Cardno ATC
Shaping the Future

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REMEDIATION PROGRESS REPORT
First Quarter 2015

Phillips 66 Facility No. 255353 (AOC 1396)
600 Westlake Avenue North
Seattle, Washington 98107
Washington State Department of Ecology Facility ID: 46445373

Submitted to:
Mr. Roger Nye
Washington State Department of Ecology
3190 160th Avenue Southeast
Bellevue, Washington 98008-5452

Submitted on behalf of:
Ed Ralston
Phillips 66 Company
Remediation Management
76 Broadway
Sacramento, California 95818

Submitted by:
Cardno
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Billings, Montana 59101

Cardno ATC Job No. Z076000073

April 17, 2015

MJM on behalf of
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:	January 1 through March 31, 2015

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:	2,019	Hours Operated This Period:	1,268.25
Percent Runtime This Period:	93.5%	Percent Runtime This Period:	58.7%
Cumulative Operating Hours:	10,047.25	Cumulative Operating Hours:	9,346.50
Cumulative Percent Runtime:	91.1%	Cumulative Percent Runtime:	84.8%

AS SYSTEM OPERATIONAL DATA

Hours Operated This Period:	2,070.25
Percent Runtime This Period:	95.8%
Cumulative Operating Hours:	10,183.50
Cumulative Percent Runtime:	92.3%

ESTIMATED REMOVAL RATES

TPHg Removed This Period:	21 pounds
TPHg Removal Rate This Period:	0.013 pounds per hour, average for the period
TPHg Removal Rate Previous Period:	0.06 pounds per hour, average for the period
Cumulative TPHg Removed:	3,039 pounds

Benzene Removed This Period:	0.03 pounds	Ethylbenzene Removed This Period:	0.08 pounds
Cumulative Benzene Removed:	1.80 pounds	Cumulative Ethylbenzene Removed:	22.40 pounds
Toluene Removed This Period:	0.06 pounds	Xylenes Removed Rate This Period:	0.16 pounds
Cumulative Toluene Removed:	17.19 pounds	Cumulative Xylenes Removed:	231.03 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.

Blower 701 (Mercer & Westlake) was down between January 4 and January 6 for approximately 54 hours due to failed motor drive belts. The entire system was shut down on January 20 for approximately 4 hours so that Cardno ERI could remove water from SVE wells using a contracted vacuum truck. The entire system was down between February 14 and February 16 for approximately 56 hours. The outage was due to the current property owner temporarily shutting down the electrical service to the feeder panel that supplies power to the system so that a dewatering system and equipment could be removed. Blower 801 (Terry & Valley) was shut down on February 25, initially to test for rebound in SVE wells. After further evaluation of optimization results, the blower remained off through the end of March. The entire system was shut down on March 23 and 24 for groundwater sampling of area monitoring wells.

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Compliance samples per a PSCAA permit (Registration #29548) were collected on January 20, February 25, and March 18. 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. The PSCAA permit specifies that a control efficiency of 97% must be demonstrated when total petroleum hydrocarbon (TPH) concentrations at the inlets to the GAC vessels are 200 ppmv or greater. TPH concentrations have never exceeded this threshold; therefore control efficiency is not reported. (NOTE: The PSCAA permit specifies vapor concentrations as TPH, while the analytical laboratory reports Method TO-15 results as THCg. For reporting purposes, TPH and THCg are assumed to be equivalent). A modification to the discharge permit to reduce carbon breakthrough monitoring to bi-weekly, and allow removal of the vapor control system when TPHg emissions drop below 2.74 lbs./day AND benzene emissions drop below 0.018 lbs./day was approved by PSCAA on September 2, 2014. A copy of the approved PSCAA permit is provided in Appendix B. On March 18, Cardno submitted a Notice of Vapor Control Removal letter to PSCAA, along with data showing estimated emissions were below the limits for both TPHg and benzene established by Condition 11 of the modified permit. Cardno calculated the maximum potential to emit at 595 pounds per year for TPHg (1.63 pounds per day), and 0.58 pounds per year for Benzene (0.00158 pounds per day). These calculated emission rates are below the limits established by Condition 11 of the modified permit for both TPHg and benzene. PSCAA subsequently granted approval on April 2, 2015 via electronic mail to remove the vapor controls.

Compliance samples per the KCIW permit (Authorization #4262-01, Expiration: 6/30/2018) were collected on January 21, February 25, and March 18. 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 summarized in Table 2. BTEX results were below reporting limits for all samples, with the exception of all BTEX constituents detected in the influent sample collected on January 21. TPHg was detected at 827 mg/L in the influent sample collected January 21, 2015. A total of 6,810 gallons of treated water were discharged to the King County sewer system during the period.

