24E-11

microgram/m3 = 40.5

Constant 100

Air Sparge Skid					1										
Temp into HX	Pressure into HX	Temp out HX	Pressure out HX	Magnahelic gauge	Blower Hour Meter	Blower Hour Meter	Sparge Compressor Hour Meter	VLS Transfer Pump Hour Meter	VLS Transfer Pump Hour Meter	Tank Transfer Pump Hour Meter	Effluent Totalizer	LPC1 Water Pressure	LPC2 Water Pressure	Tank Transfer Pump Discharge Pressure	Estimated Hydrocarbons Removed (Vapor)
					B-701	B-801	C-2201	P-401	P-501	P-5501					
°F	PSI	°F	PSI	"H_2O	hrs	hrs	hrs	hrs	hrs	hrs	gal	psi	psi	psi	lbs
125	7	44	8	4.5	284	247	283	1	1	1	965	NM	NM	10.1	
140	4	44	6.5	4.5	398	361	397	1	1	1	1,286	NM	NM	9.7	
115	4	42	6	4.5	401	364	400	1	1	1	1,287	NM	NM	9.8	
125	4	45	6	4.5	420	383	419	1	1	1	1,394	NM	NM	10	
120	4	43	5	4.5	448	411	447	1	1	1	1,740	NM	NM	10	
120	7	43	8	5.0	472	435	471	1	1	1	1,799	NM	NM	9.6	
125	7	48	7.5	5.0	489	453	488	1	1	1	1,822	NM	NM	9.8	
126	6	50	6.5	5.0	568	532	568	1	1	1	2,430	NM	NM	9.9	
125	6	52	6.5	5.0	587	550	586	1	1	1	2,430	NM	NM	10	
125	6	51	7.0	5.0	615	578	612	1	1	1	2,460	NM	NM	9.8	
118	7.5	41	6.0	5.0	634	597	631	1	1	1	2,462	NM	NM	NM	
118	6.5	41	6.0	5.0	659	623	656	1	1	1	2,462	NM	NM	NM	
120	6	42	6.5	5.0	728	692	725	1	1	1	2462	NM	NM	NM	
123	6	44	5.5	5.0	757	721	754	1	1	1	2501	NM	NM	11	
125	6	48	6.5	5.0	777	740	774	1	1	2	2501	NM	NM	NM	
125	8	46	8.5	5.0	807	770	804	1	1	2	2516	NM	NM	NM	
125	6	48	7.0	5.25	832	795	829	1	1	2	2516	NM	NM	NM	
115	6	44	6.5	5.5	898	861	895	1	1	2	2516	NM	NM	9.8	
130	8	48	8.0	5.0	923	886	920	1	1	2	2533	NM	NM	NM	
125	9	50	8.5	5.0	946	909	943	1	1	2	2984	NM	NM	6.1	
128	9	45	7	5.5	963	926	960	1	1	2	3309	NM	NM	7	
119	10	39	8.5	5.5	966	929	963	1	1	2	3385	NM	NM	7	
118	7	40	8.7	5.5	1035	998	1032	1	1	2	3406	NM	NM	5.2	
118	8	38	8.0	5.5	1063	1026	1060	1	1	2	3418	NM	NM	NM	
142	8	49	6	8	1229	1192	1227	1	1	3	3823	NM	NM	12	
145	7	56	6	8.5	1255	1218	1252	1	13	3	4318	NM	NM	12	
144	9	55	6	8.5	1274	1237	1272	2	13	3	4352	NM	NM	12	
141	8	49	7	8.5	1341	1304	1338	2	27	4	5377	NM	NM	12	
141	8	47	7	9.0	1366	1329	1364	2	27	4	5728	NM	NM	12	
144	9.5	47	9	9.0	1388	1351	1385	2	27	4	5791	NM	NM	12	
146	9.5	56	10	8.0	1510	1473	1507	2	27	4	6061	—	—	12	

3/26

10:30 AM Found onsite System not operating upon arrival
Alarm code - VFDA-8202 PNL @ 0337 3-5-14

VFD code OLF

FIELD LOG
VOC CONCENTRATION RECORD

SITE: Philips 66 Facility #255353
LOCATION: 600 Westlake Avenue, Seattle, WA
FIELD CREW: EJB & NAG

CARDNO ERI PROJECT #: 03132603B
SELECTED WELLS: Current
DATE: 03/05-03/xx/14

Well #	Date	Vacuum	Flow Rate	Temp	VOC	SCFM	Comments
		in. H_2O	feet/min	°F	ppm		
WC1	03/05/14	14	–	–	0.6	–	
WC2	03/05/14	17	–	–	0.3	–	
WC3	03/05/14	22	–	–	0.5	–	
WB3	03/05/14	18	–	–	0.4	–	
WB2	03/05/14	16	–	–	0.3	–	
WB1	03/05/14	17	–	–	0.2	–	
WA3	03/05/14	28	–	–	0.3	–	
WA2	03/05/14	49	–	–	0.2	–	
WA1	03/05/14	26	–	–	0.1	–	
M6	03/05/14	20	–	–	0.1	–	Full of H_2O
M7	03/05/14	23	–	–	0.3	–	
M10	03/05/14	22	–	–	0.1	–	
M9	03/05/14	23	–	–	0.1	–	
M8	03/05/14	29	–	–	60.5	–	
M1	03/05/14	21	–	–	1.8	–	
M2	03/05/14	20	–	–	1.4	–	
M3	03/05/14	23	–	–	1.1	–	
M4	03/05/14	21	–	–	0.8	–	
M5	03/05/14	19	–	–	0.8	–	
M14	03/05/14	25	–	–	2.0	–	
M13	03/05/14	28	–	–	0.7	–	
M15	03/05/14	29	–	–	1.4	–	
M12	03/05/14	25	–	–	0.6	–	
M11	03/05/14	26	–	–	178	–	
M16	03/05/14	27	–	–	9.5	–	
M17	03/05/14	25	–	–	134	–	
M18	03/05/14	33	–	–	71.2	–	
M19	03/05/14	40	–	–	21.5	–	
TSVE3		50	–	–		–	
TEFR1 AIR		60	–	–		–	
TMW65 AIR		48	–	–		–	
TSVE4		48	–	–		–	
TSVE11-MW67		45	–	–		–	
TSVE10 - MW66		45	–	–		–	
TSVE2		43	–	–		–	
TSVE1		38	–	–		–	
TSVE7		39	–	–		–	
TSVE12-MW68		39	–	–		–	
V9		37	–	–		–	
V7		45	–	–		–	
V1		40	–	–		–	
V6		44	–	–		–	
V2		42	–	–		–	
V5		43	–	–		–	
V3		41	–	–		–	
V4		47	–	–		–	
TSVE5		48	–	–		–	
TSVE6		51	–	–		–	
TEFR2 AIR		49	–	–		–	
TSVE8		52	–	–		–	
TMW48 AIR		54	–	–		–	

SYSTEM LOG SHEET

PHILLIPS 66 FACILITY #255353
600 Westlake Avenue
ERI Job No. 03132603B

			VPC Array																				
Date	Time	Name	Stack Air Temp	Stack Air Velocity	Flowrate	Stack Air Temp	Stack Air Velocity	Flowrate	Stack Air Temp	Stack Air Velocity	Flowrate	HC Into 1st VPC1	HC Into 1st VPC2	HC Into 1st VPC3	HC Into 2nd VPC1	HC Into 2nd VPC2	HC Into 2nd VPC3	HC out Stack 1	HC out Stack 2	HC out Stack 3	Samples Collected?	VPC Line Drain Qty	Magnahelic Gauge	Vac into VLS
			VPC-1	VPC-1	VPC-1	VPC-2	VPC-2	VPC-2	VPC-3	VPC-3	VPC-3	INF-1	INF-2	INF-3	INT-1	INT-2	INT-3	DSCHG-1	DSCHG-2	DSCHG-3				
			°F	ft/min	SCFM	°F	ft/min	SCFM	°F	ft/min	SCFM	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv	Y/N	gal	"H_2O	"H_2O
12/27/2013	12:00	EJB	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.0	0.1	0.0	0.0	0.0	y		0.08	26
1/3/2014	12:30	EJB	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.4	0.5	0.5	0.0	0.0	0.0	n		0.06	26
1/6/2014	16:45	EJB	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	na	na	na	na	na	na	n		0.06	28
1/7/2014	11:30	EJB	72	5400	503.1	72	5210	485.4	71.1	4980	464.7	NM	NM	NM	0.3	0.5	0.4	0.0	0.0	0.0	n		0.03	18
1/8/2014	16:30	EJB	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.2	0.3	0.4	0.0	0.0	0.0	n		0.04	18
1/9/2014	16:00	EJB	71	5540	515.9	69	5310	496.4	68.0	5300	496.4	NM	NM	NM	0.2	0.3	1.0	0.0	0.0	0.0	n		0.04	22
1/10/2014	9:30	EJB	75.8	5600	517.4	73.3	5410	502.2	73.0	5690	528.5	NM	NM	NM	1.6	2.1	3.1	0.2	0.3	0.5	n		0.05	22
1/13/2014	16:40	EJB	80.2	5560	509.0	77.1	5780	532.2	76.2	5950	548.7	NM	NM	NM	1.0	1.4	3.2	0.5	0.8	0.9	n		0.05	22
1/14/2014	11:30	EJB	79.8	5430	497.4	77	5690	524.0	76.5	6000	553.0	NM	NM	NM	0.0	0.1	0.6	0.0	0.0	0.0	n		0.05	22
1/15/2014	15:20	EJB	81.3	5610	512.5	78.2	5590	513.6	77.1	5840	537.7	NM	NM	NM	0.0	0.5	3.6	0.4	0.7	0.6	n		0.04	23
1/16/2014	10:15	NAG	72.9	5800	538.2	72.9	5750	533.6	72.8	5800	538.3	NM	NM	NM	0.0	0.0	0.0	0.0	0.0	0.0	n		0.04	24
1/17/2013	12:15	NAG	80.7	4850	441.1	77.3	4600	421.0	74.6	5050	464.5	NM	NM	NM	0.0	0.4	3.9	0.1	0.2	0.2	n		0.08	34
1/20/2014	9:00	EJB	79.6	5000	456.7	76.2	4920	452.2	74.2	4940	455.7	NM	NM	NM	0.0	0.8	6.5	0.2	0.0	0.1	n		0.08	33
1/21/2014	14:15	NAG	87.2	4800	429.9	83.2	5100	460.1	80.9	5150	466.6	NM	NM	NM	3.1	7.8	16.3	0.1	0.4	0.5	n		0.14	46
1/22/2014	10:30	EJB	80.0	4950	451.8	79.3	5060	462.4	81.1	5500	500.9	NM	NM	NM	0.0	2.2	11.5	0.0	0.1	0.2	n		0.14	42
1/23/2014	16:30	EJB	75.5	4560	418.2	74.8	4770	438.1	76.0	5150	471.9	NM	NM	NM	0.0	2.5	12.5	0.1	0.2	0.2	n		0.14	40
1/24/2013	17:30	EJB	76.4	4720	432.2	75.5	4790	439.3	77.3	5250	479.9	NM	NM	NM	0.0	2.6	14.0	0.3	0.2	0.1	n		0.14	41
1/27/2014	12:00	EJB	74.4	4710	431.9	74.2	4700	431.1	76.0	5200	475.4	NM	NM	NM	0.0	3.2	14.7	0.0	0.0	0.1	y		0.12	41
1/28/2014	13:15	EJB	78.6	4830	439.5	77.8	4840	441.0	79.1	5230	475.4	NM	NM	NM	0.1	4.1	15.5	0.0	0.2	0.3	n		0.12	40
1/29/2014	10:40	EJB	85.1	5050	450.9	79.6	4510	406.8	77.5	5020	454.6	NM	NM	NM	0.2	4.4	13.9	0.1	0.1	0.1	n		0.14	44
1/30/2014	14:45	NAG	83.4	5050	452.3	79.1	4800	433.3	76.6	4900	444.4	NM	NM	NM	0.1	3.1	10.1	0.0	0.0	0.0	y		0.15	44
1/31/2014	11:30	NAG	73.7	4700	429.6	71.2	4500	413.2	70.1	4500	414.1	14.2	19.7	25.8	0.0	1.9	7.0	0.0	0.0	0.0	n		0.15	46
2/3/2014	9:00	EJB	77.3	5100	464.1	74.1	4700	430.2	74.2	5060	463.1	NM	NM	NM	0.0	3.7	10.3	0.0	0.0	0.0	n		0.12	40
2/4/2014	13:00	NAG	77.3	4400	399.9	76	4625	421.4	76.0	4925	449	11.5	23.3	35	0.0	4.6	12.0	0.0	0.3	0.2	n		0.15	46
2/11/2014	11:00	NAG	90	5100	449.7	85.8	5000	444.3	82.9	5050	451	14.7	25	35.5	0.1	10.4	17.2	0.0	0.0	0.0	n		0.17	50
2/12/2014	10:45	NAG	87.4	4900	438.4	87.7	5400	482.9	86.5	5400	484	29.3	24.5	24.5	0.1	13.1	21.0	0.0	0.0	0.8	n		0.16	47
2/13/2014	13:30	NAG	82.7	4700	422.9	84	4600	413.0	83.6	5100	458	24.7	22.6	21.2	0.0	0.0	0.0	0.0	0.0	0.0	n		0.18	48
2/17/2014	14:45	NAG	81.1	4600	415.2	82.5	4750	427.6	82.7	5000	450	22.3	18.5	19	0.0	0.0	0.0	0.0	0.0	0.0	n		0.19	51
2/19/2014	12:00	NAG	82.9	4800	432.5	82.9	5200	468.6	82.3	5400	487	19.5	15.9	16.4	0.0	0.0	0.0	0.0	0.0	0.0	y		0.19	49
2/20/2014	9:45	NAG	81.4	4800	434.0	81.4	5075	458.8	81.4	5500	497	22.3	17.1	16.8	0.0	0.0	0.0	0.0	0.0	0.0	n		0.19	50
2/25/2014	12:00	EJB	88.8	4920	438.8	88.6	5600	499.7	88.6	5530	493	20.6	16.2	17.2	0.0	0.0	0.0	0.0	0.0	0.0	n		0.17	48
2/26/2014	14:00	NAG	86.1	4150	365.2	86.8	4500	395.5	86.5	4675	411	24.3	20	19.7	0.0	0.0	0.1	0.0	0.0	0.0	n		0.19	49
2/27/2014	12:30	NAG	86.8	4100	359.1	88.3	4475	390.8	88.3	4800	419	23.2	19.1	19.8	0.0	0.1	0.1	0.0	0.0	0.0	n		0.2	50
3/3/2014	14:00	NAG	85.2	3925	344.0	87.4	4375	381.8	86.8	4450	389	21.3	18.8	18.7	0.0	0.0	0.0	0.0	0.0	0.0	n		0.74	50
3/5/14	1200	MD	85.8	3580		87.6	4250		87.4	4300		25.3	19.8	20.0	0.0	0.0	0.0	0.0	0.0	0.0			0.19	50

DPE System Skid (B-701)					DPE System Skid (B-801)						
Vac into Blower	Temp Blower Dischg	Press Blower Dischg	Blower Inlet HC (pre-dil)	Blower Outlet HC	Magnahelic Gauge	Vac into VLS	Vac into Blower	Temp Blower Dischg	Press Blower Dischg	Blower Inlet HC (pre-dil)	Blower Outlet HC
"H_2O	°F	"H_2O	ppmv	ppmv	"H_2O	"H_2O	"H_2O	°F	"H_2O	ppmv	ppmv
29	78	37	NM	29.9	0.07	26	25	78	35	NM	25.2
31	80	37	NM	16.0	0.06	26	26	78	35	NM	17.9
32	78	37	NM	21.1	0.07	26	25	73	35	NM	17.2
22	78	38	NM	19.3	0.06	25	26	78	37	NM	16.4
21	77	38	NM	25.4	0.06	26	26	78	36	NM	16.3
25	76	38	NM	34.1	0.07	26	27	76	35	NM	31.8
26	79	38	NM	20.6	0.07	27	29	79	36	NM	12.0
26	82	37	NM	21.5	0.08	26	30	83	36	NM	15.7
26	82	37	NM	20.2	0.08	27	32	82	36	NM	18.0
27	83	37	NM	22.5	0.07	27	33	84	36	NM	14.4
28	76	37	NM	14.8	0.07	28	36	77	36	NM	17.3
37	80	36	NM	36.5	0.12	44	51	85	32	NM	15.0
37	79	37	NM	37.9	0.11	44	59	82	33	NM	12.8
50	91	34	NM	42.8	0.17	53	65	89	31	NM	15.9
48	88	36	NM	53.2	0.10	33	52	81	34	NM	14.6
48	85	34	NM	56.6	0.10	32	50	80	33	NM	16.2
49	85	34	NM	52.5	0.09	32	100	80	33	NM	14.5
50	84	33	NM	52.8	0.09	31	100	77	32	NM	15.2
51	88	33	NM	43.5	0.09	31	50	81	32	NM	13.5
55	88	31	NM	41.5	0.13	59	60	90	28	NM	16.5
54	85	31	NM	NM	0.17	56	61	88	28	NM	NM
57	80	31	34.4	27.3	0.13	47	56	76	30	27.5	13.5
53	78	33	NM	45.1	0.12	46	52	78	30	NM	14.2
57	83	32	35.9	33.1	0.13	48	54	81	30	24.9	13
62	87	29	35.5	37.6	0.15	51	58	86	27	25.7	15.2
62	94	32.5	34.9	36.1	0.15	51	56	95	32	22.8	13
62	90	31	29.8	31.1	0.15	51	58	91	31	18.6	10.7
66	90	31	28.7	27.1	0.15	52	56	90	31	18.2	11.1
63	89	31.5	25.6	26.0	0.14	49	55	88	32	17.5	7.9
64	87	32	26.8	30.4	0.18	49	58	85	32	10.7	6.2
66	94	32	31.5	29.1	0.19	46	54	93	32	9.6	6.5
68	91	24	25.9	32.4	0.23	53	57	92	24	10.2	8.6
70	90	23	26.1	31.3	0.30	63	70	95	22	11.8	10.4
53	90	22	24.3	27.5	0.32	62	65	94	21	10.7	10.8
53	91	22	30.4	34.6	0.25	67	73	96	20	9.8	9.1

Conversions 6.24E-11

microgram/m3 = 40.5

Constant 100

Air Sparge Skid					1										
Temp into HX	Pressure into HX	Temp out HX	Pressure out HX	Magnahelic gauge	Blower Hour Meter	Blower Hour Meter	Sparge Compressor Hour Meter	VLS Transfer Pump Hour Meter	VLS Transfer Pump Hour Meter	Tank Transfer Pump Hour Meter	Effluent Totalizer	LPC1 Water Pressure	LPC2 Water Pressure	Tank Transfer Pump Discharge Pressure	Estimated Hydrocarbons Removed (Vapor)
					B-701	B-801	C-2201	P-401	P-501	P-5501					
°F	PSI	°F	PSI	"H_2O	hrs	hrs	hrs	hrs	hrs	hrs	gal	psi	psi	psi	lbs
125	7	44	8	4.5	284	247	283	1	1	1	965	NM	NM	10.1	
140	4	44	6.5	4.5	398	361	397	1	1	1	1,286	NM	NM	9.7	
115	4	42	6	4.5	401	364	400	1	1	1	1,287	NM	NM	9.8	
125	4	45	6	4.5	420	383	419	1	1	1	1,394	NM	NM	10	
120	4	43	5	4.5	448	411	447	1	1	1	1,740	NM	NM	10	
120	7	43	8	5.0	472	435	471	1	1	1	1,799	NM	NM	9.6	
125	7	48	7.5	5.0	489	453	488	1	1	1	1,822	NM	NM	9.8	
126	6	50	6.5	5.0	568	532	568	1	1	1	2,430	NM	NM	9.9	
125	6	52	6.5	5.0	587	550	586	1	1	1	2,430	NM	NM	10	
125	6	51	7.0	5.0	615	578	612	1	1	1	2,460	NM	NM	9.8	
118	7.5	41	6.0	5.0	634	597	631	1	1	1	2,462	NM	NM	NM	
118	6.5	41	6.0	5.0	659	623	656	1	1	1	2,462	NM	NM	NM	
120	6	42	6.5	5.0	728	692	725	1	1	1	2462	NM	NM	NM	
123	6	44	5.5	5.0	757	721	754	1	1	1	2501	NM	NM	11	
125	6	48	6.5	5.0	777	740	774	1	1	2	2501	NM	NM	NM	
125	8	46	8.5	5.0	807	770	804	1	1	2	2516	NM	NM	NM	
125	6	48	7.0	5.3	832	795	829	1	1	2	2516	NM	NM	NM	
115	6	44	6.5	5.5	898	861	895	1	1	2	2516	NM	NM	9.8	
130	8	48	8.0	5.0	923	886	920	1	1	2	2533	NM	NM	NM	
125	9	50	8.5	5.0	946	909	943	1	1	2	2984	NM	NM	6.1	
128	9	45	7	5.5	963	926	960	1	1	2	3309	NM	NM	7	
119	10	39	8.5	5.5	966	929	963	1	1	2	3385	NM	NM	7	
118	7	40	8.7	5.5	1035	998	1032	1	1	2	3406	NM	NM	5.2	
118	8	38	8.0	5.5	1063	1026	1060	1	1	2	3418	NM	NM	NM	
142	8	49	6	8.0	1229	1192	1227	1	1	3	3823	NM	NM	12	
145	7	56	6	8.5	1255	1218	1252	1	13	3	4318	NM	NM	12	
144	9	55	6	8.5	1274	1237	1272	2	13	3	4352	NM	NM	12	
141	8	49	7	8.5	1341	1304	1338	2	27	4	5377	NM	NM	12	
141	8	47	7	9.0	1366	1329	1364	2	27	4	5728	NM	NM	12	
144	9.5	47	9	9.0	1388	1351	1385	2	27	4	5791	NM	NM	12	
146	9.5	56	10	8.0	1510	1473	1507	2	27	4	6061	NM	NM	12	
172	9	59	8.5	8.0	1536	1499	1533	2	27	4	6061	NM	NM	12	
169	10	58	9.0	8.0	1559	1522	1556	2	27	4	6061	NM	NM	12	
165	10.5	57	8.0	8.0	1656	1619	1653	2	27	5	6888	NM	NM	12	
165	11	61	~~7.5~~ 12.2	7.5	1694	1657	1691	2	27	6	7,812	—	—	5.2	

lbs/ft^3 = 1 microgram/m^3

9 x ppmv x M (STP)

molecular weight , TPHg

Comments
Insufficient water for pressure readings.
Insufficient water for pressure readings.
Insufficient water for pressure readings. PID Readings taken.
Attempted to reduce dilution air further, but persistent VFDW-8101 alarms prevented this. PID Readings taken.
Insufficient water for pressure readings.
Attempted to reduce dilution air further, but persistent VFDW-8101 alarms prevented this. PID Readings taken.
Insufficient water for pressure readings.
Insufficient water for pressure readings.
Insufficient water for pressure readings.
Insufficient water for pressure readings.
Reduced dilution air a bit on B-801. Tank trans pump press went down after switching discharge to direct drain (not to Baker tank)
System down upon arrival, restarted, opened dilution slightly on 801. Baker tank pumped out. Inf sample ports installed predilution for each blower. Samples taken. (V-INF-701, 801). PID was not operating properly.
System down upon arrival, restarted, opened dilution slightly on 801. AS readings taken, individual well PID Readings completed. Baker tank picked up.
System operational upon arrival, Individual well PID Readings taken for 3/4 wells.
System operational upon arrival/departure. PID readings completed. AS well readings taken.
System operational upon arrival/departure. 701 & 801 blowers reduced to 60% from 65%. Sparge compressor increased from 25% to 50%.
system operational upon arrival/departure. 801 PID Readings completed. Sparge readings completed. 801 VLS pump had lost its prime and was found running dry. Reprimed=OK. Plumbing was modified to even out [ ] to VPCs.
System operational upon arrival/departure. Siemens carbon change for VPCs 1-1, 2-1, 3-1, & 3-2. 701 PID Readings completed. Precarbon water filter replaced.
System down upon arrival due to 801-VLS High-High.This caused HT pump to stop, so the containment area was full as a result. Containment pumped out, system restarted. Sparge manifold readings completed.
System down upon arrival due to a VFD-8202 PNL alarm. Dilution air was increased slightly on 801 blower. Compliance air samples were taken in addition to influent samples. 701 PID Readings completed.
System operational upon arrival/departure. Monthly water samples were taken. 801 PID Readings were completed. NOTE: 801 VLS transfer pump is still losing its prime.
System operational upon arrival/departure. 701 PID Readings were completed.
System operational upon arrival/departure. Blower VFDs were both reduced to 40%. Sparge VFD were increased to 80%. Dilution was decreased to both blowers. Sparge readings were taken.
System operational upon arrival/departure. Dilution was closed for both blowers. 801 PID Readings completed.
System operational upon arrival/departure. Sparge readings taken. Attempted unsuccessfully to upload program to the PLC-need to contact IT for priveledges. Skid Readings taken from PLC
Adj VFD 801 to 14 @. 701 PID readings

917 1st Avenue North, Suite 3
Billings, Montana 59101
Telephone: 406-259-1033
Fax: 406-259-1099

Appendix A
Laboratory Data

January 13, 2014

Kyle Sattler
Cardno ATC
7070 SW Fir Loop
Suite 100
Portland, OR 97223

RE: Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on December 27, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Gross

jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: Keith Fox, Cardno ATC
Michael Miller, Cardno ATC

CERTIFICATIONS

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Dept of Environmental Management #40770
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
EPA Region 5 #WD-15J
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nebraska Certification #: Pace
Nevada Certification #: MN_00064
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

SAMPLE SUMMARY

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10253710001	**W-DSCHG**	Water	12/27/13 11:30	12/27/13 14:30
10253710002	**W-INT**	Water	12/27/13 11:40	12/27/13 14:30
10253710003	**W-INF**	Water	12/27/13 11:50	12/27/13 14:30
10253710004	**V-INF-1**	Air	12/27/13 13:00	12/27/13 14:30
10253710005	**V-INF-2**	Air	12/27/13 13:00	12/27/13 14:30
10253710006	**V-INT-1**	Air	12/27/13 13:10	12/27/13 14:30
10253710007	**V-INT-2**	Air	12/27/13 13:11	12/27/13 14:30
10253710008	**V-INT-3**	Air	12/27/13 13:12	12/27/13 14:30
10253710009	**V-DSCHG-1**	Air	12/27/13 13:25	12/27/13 14:30
10253710010	**V-DSCHG-2**	Air	12/27/13 13:26	12/27/13 14:30
10253710011	**V-DSCHG-3**	Air	12/27/13 13:27	12/27/13 14:30
10253710012	**Trip Blank**	Water	12/27/13 00:00	12/27/13 14:30

SAMPLE ANALYTE COUNT

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10253710001	**W-DSCHG**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	SH2	7	PASI-M
10253710002	**W-INT**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	SH2	7	PASI-M
10253710003	**W-INF**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	SH2	7	PASI-M
10253710004	**V-INF-1**	TO-15	DR1	6	PASI-M
10253710005	**V-INF-2**	TO-15	DR1	6	PASI-M
10253710006	**V-INT-1**	TO-15	DR1	6	PASI-M
10253710008	**V-INT-3**	TO-15	DR1	6	PASI-M
10253710009	**V-DSCHG-1**	TO-15	DR1	6	PASI-M
10253710010	**V-DSCHG-2**	TO-15	AH2, DR1	6	PASI-M
10253710011	**V-DSCHG-3**	TO-15	DR1	6	PASI-M

ANALYTICAL RESULTS

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

Sample: W-DSCHG **Lab ID: 10253710001** Collected: 12/27/13 11:30 Received: 12/27/13 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		12/31/13 18:10		
Surrogates								
a,a,a-Trifluorotoluene (S)	76	%.	75-125	1		12/31/13 18:10	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		12/31/13 12:25	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		12/31/13 12:25	100-41-4	
Toluene	ND	ug/L	1.0	1		12/31/13 12:25	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		12/31/13 12:25	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	88	%.	75-125	1		12/31/13 12:25	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1		12/31/13 12:25	2037-26-5	
4-Bromofluorobenzene (S)	94	%.	75-125	1		12/31/13 12:25	460-00-4	

Sample: W-INT **Lab ID: 10253710002** Collected: 12/27/13 11:40 Received: 12/27/13 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		12/31/13 18:30		
Surrogates								
a,a,a-Trifluorotoluene (S)	76	%.	75-125	1		12/31/13 18:30	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		12/31/13 12:40	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		12/31/13 12:40	100-41-4	
Toluene	ND	ug/L	1.0	1		12/31/13 12:40	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		12/31/13 12:40	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	88	%.	75-125	1		12/31/13 12:40	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1		12/31/13 12:40	2037-26-5	
4-Bromofluorobenzene (S)	94	%.	75-125	1		12/31/13 12:40	460-00-4	

Sample: W-INF **Lab ID: 10253710003** Collected: 12/27/13 11:50 Received: 12/27/13 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		01/07/14 16:38		
Surrogates								
a,a,a-Trifluorotoluene (S)	86	%.	70-125	1		01/07/14 16:38	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		12/31/13 12:55	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		12/31/13 12:55	100-41-4	

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

Sample: W-INF **Lab ID: 10253710003** Collected: 12/27/13 11:50 Received: 12/27/13 14:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		12/31/13 12:55	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		12/31/13 12:55	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	88	%.	75-125	1		12/31/13 12:55	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		12/31/13 12:55	2037-26-5	
4-Bromofluorobenzene (S)	94	%.	75-125	1		12/31/13 12:55	460-00-4	

Sample: V-INF-1 **Lab ID: 10253710004** Collected: 12/27/13 13:00 Received: 12/27/13 14:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**82.2**	ug/m3	11.0	33.8		01/09/14 20:58	71-43-2	A4
Ethylbenzene	**66.1**	ug/m3	29.7	33.8		01/09/14 20:58	100-41-4	
THC as Gas	**95000**	ug/m3	2060	33.8		01/09/14 20:58		
Toluene	**168**	ug/m3	26.0	33.8		01/09/14 20:58	108-88-3	
m&p-Xylene	**478**	ug/m3	59.5	33.8		01/09/14 20:58	179601-23-1	
o-Xylene	**157**	ug/m3	29.7	33.8		01/09/14 20:58	95-47-6	

Sample: V-INF-2 **Lab ID: 10253710005** Collected: 12/27/13 13:00 Received: 12/27/13 14:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**37.7**	ug/m3	13.2	40.7		01/09/14 21:52	71-43-2	A4
Ethylbenzene	**244**	ug/m3	35.8	40.7		01/09/14 21:52	100-41-4	
THC as Gas	**54900**	ug/m3	2470	40.7		01/09/14 21:52		
Toluene	**146**	ug/m3	31.3	40.7		01/09/14 21:52	108-88-3	
m&p-Xylene	**364**	ug/m3	71.6	40.7		01/09/14 21:52	179601-23-1	
o-Xylene	ND	ug/m3	35.8	40.7		01/09/14 21:52	95-47-6	

Sample: V-INT-1 **Lab ID: 10253710006** Collected: 12/27/13 13:10 Received: 12/27/13 14:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	16.6	51.05		01/09/14 20:04	71-43-2	A4
Ethylbenzene	ND	ug/m3	44.9	51.05		01/09/14 20:04	100-41-4	
THC as Gas	**4310**	ug/m3	3100	51.05		01/09/14 20:04		
Toluene	ND	ug/m3	39.3	51.05		01/09/14 20:04	108-88-3	
m&p-Xylene	ND	ug/m3	89.8	51.05		01/09/14 20:04	179601-23-1	
o-Xylene	ND	ug/m3	44.9	51.05		01/09/14 20:04	95-47-6	

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

Sample: V-INT-3 **Lab ID: 10253710008** Collected: 12/27/13 13:12 Received: 12/27/13 14:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	9.4	28.95		01/09/14 21:25	71-43-2	A4
Ethylbenzene	ND	ug/m3	25.5	28.95		01/09/14 21:25	100-41-4	
THC as Gas	**19500**	ug/m3	1760	28.95		01/09/14 21:25		
Toluene	**30.8**	ug/m3	22.3	28.95		01/09/14 21:25	108-88-3	
m&p-Xylene	ND	ug/m3	51.0	28.95		01/09/14 21:25	179601-23-1	
o-Xylene	ND	ug/m3	25.5	28.95		01/09/14 21:25	95-47-6	

Sample: V-DSCHG-1 **Lab ID: 10253710009** Collected: 12/27/13 13:25 Received: 12/27/13 14:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.0	33.8		01/09/14 22:45	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.7	33.8		01/09/14 22:45	100-41-4	
THC as Gas	**6800**	ug/m3	2060	33.8		01/09/14 22:45		
Toluene	ND	ug/m3	26.0	33.8		01/09/14 22:45	108-88-3	
m&p-Xylene	ND	ug/m3	59.5	33.8		01/09/14 22:45	179601-23-1	
o-Xylene	ND	ug/m3	29.7	33.8		01/09/14 22:45	95-47-6	

Sample: V-DSCHG-2 **Lab ID: 10253710010** Collected: 12/27/13 13:26 Received: 12/27/13 14:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.0	33.8		01/09/14 23:39	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.7	33.8		01/09/14 23:39	100-41-4	
THC as Gas	**11200**	ug/m3	2060	33.8		01/09/14 23:39		
Toluene	**7390**	ug/m3	104	135.2		01/10/14 15:25	108-88-3	
m&p-Xylene	ND	ug/m3	59.5	33.8		01/09/14 23:39	179601-23-1	
o-Xylene	ND	ug/m3	29.7	33.8		01/09/14 23:39	95-47-6	

Sample: V-DSCHG-3 **Lab ID: 10253710011** Collected: 12/27/13 13:27 Received: 12/27/13 14:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.0	33.8		01/09/14 23:12	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.7	33.8		01/09/14 23:12	100-41-4	
THC as Gas	**7880**	ug/m3	2060	33.8		01/09/14 23:12		
Toluene	**1860**	ug/m3	26.0	33.8		01/09/14 23:12	108-88-3	
m&p-Xylene	ND	ug/m3	59.5	33.8		01/09/14 23:12	179601-23-1	
o-Xylene	ND	ug/m3	29.7	33.8		01/09/14 23:12	95-47-6	

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

QC Batch: AIR/19149 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10253710004, 10253710005, 10253710006, 10253710008, 10253710009, 10253710010, 10253710011

METHOD BLANK: 1606626 Matrix: Air
Associated Lab Samples: 10253710004, 10253710005, 10253710006, 10253710008, 10253710009, 10253710010, 10253710011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	01/09/14 19:07	
Ethylbenzene	ug/m3	ND	0.88	01/09/14 19:07	
m&p-Xylene	ug/m3	ND	1.8	01/09/14 19:07	
o-Xylene	ug/m3	ND	0.88	01/09/14 19:07	
THC as Gas	ug/m3	ND	60.8	01/09/14 19:07	
Toluene	ug/m3	ND	0.77	01/09/14 19:07	

LABORATORY CONTROL SAMPLE: 1606627

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	34.9	107	69-134	
Ethylbenzene	ug/m3	44.2	45.4	103	73-139	
m&p-Xylene	ug/m3	44.2	44.9	102	73-139	
o-Xylene	ug/m3	44.2	44.7	101	71-138	
THC as Gas	ug/m3	3520	3670	104	65-136	
Toluene	ug/m3	38.3	40.7	106	67-133	

SAMPLE DUPLICATE: 1606768

Parameter	Units	10253710006 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	ND	ND		25	
Ethylbenzene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	ND	ND		25	
THC as Gas	ug/m3	4310	4100	5	25	
Toluene	ug/m3	ND	23.4J		25	

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

QC Batch: GCV/11554 Analysis Method: NWTPH-Gx/8021
QC Batch Method: NWTPH-Gx/8021 Analysis Description: NWTPH-Gx/8021B Water
Associated Lab Samples: 10253710001, 10253710002

METHOD BLANK: 1603496 Matrix: Water
Associated Lab Samples: 10253710001, 10253710002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	12/31/13 17:50	
a,a,a-Trifluorotoluene (S)	%.	82	75-125	12/31/13 17:50	

LABORATORY CONTROL SAMPLE & LCSD: 1603497 1603498

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	958	999	96	100	75-126	4	20	
a,a,a-Trifluorotoluene (S)	%.				88	82	75-125			

MATRIX SPIKE SAMPLE: 1603500

Parameter	Units	10253438009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
TPH as Gas	ug/L	150000	200000	360000	105	75-137	
a,a,a-Trifluorotoluene (S)	%.				90	75-125	

SAMPLE DUPLICATE: 1603499

Parameter	Units	10253438007 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	6450	6060	6	30	
a,a,a-Trifluorotoluene (S)	%.	80	78	3		

SAMPLE DUPLICATE: 1603501

Parameter	Units	10253438010 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1950	2040	4	30	
a,a,a-Trifluorotoluene (S)	%.	89	91	2		

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

QC Batch: GCV/11565
QC Batch Method: NWTPH-Gx/8021
Analysis Method: NWTPH-Gx/8021
Analysis Description: NWTPH-Gx/8021B Water
Associated Lab Samples: 10253710003

METHOD BLANK: 1605291 Matrix: Water
Associated Lab Samples: 10253710003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	01/07/14 16:18	
a,a,a-Trifluorotoluene (S)	%.	100	70-125	01/07/14 16:18	

LABORATORY CONTROL SAMPLE & LCSD: 1605292 1605293

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	1000	854	100	85	75-125	16	20	
a,a,a-Trifluorotoluene (S)	%.				102	87	70-125			

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

QC Batch: MSV/26056 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10253710001, 10253710002, 10253710003

METHOD BLANK: 1603229 Matrix: Water
Associated Lab Samples: 10253710001, 10253710002, 10253710003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	12/31/13 10:36	
Ethylbenzene	ug/L	ND	1.0	12/31/13 10:36	
Toluene	ug/L	ND	1.0	12/31/13 10:36	
Xylene (Total)	ug/L	ND	3.0	12/31/13 10:36	
1,2-Dichloroethane-d4 (S)	%.	87	75-125	12/31/13 10:36	
4-Bromofluorobenzene (S)	%.	94	75-125	12/31/13 10:36	
Toluene-d8 (S)	%.	98	75-125	12/31/13 10:36	

LABORATORY CONTROL SAMPLE: 1603230

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	16.8	84	75-125	
Ethylbenzene	ug/L	20	17.1	86	75-125	
Toluene	ug/L	20	17.2	86	75-125	
Xylene (Total)	ug/L	60	53.9	90	75-125	
1,2-Dichloroethane-d4 (S)	%.			86	75-125	
4-Bromofluorobenzene (S)	%.			95	75-125	
Toluene-d8 (S)	%.			99	75-125	

MATRIX SPIKE SAMPLE: 1603621

Parameter	Units	10253342002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	ND	20	16.3	82	70-135	
Ethylbenzene	ug/L	ND	20	16.4	82	75-125	
Toluene	ug/L	ND	20	16.3	82	75-125	
Xylene (Total)	ug/L	ND	60	52.0	87	75-125	
1,2-Dichloroethane-d4 (S)	%.				87	75-125	
4-Bromofluorobenzene (S)	%.				93	75-125	
Toluene-d8 (S)	%.				98	75-125	

SAMPLE DUPLICATE: 1603622

Parameter	Units	10253342003 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	89	88	1		

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

SAMPLE DUPLICATE: 1603622

Parameter	Units	10253342003 Result	Dup Result	RPD	Max RPD	Qualifiers
4-Bromofluorobenzene (S)	%.	94	93	1		
Toluene-d8 (S)	%.	98	98	.3		

REPORT OF LABORATORY ANALYSIS

QUALIFIERS

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

BATCH QUALIFIERS

Batch: GCV/11565

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

A4	Sample was transferred from a sampling bag into a Summa Canister within 48 hours of collection.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: P66 Westlake/ Mercer - 31326
Pace Project No.: 10253710

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10253710004	**V-INF-1**	TO-15	AIR/19149		
10253710005	**V-INF-2**	TO-15	AIR/19149		
10253710006	**V-INT-1**	TO-15	AIR/19149		
10253710008	**V-INT-3**	TO-15	AIR/19149		
10253710009	**V-DSCHG-1**	TO-15	AIR/19149		
10253710010	**V-DSCHG-2**	TO-15	AIR/19149		
10253710011	**V-DSCHG-3**	TO-15	AIR/19149		
10253710001	**W-DSCHG**	NWTPH-Gx/8021	GCV/11554		
10253710002	**W-INT**	NWTPH-Gx/8021	GCV/11554		
10253710003	**W-INF**	NWTPH-Gx/8021	GCV/11565		
10253710001	**W-DSCHG**	EPA 8260	MSV/26056		
10253710002	**W-INT**	EPA 8260	MSV/26056		
10253710003	**W-INF**	EPA 8260	MSV/26056		

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1134
10253710

Page: 1 of 1

1505093

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Cardno ATC	Report To: keith.fox@cardno.com	Attention:
Address: 7070 SW Fir Loop Suite 100, Tigard, OR 97223	Copy To: Kyle.Sattler@cardno.com, michael.miller@cardno.com	Company Name:
Email To: Kyle.Sattler	Purchase Order No.:	Address:
Phone: 503-684-0525 Fax: 503-624-6415	Project Name: P66 Westlake/Mercer	Pace Quote Reference:
Requested Due Date/TAT:	Project Number: 31326	Pace Project Manager:
		Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER _____

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: GX/BTEX 8260	TPH EPA 18	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	W-DSC HG	WT	G			12/27	1130		6				X					X	X			10253710001
2	W-INT	WT	G			12/27	1140		6				X					X	X			002
3	W-INF	WT	G			12/27	1150		6				X					X	X			003
4																						
5	V-INF-1	AR	G			12/27	1300		1	X									X			004
6	V-INF-2	AR	G			12/27	1300		1	X									X			005
7	V-INT-1	AR	G			1	1310		1	X									X			006
8	V-INT-2	AR	G			1	1311		1	X									X			007
9	V-INT-3	AR	G			1	1312		1	X									X			008
10	V-DSCHG-1	AR	G			1	1325		1	X									X			009
11	V-DSCHG-2	AR	G			1	1326		1	X									X			010
12	V-DSCHG-3	AR	G			12/27	1327		1	X									X			011

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
		12/27/13	1430	PAF	12/27/13	1730	10.8	Y	N	Y
	Cardno ATC			Pace	12-28-13	9:22	22	Y	Y	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Edward Burracci

SIGNATURE of SAMPLER: _____ DATE Signed (MM/DD/YY): 12/27/13

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 07Nov2013 Page 1 of 1
	Document No.: F-MN-L-213-rev.08	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Cardno ATC

Project #: **WO#: 10253710**

10253710

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number: 577953309215

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermom. Used: ☐ 80512447 ☒ B88A912167504 ☐ 72337080 ☐ B88A9132521491 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on Ice, cooling process has begun

Cooler Temp Read (°C): 2.0 Cooler Temp Corrected (°C): 2.2 Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C Correction Factor: +.2 Date and Initials of Person Examining Contents: JP 12.28.13

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH>12) Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water) DOC	☐ Yes ☒ Yes	☐ No ☐ No	☒ N/A	Initial when completed: JP Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☒ No	☐ N/A	14.
Trip Blank Present?	☒ Yes	☐ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☒ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if purchased): pace-seattle				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Kyle Sattler Date/Time: 12/31/13

Comments/Resolution: Hold Trip Blank, do not analyze JP 12/31/13 TC-15 method was approved instead of EPA method 18. JP 12/31/13

Project Manager Review: JENN SCOTT Date: 12/30/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical	Document Name: Air Sample Condition Upon Receipt	Document Revised: 28Jan2013 Page 1 of 1
	Document No.: F-MN-A-106-rev.07	Issuing Authority: Pace Minnesota Quality Office

Air Sample Condition Upon Receipt

Client Name: CARDNO ATC

Project #: 10253710

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace [ ] Other:

Tracking Number: 5779 5330 9204

Custody Seal on Cooler/Box Present? [ ] Yes [X] No **Seals Intact?** [ ] Yes [ ] No

Optional: Proj. Due Date: Proj. Name:

Packing Material: [ ] Bubble Wrap [ ] Bubble Bags [ ] Foam [X] None [ ] Other:

Temp. (TO17 and TO13 samples only) (°C): Amb **Corrected Temp (°C):** **Thermom. Used:** [ ] B88A912167504 [ ] 80512447 [ ] 72337080

Temp should be above freezing to 6°C **Correction Factor:** **Date & Initials of Person Examining Contents:** 12-30-13 JK

Comments:

Chain of Custody Present?	[X] Yes	[ ] No	[ ] N/A	1.	
Chain of Custody Filled Out?	[X] Yes	[ ] No	[ ] N/A	2.	
Chain of Custody Relinquished?	[X] Yes	[ ] No	[ ] N/A	3.	
Sampler Name and/or Signature on COC?	[X] Yes	[ ] No	[ ] N/A	4.	
Samples Arrived within Hold Time?	[X] Yes	[ ] No	[ ] N/A	5.	
Short Hold Time Analysis (<72 hr)?	[X] Yes	[ ] No	[ ] N/A	6.	
Rush Turn Around Time Requested?	[ ] Yes	[X] No	[ ] N/A	7.	
Sufficient Volume?	[X] Yes	[ ] No	[ ] N/A	8.	Sample V-INT-2 received flat
Correct Containers Used?	[X] Yes	[ ] No	[ ] N/A	9.	
-Pace Containers Used?	[X] Yes	[ ] No	[ ] N/A		
Containers Intact?	[X] Yes	[ ] No	[ ] N/A	10.	
Media: AR (BAG)				11.	
Sample Labels Match COC?	[X] Yes	[ ] No	[ ] N/A	12.	

Samples Received:

Canisters		Flow Controllers		Stand Alone G	
Sample Number	Can ID	Sample Number	Can ID	Sample Number	Can ID

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** [ ] Yes [ ] No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Erin Boss **Date:** 12/30/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

February 19, 2014

Kyle Sattler
Cardno ATC
7070 SW Fir Loop
Suite 100
Portland, OR 97223

RE: Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on January 30, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Per client request this report is to only include the water portion of the attached chain of custody.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: Keith Fox, Cardno ATC
Michael Miller, Cardno ATC

CERTIFICATIONS

Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Dept of Environmental Management #40770
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
EPA Region 5 #WD-15J
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

SAMPLE SUMMARY

Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10256370010	**W-DSCHG**	Water	01/27/14 15:00	01/30/14 10:10
10256370011	**W-INT**	Water	01/27/14 15:10	01/30/14 10:10
10256370012	**W-INF**	Water	01/27/14 15:20	01/30/14 10:10

SAMPLE ANALYTE COUNT

Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10256370010	**W-DSCHG**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	SH2	7	PASI-M
10256370011	**W-INT**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	SH2	7	PASI-M
10256370012	**W-INF**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	SH2	7	PASI-M

ANALYTICAL RESULTS

Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

Sample: W-DSCHG **Lab ID: 10256370010** Collected: 01/27/14 15:00 Received: 01/30/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	**2250**	ug/L	500	5		02/06/14 23:21		
Surrogates								
a,a,a-Trifluorotoluene (S)	109	%.	70-125	5		02/06/14 23:21	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		02/03/14 12:44	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		02/03/14 12:44	100-41-4	
Toluene	ND	ug/L	1.0	1		02/03/14 12:44	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		02/03/14 12:44	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	97	%.	75-125	1		02/03/14 12:44	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		02/03/14 12:44	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1		02/03/14 12:44	460-00-4	

Sample: W-INT **Lab ID: 10256370011** Collected: 01/27/14 15:10 Received: 01/30/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		02/04/14 15:13		
Surrogates								
a,a,a-Trifluorotoluene (S)	97	%.	70-125	1		02/04/14 15:13	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		02/03/14 12:59	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		02/03/14 12:59	100-41-4	
Toluene	ND	ug/L	1.0	1		02/03/14 12:59	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		02/03/14 12:59	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	97	%.	75-125	1		02/03/14 12:59	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		02/03/14 12:59	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		02/03/14 12:59	460-00-4	

Sample: W-INF **Lab ID: 10256370012** Collected: 01/27/14 15:20 Received: 01/30/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		02/04/14 15:33		
Surrogates								
a,a,a-Trifluorotoluene (S)	97	%.	70-125	1		02/04/14 15:33	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		02/03/14 13:15	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		02/03/14 13:15	100-41-4	

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

Sample: W-INF **Lab ID: 10256370012** Collected: 01/27/14 15:20 Received: 01/30/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260							
Toluene	**1.5**	ug/L	1.0	1		02/03/14 13:15	108-88-3	
Xylene (Total)	**8.6**	ug/L	3.0	1		02/03/14 13:15	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%.	75-125	1		02/03/14 13:15	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		02/03/14 13:15	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		02/03/14 13:15	460-00-4	

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

QC Batch: GCV/11651
QC Batch Method: NWTPH-Gx/8021
Analysis Method: NWTPH-Gx/8021
Analysis Description: NWTPH-Gx/8021B Water
Associated Lab Samples: 10256370011, 10256370012

METHOD BLANK: 1618834 Matrix: Water
Associated Lab Samples: 10256370011, 10256370012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	02/04/14 14:33	
a,a,a-Trifluorotoluene (S)	%.	98	70-125	02/04/14 14:33	

LABORATORY CONTROL SAMPLE & LCSD: 1618835 1618836

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	924	929	92	93	75-125	.5	20	
a,a,a-Trifluorotoluene (S)	%.				107	108	70-125			

MATRIX SPIKE SAMPLE: 1619922

Parameter	Units	10256546003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
TPH as Gas	ug/L	ND	1000	976	97	52-150	
a,a,a-Trifluorotoluene (S)	%.				115	70-125	

SAMPLE DUPLICATE: 1619923

Parameter	Units	10256546005 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	ND	ND		30	
a,a,a-Trifluorotoluene (S)	%.	94	94	.7		

SAMPLE DUPLICATE: 1619924

Parameter	Units	10256546008 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	ND	ND		30	
a,a,a-Trifluorotoluene (S)	%.	92	95	3		

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

QC Batch: GCV/11657
QC Batch Method: NWTPH-Gx/8021
Analysis Method: NWTPH-Gx/8021
Analysis Description: NWTPH-Gx/8021B Water
Associated Lab Samples: 10256370010

METHOD BLANK: 1620286 Matrix: Water
Associated Lab Samples: 10256370010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	02/06/14 20:21	
a,a,a-Trifluorotoluene (S)	%.	95	70-125	02/06/14 20:21	

LABORATORY CONTROL SAMPLE & LCSD: 1620287 1620288

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	1080	1020	108	102	75-125	6	20	
a,a,a-Trifluorotoluene (S)	%.				109	104	70-125			

MATRIX SPIKE SAMPLE: 1622038

Parameter	Units	10256845002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
TPH as Gas	ug/L	ND	1000	1160	116	52-150	
a,a,a-Trifluorotoluene (S)	%.				115	70-125	

SAMPLE DUPLICATE: 1622039

Parameter	Units	10256845003 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	125	131	5	30	
a,a,a-Trifluorotoluene (S)	%.	98	101	3		

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

QC Batch: MSV/26264 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10256370010, 10256370011, 10256370012

METHOD BLANK: 1618460 Matrix: Water
Associated Lab Samples: 10256370010, 10256370011, 10256370012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	02/03/14 10:13	
Ethylbenzene	ug/L	ND	1.0	02/03/14 10:13	
Toluene	ug/L	ND	1.0	02/03/14 10:13	
Xylene (Total)	ug/L	ND	3.0	02/03/14 10:13	
1,2-Dichloroethane-d4 (S)	%.	96	75-125	02/03/14 10:13	
4-Bromofluorobenzene (S)	%.	102	75-125	02/03/14 10:13	
Toluene-d8 (S)	%.	102	75-125	02/03/14 10:13	

LABORATORY CONTROL SAMPLE: 1618461

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	15.9	79	75-125	
Ethylbenzene	ug/L	20	17.0	85	75-125	
Toluene	ug/L	20	17.3	86	75-125	
Xylene (Total)	ug/L	60	51.7	86	75-125	
1,2-Dichloroethane-d4 (S)	%.			97	75-125	
4-Bromofluorobenzene (S)	%.			102	75-125	
Toluene-d8 (S)	%.			102	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1618627 1618628

Parameter	Units	10256615005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	100	100	82.0	94.2	82	94	75-129	14	30	
Ethylbenzene	ug/L	ND	100	100	81.3	94.5	81	94	75-128	15	30	
Toluene	ug/L	ND	100	100	84.5	97.2	85	97	75-129	14	30	
Xylene (Total)	ug/L	ND	300	300	251	288	84	96	75-129	14	30	
1,2-Dichloroethane-d4 (S)	%.						101	100	75-125			
4-Bromofluorobenzene (S)	%.						101	99	75-125			
Toluene-d8 (S)	%.						102	101	75-125			

REPORT OF LABORATORY ANALYSIS

QUALIFIERS

Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: P66 Westlake/ Mercer AOC1396
Pace Project No.: 10258179

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10256370010	**W-DSCHG**	NWTPH-Gx/8021	GCV/11657		
10256370011	**W-INT**	NWTPH-Gx/8021	GCV/11651		
10256370012	**W-INF**	NWTPH-Gx/8021	GCV/11651		
10256370010	**W-DSCHG**	EPA 8260	MSV/26264		
10256370011	**W-INT**	EPA 8260	MSV/26264		
10256370012	**W-INF**	EPA 8260	MSV/26264		

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1126

10256370

Page: 1 of 1

1505092

Section A Required Client Information:

Company: Cardno ATC
Address: 7070 SW Fir Loop Suite 100
Tigard, OR 97223
Email To: kyle.sattler@cardno.com
Phone: 503-430-6698 Fax: 503-624-0415
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Kyle Sattler
Copy To: Keith Fox
Keith.fox@cardno.com
Purchase Order No.: 03123603B
Project Name: AOC 1396
Project Number: P-66 Westlake/Mercer

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER

Site Location STATE:

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: TO-15	GX/BTEX 8260	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	V-DSCHG-1	AR	G				1/27	1200		2	X									X			001
2	V-DSCHG-2	AR	G				1/27	1210		2	X									X			002
3	V-DSCHG-3	AR	G				1/27	1220		2	X									X			003
4	V-INT-1	AR	G				1/27	1230		2	X									X			004
5	V-INT-2	AR	G				1/27	1240		2	X									X			005
6	V-INT-3	AR	G				1/27	1250		2	X									X			006
7	V-INF-1	AR	G				1/27	1300		2	X									X			007
8	V-INF-2	AR	G				1/27	1310		2	X									X			008
9	V-INF-3	AR	G				1/27	1320		2	X									X			009
10	W-DSCHG	WT	G				1/27	1500		3				X							X		010
11	W-INT	WT	G				1/27	1510		3				X							X		011
12	W-INF	WT	G				1/27	1520		3				X							X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
TO-15 = BTEX/GRO Per Kyle Sattler 01/28/14 GD 15:17					1/27/14	1432	Air	N	N	Y
				3rd Pace	1/30/14	10:10	0.8	Y	Y	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER:
SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 07Nov2013 Page 1 of 1
	Document No.: F-MN-L-213-rev.08	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Cardno ATC

Project #: WO#: 10256370

10256370

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number: 5779 5331 0230, 0252

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermom. Used: ☐ 80512447 ☐ 72337080 ☒ 888A912167504 ☒ 888A9132521491 Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.8 Cooler Temp Corrected (°C): 0.8 Biological Tissue Frozen? ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C Correction Factor: 0.0 Date and Initials of Person Examining Contents: JP 1.30.14

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☐ Yes	☒ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume? CW 1.30.14	☒ Yes	☐ No	☐ N/A	8. ½ V-INF-3 Recd Broken
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT, AR	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH>12) Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water) DOC	☐ Yes	☐ No	☒ N/A	Sample # Initial when completed: Lot # of added preservative:
	☒ Yes	☐ No		
Headspace in VOA Vials (>6mm)?	☐ Yes	☒ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: JENN GROSS Date: 01/30/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

March 05, 2014

Kyle Sattler
Cardno ATC
7070 SW Fir Loop
Suite 100
Portland, OR 97223

RE: Project: P66 Westlake/ Mercer AOC 1396
Pace Project No.: 10258276

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on February 19, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: Keith Fox, Cardno ATC

CERTIFICATIONS

Project: P66 Westlake/ Mercer AOC 1396
Pace Project No.: 10258276

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #40770
Alabama Certification #40770
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #: Pace
Georgia Certification #: 959
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nebraska Certification #: Pace
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
Wisconsin Certification #: 999407970
West Virginia Certification #: 382
West Virginia TO-15 Approval
West Virginia DHHR #:9952C

SAMPLE SUMMARY

Project: P66 Westlake/ Mercer AOC 1396
Pace Project No.: 10258276

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10258276001	**V-DSCHG-1**	Air	02/19/14 11:00	02/19/14 15:40
10258276002	**V-DSCHG-2**	Air	02/19/14 11:05	02/19/14 15:40
10258276003	**V-DSCHG-3**	Air	02/19/14 11:10	02/19/14 15:40
10258276004	**V-INT-1**	Air	02/19/14 11:15	02/19/14 15:40
10258276005	**V-INT-2**	Air	02/19/14 11:20	02/19/14 15:40
10258276006	**V-INT-3**	Air	02/19/14 11:25	02/19/14 15:40
10258276007	**V-INF-1**	Air	02/19/14 11:30	02/19/14 15:40
10258276008	**V-INF-2**	Air	02/19/14 11:35	02/19/14 15:40
10258276009	**V-INF-3**	Air	02/19/14 11:40	02/19/14 15:40

SAMPLE ANALYTE COUNT

Project: P66 Westlake/ Mercer AOC 1396
Pace Project No.: 10258276

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10258276001	**V-DSCHG-1**	TO-15	JAM	6	PASI-M
10258276002	**V-DSCHG-2**	TO-15	JAM	6	PASI-M
10258276003	**V-DSCHG-3**	TO-15	JAM	6	PASI-M
10258276004	**V-INT-1**	TO-15	JAM	6	PASI-M
10258276005	**V-INT-2**	TO-15	JAM	6	PASI-M
10258276006	**V-INT-3**	TO-15	JAM	6	PASI-M
10258276007	**V-INF-1**	TO-15	JAM	6	PASI-M
10258276008	**V-INF-2**	TO-15	JAM	6	PASI-M
10258276009	**V-INF-3**	TO-15	JAM	6	PASI-M

ANALYTICAL RESULTS

Project: P66 Westlake/ Mercer AOC 1396
Pace Project No.: 10258276

Sample: V-DSCHG-1 **Lab ID: 10258276001** Collected: 02/19/14 11:00 Received: 02/19/14 15:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		03/04/14 21:05	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.6	33.6		03/04/14 21:05	100-41-4	
THC as Gas	**7800**	ug/m3	2040	33.6		03/04/14 21:05		
Toluene	**37.5**	ug/m3	25.9	33.6		03/04/14 21:05	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		03/04/14 21:05	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		03/04/14 21:05	95-47-6	

Sample: V-DSCHG-2 **Lab ID: 10258276002** Collected: 02/19/14 11:05 Received: 02/19/14 15:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		03/04/14 21:30	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.6	33.6		03/04/14 21:30	100-41-4	
THC as Gas	**7750**	ug/m3	2040	33.6		03/04/14 21:30		
Toluene	**31.4**	ug/m3	25.9	33.6		03/04/14 21:30	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		03/04/14 21:30	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		03/04/14 21:30	95-47-6	

Sample: V-DSCHG-3 **Lab ID: 10258276003** Collected: 02/19/14 11:10 Received: 02/19/14 15:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		03/04/14 21:54	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.6	33.6		03/04/14 21:54	100-41-4	
THC as Gas	**3220**	ug/m3	2040	33.6		03/04/14 21:54		
Toluene	**34.1**	ug/m3	25.9	33.6		03/04/14 21:54	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		03/04/14 21:54	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		03/04/14 21:54	95-47-6	

Sample: V-INT-1 **Lab ID: 10258276004** Collected: 02/19/14 11:15 Received: 02/19/14 15:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		03/04/14 22:19	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.6	33.6		03/04/14 22:19	100-41-4	
THC as Gas	ND	ug/m3	2040	33.6		03/04/14 22:19		
Toluene	ND	ug/m3	25.9	33.6		03/04/14 22:19	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		03/04/14 22:19	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		03/04/14 22:19	95-47-6	

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: P66 Westlake/ Mercer AOC 1396
Pace Project No.: 10258276

Sample: V-INT-2 **Lab ID: 10258276005** Collected: 02/19/14 11:20 Received: 02/19/14 15:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		03/04/14 22:44	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.6	33.6		03/04/14 22:44	100-41-4	
THC as Gas	**5700**	ug/m3	2040	33.6		03/04/14 22:44		
Toluene	**30.7**	ug/m3	25.9	33.6		03/04/14 22:44	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		03/04/14 22:44	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		03/04/14 22:44	95-47-6	

Sample: V-INT-3 **Lab ID: 10258276006** Collected: 02/19/14 11:25 Received: 02/19/14 15:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		03/04/14 23:08	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.6	33.6		03/04/14 23:08	100-41-4	
THC as Gas	**2640**	ug/m3	2040	33.6		03/04/14 23:08		
Toluene	ND	ug/m3	25.9	33.6		03/04/14 23:08	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		03/04/14 23:08	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		03/04/14 23:08	95-47-6	

Sample: V-INF-1 **Lab ID: 10258276007** Collected: 02/19/14 11:30 Received: 02/19/14 15:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**84.3**	ug/m3	10.9	33.6		03/04/14 23:33	71-43-2	A4
Ethylbenzene	**1370**	ug/m3	29.6	33.6		03/04/14 23:33	100-41-4	
THC as Gas	**158000**	ug/m3	2040	33.6		03/04/14 23:33		
Toluene	**598**	ug/m3	25.9	33.6		03/04/14 23:33	108-88-3	
m&p-Xylene	**9450**	ug/m3	237	134.4		03/05/14 13:31	179601-23-1	A3
o-Xylene	**2150**	ug/m3	29.6	33.6		03/04/14 23:33	95-47-6	

Sample: V-INF-2 **Lab ID: 10258276008** Collected: 02/19/14 11:35 Received: 02/19/14 15:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**87.8**	ug/m3	10.9	33.6		03/04/14 23:57	71-43-2	A4
Ethylbenzene	**1030**	ug/m3	29.6	33.6		03/04/14 23:57	100-41-4	
THC as Gas	**153000**	ug/m3	2040	33.6		03/04/14 23:57		
Toluene	**432**	ug/m3	25.9	33.6		03/04/14 23:57	108-88-3	
m&p-Xylene	**4540**	ug/m3	59.1	33.6		03/04/14 23:57	179601-23-1	
o-Xylene	**1600**	ug/m3	29.6	33.6		03/04/14 23:57	95-47-6	

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: P66 Westlake/ Mercer AOC 1396
Pace Project No.: 10258276

Sample: V-INF-3 **Lab ID: 10258276009** Collected: 02/19/14 11:40 Received: 02/19/14 15:40 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**84.9**	ug/m3	10.9	33.6		03/05/14 00:22	71-43-2	A4
Ethylbenzene	**1070**	ug/m3	29.6	33.6		03/05/14 00:22	100-41-4	
THC as Gas	**165000**	ug/m3	2040	33.6		03/05/14 00:22		
Toluene	**456**	ug/m3	25.9	33.6		03/05/14 00:22	108-88-3	
m&p-Xylene	**4550**	ug/m3	59.1	33.6		03/05/14 00:22	179601-23-1	
o-Xylene	**1650**	ug/m3	29.6	33.6		03/05/14 00:22	95-47-6	

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: P66 Westlake/ Mercer AOC 1396
Pace Project No.: 10258276

QC Batch: AIR/19568 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10258276001, 10258276002, 10258276003, 10258276004, 10258276005, 10258276006, 10258276007, 10258276008, 10258276009

METHOD BLANK: 1633372 Matrix: Air
Associated Lab Samples: 10258276001, 10258276002, 10258276003, 10258276004, 10258276005, 10258276006, 10258276007, 10258276008, 10258276009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	03/04/14 12:55	
Ethylbenzene	ug/m3	ND	0.88	03/04/14 12:55	
m&p-Xylene	ug/m3	ND	1.8	03/04/14 12:55	
o-Xylene	ug/m3	ND	0.88	03/04/14 12:55	
THC as Gas	ug/m3	ND	60.8	03/04/14 12:55	
Toluene	ug/m3	ND	0.77	03/04/14 12:55	

LABORATORY CONTROL SAMPLE: 1633373

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	34.1	105	69-134	
Ethylbenzene	ug/m3	44.2	50.4	114	73-139	
m&p-Xylene	ug/m3	44.2	50.2	114	73-139	
o-Xylene	ug/m3	44.2	47.2	107	71-138	
THC as Gas	ug/m3	3520	3790	108	65-136	
Toluene	ug/m3	38.3	37.2	97	67-133	

SAMPLE DUPLICATE: 1633790

Parameter	Units	92190813010 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	<45.4	ND		25	
Ethylbenzene	ug/m3	<33.1	ND		25	
m&p-Xylene	ug/m3	<246	ND		25	
o-Xylene	ug/m3	<35.6	ND		25	
THC as Gas	ug/m3	32800	32200	2	25	
Toluene	ug/m3	111J	117J		25	

REPORT OF LABORATORY ANALYSIS

QUALIFIERS

Project: P66 Westlake/ Mercer AOC 1396
Pace Project No.: 10258276

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

SAMPLE QUALIFIERS

Sample: 1633790

[1]	This result is reported from a serial dilution.

ANALYTE QUALIFIERS

A3	The sample was analyzed by serial dilution.
A4	Sample was transferred from a sampling bag into a Summa Canister within 48 hours of collection.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: P66 Westlake/ Mercer AOC 1396
Pace Project No.: 10258276

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10258276001	**V-DSCHG-1**	TO-15	AIR/19568		
10258276002	**V-DSCHG-2**	TO-15	AIR/19568		
10258276003	**V-DSCHG-3**	TO-15	AIR/19568		
10258276004	**V-INT-1**	TO-15	AIR/19568		
10258276005	**V-INT-2**	TO-15	AIR/19568		
10258276006	**V-INT-3**	TO-15	AIR/19568		
10258276007	**V-INF-1**	TO-15	AIR/19568		
10258276008	**V-INF-2**	TO-15	AIR/19568		
10258276009	**V-INF-3**	TO-15	AIR/19568		

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10258276

Page: 1 of 1

1505203

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Cardno ATC	Report To: Kyle Sattler	Attention:
Address: 7070 SW Fir Loop Su.100 Tigard, OR 97223	Copy To: Keith Fox	Company Name:
Email To: kyle.sattler@cardno.com	Purchase Order No.: 0313260313	Address:
Phone: 503 430 6696 Fax:	Project Name: AOC 1396	Pace Quote Reference:
Requested Due Date/TAT: Standard	Project Number: P66 Westlake/Mercer	Pace Project Manager:
		Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: WA

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE (Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test ↓	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	V-DSCHG-1	AR	G			2/19/14	1100		2	X									X	TO-15		10258276001
2	V-DSCHG-2	AR	G			2/19/14	1105		2	X									X			002
3	V-DSCHG-3	AR	G			2/19/14	1110		2	X									X			003
4	V-INT-1	AR	G			2/19/14	1115		2	X									X			004
5	V-INT-2	AR	G			2/19/14	1120		2	X									X			005
6	V-INT-3	AR	G			2/19/14	1125		2	X									X			006
7	V-INF-1	AR	G			2/19/14	1130		2	X									X			007
8	V-INF-2	AR	G			2/19/14	1135		2	X									X			008
9	V-INF-3	AR	G			2/19/14	1140		2	X									X			009
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Nicholas Gerkin	2/19/14	1646	MB PACE	2/19/14	1646				
				[signature] Pace 2/20/14		0800	Amb	N	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Nicholas Gerkin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 02/19/14

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: Air Sample Condition Upon Receipt	Document Revised: 26Dec2013 Page 1 of 1
	Document No.: F-MN-A-106-rev.09	Issuing Authority: Pace Minnesota Quality Office

Air Sample Condition Upon Receipt

Client Name: CARDNO ATC

Project #: WO# : 10258276

10258276

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace [ ] Other: _____

Tracking Number: 5779 5331 1513

Custody Seal on Cooler/Box Present? [X] Yes [ ] No **Seals Intact?** [X] Yes [ ] No

Optional: Proj. Due Date: Proj. Name:

Packing Material: [ ] Bubble Wrap [ ] Bubble Bags [ ] Foam [X] None [ ] Other: _____ **Temp Blank rec:** [ ] Yes [X] No

Temp. (TO17 and TO13 samples only) (°C): Amb **Corrected Temp (°C):** _____ **Thermom. Used:** [ ] B88A912167504 [ ] 72337080 [ ] B88A9132521491 [ ] 80512447

Temp should be above freezing to 6°C **Correction Factor:** _____ **Date & Initials of Person Examining Contents:** 2-20-14 K

Type of Ice Received [ ] Blue [ ] Wet [X] None

				Comments:
Chain of Custody Present?	[X] Yes	[ ] No	[ ] N/A	1.
Chain of Custody Filled Out?	[X] Yes	[ ] No	[ ] N/A	2.
Chain of Custody Relinquished?	[X] Yes	[ ] No	[ ] N/A	3.
Sampler Name and/or Signature on COC?	[X] Yes	[ ] No	[ ] N/A	4.
Samples Arrived within Hold Time?	[X] Yes	[ ] No	[ ] N/A	5.
Short Hold Time Analysis (<72 hr)?	[X] Yes	[ ] No	[ ] N/A	6.
Rush Turn Around Time Requested?	[ ] Yes	[X] No	[ ] N/A	7.
Sufficient Volume?	[X] Yes	[ ] No	[ ] N/A	8.
Correct Containers Used?	[X] Yes	[ ] No	[ ] N/A	9.
-Pace Containers Used?	[X] Yes	[ ] No	[ ] N/A	
Containers Intact?	[X] Yes	[ ] No	[ ] N/A	10.
Media: A.R. (TO-17)				11.
Sample Labels Match COC?	[X] Yes	[ ] No	[ ] N/A	12.

Samples Received:

Canisters		Flow Controllers		Stand Alone G	
Sample Number	Can ID	Sample Number	Can ID	Sample Number	Can ID

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** [ ] Yes [ ] No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: JENNI GROSS **Date:** 02/20/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

March 24, 2014

Kyle Sattler
Cardno ATC
7070 SW Fir Loop
Suite 100
Portland, OR 97223

RE: Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10260060

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on March 11, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: Keith Fox, Cardno ATC

CERTIFICATIONS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10260060

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #40770
Alabama Certification #40770
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #: Pace
Georgia Certification #: 959
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nebraska Certification #: Pace
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
Wisconsin Certification #: 999407970
West Virginia Certification #: 382
West Virginia TO-15 Approval
West Virginia DHHR #:9952C

SAMPLE SUMMARY

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10260060

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10260060001	**V-DSCHG-1**	Air	03/10/14 14:15	03/11/14 12:54
10260060002	**V-DSCHG-2**	Air	03/10/14 14:20	03/11/14 12:54
10260060003	**V-DSCHG-3**	Air	03/10/14 14:25	03/11/14 12:54
10260060004	**V-INT-1**	Air	03/10/14 14:30	03/11/14 12:54
10260060005	**V-INT-2**	Air	03/10/14 14:35	03/11/14 12:54
10260060006	**V-INT-3**	Air	03/10/14 14:40	03/11/14 12:54
10260060007	**V-INF-1**	Air	03/10/14 14:45	03/11/14 12:54
10260060008	**V-INF-2**	Air	03/10/14 14:50	03/11/14 12:54
10260060009	**V-INF-3**	Air	03/10/14 14:55	03/11/14 12:54

SAMPLE ANALYTE COUNT

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10260060

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10260060001	**V-DSCHG-1**	TO-15	JAM	6	PASI-M
10260060002	**V-DSCHG-2**	TO-15	JAM	6	PASI-M
10260060003	**V-DSCHG-3**	TO-15	JAM	6	PASI-M
10260060004	**V-INT-1**	TO-15	JAM	6	PASI-M
10260060005	**V-INT-2**	TO-15	JAM	6	PASI-M
10260060006	**V-INT-3**	TO-15	JAM	6	PASI-M
10260060007	**V-INF-1**	TO-15	JAM	6	PASI-M
10260060008	**V-INF-2**	TO-15	JAM	6	PASI-M
10260060009	**V-INF-3**	TO-15	JAM	6	PASI-M

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10260060

Sample: V-DSCHG-1 **Lab ID: 10260060001** Collected: 03/10/14 14:15 Received: 03/11/14 12:54 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	13.6	42		03/23/14 20:18	71-43-2	A4
Ethylbenzene	ND	ug/m3	37.0	42		03/23/14 20:18	100-41-4	
THC as Gas	**8660**	ug/m3	2550	42		03/23/14 20:18		
Toluene	**39.5**	ug/m3	32.3	42		03/23/14 20:18	108-88-3	
m&p-Xylene	ND	ug/m3	73.9	42		03/23/14 20:18	179601-23-1	
o-Xylene	ND	ug/m3	37.0	42		03/23/14 20:18	95-47-6	

Sample: V-DSCHG-2 **Lab ID: 10260060002** Collected: 03/10/14 14:20 Received: 03/11/14 12:54 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	12.2	37.4		03/23/14 21:06	71-43-2	A4
Ethylbenzene	ND	ug/m3	32.9	37.4		03/23/14 21:06	100-41-4	
THC as Gas	**6320**	ug/m3	2270	37.4		03/23/14 21:06		
Toluene	ND	ug/m3	28.8	37.4		03/23/14 21:06	108-88-3	
m&p-Xylene	ND	ug/m3	65.8	37.4		03/23/14 21:06	179601-23-1	
o-Xylene	ND	ug/m3	32.9	37.4		03/23/14 21:06	95-47-6	

Sample: V-DSCHG-3 **Lab ID: 10260060003** Collected: 03/10/14 14:25 Received: 03/11/14 12:54 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		03/23/14 21:55	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.6	33.6		03/23/14 21:55	100-41-4	
THC as Gas	**4980**	ug/m3	2040	33.6		03/23/14 21:55		
Toluene	ND	ug/m3	25.9	33.6		03/23/14 21:55	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		03/23/14 21:55	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		03/23/14 21:55	95-47-6	

Sample: V-INT-1 **Lab ID: 10260060004** Collected: 03/10/14 14:30 Received: 03/11/14 12:54 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.3	34.8		03/23/14 21:31	71-43-2	A4
Ethylbenzene	ND	ug/m3	30.6	34.8		03/23/14 21:31	100-41-4	
THC as Gas	**4560**	ug/m3	2120	34.8		03/23/14 21:31		
Toluene	**27.6**	ug/m3	26.8	34.8		03/23/14 21:31	108-88-3	
m&p-Xylene	ND	ug/m3	61.2	34.8		03/23/14 21:31	179601-23-1	
o-Xylene	ND	ug/m3	30.6	34.8		03/23/14 21:31	95-47-6	

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10260060

Sample: V-INT-2 **Lab ID: 10260060005** Collected: 03/10/14 14:35 Received: 03/11/14 12:54 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		03/23/14 19:53	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.6	33.6		03/23/14 19:53	100-41-4	
THC as Gas	**9140**	ug/m3	2040	33.6		03/23/14 19:53		
Toluene	ND	ug/m3	25.9	33.6		03/23/14 19:53	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		03/23/14 19:53	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		03/23/14 19:53	95-47-6	

Sample: V-INT-3 **Lab ID: 10260060006** Collected: 03/10/14 14:40 Received: 03/11/14 12:54 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		03/23/14 20:42	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.6	33.6		03/23/14 20:42	100-41-4	
THC as Gas	**8010**	ug/m3	2040	33.6		03/23/14 20:42		
Toluene	**27.3**	ug/m3	25.9	33.6		03/23/14 20:42	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		03/23/14 20:42	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		03/23/14 20:42	95-47-6	

Sample: V-INF-1 **Lab ID: 10260060007** Collected: 03/10/14 14:45 Received: 03/11/14 12:54 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**227**	ug/m3	87.4	268.8		03/23/14 22:19	71-43-2	A4
Ethylbenzene	**3110**	ug/m3	237	268.8		03/23/14 22:19	100-41-4	
THC as Gas	**181000**	ug/m3	16300	268.8		03/23/14 22:19		
Toluene	**2380**	ug/m3	207	268.8		03/23/14 22:19	108-88-3	
m&p-Xylene	**21000**	ug/m3	473	268.8		03/23/14 22:19	179601-23-1	
o-Xylene	**6420**	ug/m3	237	268.8		03/23/14 22:19	95-47-6	

Sample: V-INF-2 **Lab ID: 10260060008** Collected: 03/10/14 14:50 Received: 03/11/14 12:54 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**214**	ug/m3	87.4	268.8		03/23/14 22:43	71-43-2	A4
Ethylbenzene	**2910**	ug/m3	237	268.8		03/23/14 22:43	100-41-4	
THC as Gas	**219000**	ug/m3	16300	268.8		03/23/14 22:43		
Toluene	**2230**	ug/m3	207	268.8		03/23/14 22:43	108-88-3	
m&p-Xylene	**19000**	ug/m3	473	268.8		03/23/14 22:43	179601-23-1	
o-Xylene	**5800**	ug/m3	237	268.8		03/23/14 22:43	95-47-6	

REPORT OF LABORATORY ANALYSIS

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10260060

Sample: V-INF-3 **Lab ID: 10260060009** Collected: 03/10/14 14:55 Received: 03/11/14 12:54 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**204**	ug/m3	87.4	268.8		03/23/14 23:08	71-43-2	A4
Ethylbenzene	**2830**	ug/m3	237	268.8		03/23/14 23:08	100-41-4	
THC as Gas	**209000**	ug/m3	16300	268.8		03/23/14 23:08		
Toluene	**2110**	ug/m3	207	268.8		03/23/14 23:08	108-88-3	
m&p-Xylene	**18400**	ug/m3	473	268.8		03/23/14 23:08	179601-23-1	
o-Xylene	**5550**	ug/m3	237	268.8		03/23/14 23:08	95-47-6	

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10260060

QC Batch: AIR/19736 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10260060001, 10260060002, 10260060003, 10260060004, 10260060005, 10260060006, 10260060007, 10260060008, 10260060009

METHOD BLANK: 1643127 Matrix: Air
Associated Lab Samples: 10260060001, 10260060002, 10260060003, 10260060004, 10260060005, 10260060006, 10260060007, 10260060008, 10260060009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	03/23/14 16:15	
Ethylbenzene	ug/m3	ND	0.88	03/23/14 16:15	
m&p-Xylene	ug/m3	ND	1.8	03/23/14 16:15	
o-Xylene	ug/m3	ND	0.88	03/23/14 16:15	
THC as Gas	ug/m3	ND	60.8	03/23/14 16:15	
Toluene	ug/m3	ND	0.77	03/23/14 16:15	

LABORATORY CONTROL SAMPLE: 1643128

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	35.6	110	69-134	
Ethylbenzene	ug/m3	44.2	50.4	114	73-139	
m&p-Xylene	ug/m3	44.2	52.0	118	73-139	
o-Xylene	ug/m3	44.2	49.0	111	71-138	
THC as Gas	ug/m3	3520	3900	111	65-136	
Toluene	ug/m3	38.3	39.9	104	67-133	

SAMPLE DUPLICATE: 1643856

Parameter	Units	10260519001 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	1.7	1.8	1	25	
Ethylbenzene	ug/m3	ND	1.2J		25	
m&p-Xylene	ug/m3	4.4	4.4	2	25	
o-Xylene	ug/m3	ND	1.5J		25	
THC as Gas	ug/m3	556	568	2	25	
Toluene	ug/m3	6.5	6.7	3	25	

REPORT OF LABORATORY ANALYSIS

QUALIFIERS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10260060

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

SAMPLE QUALIFIERS

Sample: 10260060007
[1] This result is reported from a serial dilution.
Sample: 10260060008
[1] This result is reported from a serial dilution.
Sample: 10260060009
[1] This result is reported from a serial dilution.

ANALYTE QUALIFIERS

A4 Sample was transferred from a sampling bag into a Summa Canister within 48 hours of collection.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10260060

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10260060001	**V-DSCHG-1**	TO-15	AIR/19736		
10260060002	**V-DSCHG-2**	TO-15	AIR/19736		
10260060003	**V-DSCHG-3**	TO-15	AIR/19736		
10260060004	**V-INT-1**	TO-15	AIR/19736		
10260060005	**V-INT-2**	TO-15	AIR/19736		
10260060006	**V-INT-3**	TO-15	AIR/19736		
10260060007	**V-INF-1**	TO-15	AIR/19736		
10260060008	**V-INF-2**	TO-15	AIR/19736		
10260060009	**V-INF-3**	TO-15	AIR/19736		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

102600160

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Cardno ATC	Report To:	Kyle Sattler	Attention:	
Address:	7070 SW Fir Loop, Suite 100	Copy To:	Keith Fox	Company Name:	
	Tigard, OR 97223			Address:	
Email To:	kyle.sattler@cardno.com	Purchase Order No.	03132603B	Pace Quote Reference:	
Phone:	503 430 6696 Fax:	Client Project ID:	AOC 1396 - P66 Westlake/Mercer	Pace Project Manager:	Jenni Gross
Requested Due Date/TAT:	10 Day (Standard)	Container Order Number:		Pace Profile #:	

Requested Analysis Filtered (Y/N): PSCAA / WA

ITEM#	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: TO-15	Residual Chlorine (Y/N)	
1	V-DSCHG-1	AR	G			03/10/14	14:15		2	X								X		-001
2	V-DSCHG-2	AR	G			03/10/14	14:20		2	X								X		-002
3	V-DSCHG-3	AR	G			03/10/14	14:25		2	X								X		-003
4	V-INT-1	AR	G			03/10/14	14:30		2	X								X		-004
5	V-INT-2	AR	G			03/10/14	14:35		2	X								X		-005
6	V-INT-3	AR	G			03/10/14	14:40		2	X								X		-006
7	V-INF-1	AR	G			03/10/14	14:45		2	X								X		-007
8	V-INF-2	AR	G			03/10/14	14:50		2	X								X		-008
9	V-INF-3	AR	G			03/10/14	14:55		2	X								X		-009
10																				
11																				
12																				

MATRIX: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	N. Nicholas Gerlen	3/11/14	1254	PACE	3/11/14	1254	
				PACE	3/12/14	845	Amb n n Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Nicholas Gerlen

SIGNATURE of SAMPLER: [signature] DATE Signed: 3/11/14

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical	Document Name: Air Sample Condition Upon Receipt	Document Revised: 26Dec2013 Page 1 of 1
	Document No.: F-MN-A-106-rev.09	Issuing Authority: Pace Minnesota Quality Office

Air Sample Condition Upon Receipt

Client Name: Cardno ATC

Project #: WO# : 10260060

10260060

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other: _____

Tracking Number: 577953313674

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ Foam ☒ None ☐ Other: _____ **Temp Blank rec:** ☐ Yes ☒ No

Temp. (TO17 and TO18 samples only) (°C): Amb **Corrected Temp (°C):** Amb **Thermom. Used:** ☐ B88A912167504 ☐ B88A9132521491 ☐ 72337080 ☐ 80512447

Temp should be above freezing to 6°C **Correction Factor:** Ambient **Date & Initials of Person Examining Contents:** AMB 3/12/14

Type of Ice Received ☐ Blue ☐ Wet ☒ None

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☒ Yes	☐ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact? AMB 3/12/14	☐ Yes	☒ No	☐ N/A	10. 1 bag for sample #1 recd
Media: Air Bag				11. with a hole in the bag.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.

Samples Received: 18 air bags

Canisters		Flow Controllers		Stand Alone G	
Sample Number	Can ID	Sample Number	Can ID	Sample Number	Can ID

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: ENM-Ross **Date:** 3/13/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Cardno ATC
Shaping the Future

917 1st Avenue North, Suite 3
Billings, Montana 59101
Telephone: 406-259-1033
Fax: 406-259-1099

Appendix B
Carbon Change Documentation

,K Order Form

SR# 0

EVOQUA WATER TECHNOLOGIES

BILL TO:	0
Cardno ERI	
801 Second Ave	
Suite, 700	
Seattle, WA 98104	
Ordered By:	Mike Miller
Contact Phone #:	206-767-2360

SHIP TO:	1232153339
Phillips 66	
600 Westlake Ave North	
Seattle WA 98109	
0	
Site Contact:	Nick Gerkin
Contact Phone #:	206-510-7158

SR Image Y/N	NO
SR Image via	0
Freight Type:	Prepaid

PO #	03132603B
Requested Date	4/11/2014
Scheduled Date	04-11-14 close to 9am

Description	QTY	Pkg	Oracle Part Number
VSC1000 Change out service	3	0	W3TSP4133
VCNS	3000	0	W3T184304
Spent GAC	7000	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	gm

W140069 NH 4/8/16

Profile #	0	Expiration Date	01/00/00
Profile #	0	Expiration Date	01/00/00

Customer Special Requests:	0
PPE:	0
Shop Notes:	0
Field Notes:	Change out (3) VSC1000 adsorbers with VCNS carbon, remove (4) bulk bags of spent GAc from previous service event.

notes from shop/field	

fresh carbon movement:	lot #	type	mesh	weight	packaging	# used	by
	140409-1	~~VCNS~~	~~4x10~~	~~1243~~			
		VCNS	~~4x10~~ 4x10	3000	SS	3	TS

DB

spent carbon movement:	profile #	type	mesh	weight	packaging	# used	location
	W140069NH	VCNS	4x10	1243	DOT	4	Skid
				1315			
				1460			
				~~1460~~			
				1215			
				1209			
				1196			

TO 5087 7298

SR Time Tracking							
	Vehicle	Name	Date	Mileage	Travel Time	Site Time	Sum Line
							0
							0
							0
							0
							0
			Sum Mileage	0		Sum Time	0

V. 012014

Evoqua Water Technologies LLC -
2523 Mutahar Street - Box 3308
Parker, AZ 85344

Telephone: (928) 669-5758
Facsimile: (928) 669-5775

May 28, 2014

Ed Ralston
Phillips 66 Company
76 Broadway
Sacramento, CA 95818-

This is to certify the following spent carbon received at the Evoqua Water Technologies Carbon Reactivation facility was reactivated in accordance with 40 CFR Part 265 and Part 61 regulations:

Site Address:	Facility No. 255353 (AOC 1396) 600
Profile Number:	W140069NH
Shipping Document Number:	051514SL
Date Of Receipt:	May 19, 2014
Container Quantity - Type:	7 - Bag
Reactivation Date:	5/24/2014

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations, I verify the information contained above is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification this information is true, accurate and complete.

Evoqua Water Technologies LLC
EPA ID No. AZD 982 441 263

Sincerely,

Monte McCue
Plant Manager