Steps taken to optimize the system during the first quarter of 2015 included removing approximately 1,400 gallons of water from SVE wells by connecting a vacuum truck to the manifolds. Water was removed from wells M1, M2, M5 through M10, M12, M13, and M19 on the Westlake-Mercer manifold; wells TEFR1, TMW48, TMW65, TSVE1, TSVE3, TSVE4, TSVE7, TSVE12, V1, V2, V4, V7, and V9 were evacuated on the Terry-Valley manifold. Evacuated water was emptied into the system secondary containment for disposal via the GAC treatment system. The presence of water in the SVE wells was likely due to periodic high groundwater levels saturating the soils around certain remediation wells.

Cardno also conducted weekly field visits to collect PID readings, optimize flow rates, and toggle wells on and off in an effort to determine if any significant vapor concentrations could be extracted. The SVE wells in Westlake were also operated for approximately three days each to test for rebound since the wells were turned off in April of 2014. Vapor concentrations from Westlake wells were not significant. Removal rates have bottomed out, as shown on the Cumulative TPHg and BTEX Removal Graph, with the average calculated removal rate for the period at 0.03 pounds TPHg per hour, a 50% decrease compared to the rate from the previous period; total estimated TPHg removal was 21 pounds.

Recommendations:

- Take the system offline for an extended period, followed by rebound testing for the entire system:
- If the system is run for an extended period, disconnect vapor controls if concentrations fall to deminimis levels per PSCAA approval to removal of the vapor controls dated April 2, 2015.

Table 1. Vapor Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Sample Location	Sample Date	Analytical Vapor Results, Vapor Train 1 (EPA Method TO-15 for VOCs) (µg/m3)						*THCg (ppmv)
		THCg	Benzene	Toluene	Ethylbenzene	m&p Xylenes	o-Xylenes	
V1 Influent	01/27/14	77,100	ND<12.6	121	86	411	81.8	18.3
V1 Intermediate		54,100	ND<21.9	128	ND<59.3	ND<119	ND<59.3	12.8
V1 Effluent		30,500	ND<12.2	ND<12.3	ND<12.4	ND<12.5	ND<12.6	7.2
V1 Influent	02/19/14	158,000	84	598	1,370	9,450	2,150.0	37.4
V1 Intermediate		ND<2040	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6	NC
V1 Effluent		7,800	ND<10.9	38	ND<29.6	ND<59.1	ND<29.6	1.8
V1 Influent	03/10/14	181,000	227	2,380	3,110	21,000	9,420.0	42.9
V1 Intermediate		4,560	ND<11.3	27.6	ND<30.6	ND<61.2	ND<30.6	1.1
V1 Effluent		8,660	ND<13.6	40	ND<37.0	ND<73.9	ND<37.0	2.1
V1 Influent	04/16/14	156,000	119	2,050	1,430	9,170	3,630.0	36.9
V1 Intermediate		ND<1220	ND<6.5	32	ND<17.6	ND<35.2	ND<17.6	NC
V1 Effluent		ND<1220	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	NC
V1 Influent	05/08/14	107,000	28	483	745	7,240	2,720.0	25.3
V1 Intermediate		4,120	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	1.0
V1 Effluent		5,110	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	1.2
V1 Influent	06/25/14	55,200	ND<76	309	277	5,840	2,280	13.1
V1 Intermediate		9,600	19.3	231	148	773	38	2.3
V1 Effluent		ND<2040	20.6	36.5	ND<29.6	ND<59.1	ND<29.6	NC
V1 Influent	07/09/14	131,000	ND<58.4	235.0	253	5,360	2,460	31.0
V1 Intermediate		ND<3520	ND<37.6	ND<44.6	ND<51.0	ND<102	ND<51.0	NC
V1 Effluent		9,860	17	29.7	ND<22.3	ND<44.5	ND<22.3	2.3
V1 Influent	08/05/14	33,900	ND<37.6	127	ND<102	1,560	701	8.0
V1 Intermediate		2,630	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<79.5	0.6
V1 Effluent		ND<2190	ND<11.7	28.6	ND<31.7	ND<63.4	ND<79.5	NC
V1 Influent	09/04/14	20,500	ND<10.9	51.5	ND<78.6	3,730	1,720	4.9
V1 Intermediate		ND<2040	ND<10.9	88.1	ND<78.6	ND<59.1	ND<29.6	NC
V1 Effluent		ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V1 Influent	10/16/14	16,500	ND<13.1	ND<31.1	ND<35.6	372	246	3.9
V1 Intermediate		ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V1 Effluent		16,800	64.0	84.5	ND<25.5	ND<51.0	ND<25.5	4.0
V1 Influent	11/11/14	ND<1640	ND<8.7	ND<48.3	ND<55.6	ND<119	63.1	NC
V1 Intermediate		ND<1760	ND<9.4	ND<55.4	ND<63.9	ND<128	ND<63.9	NC
V1 Effluent		ND<1760	10.2	ND<55.4	ND<63.9	ND<128	ND<63.9	NC
V1 Influent	12/10/14	6,930	ND<6.0	14.8	ND<16.1	ND<32.3	ND<16.1	1.6
V1 Intermediate		7,240	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	1.7
V1 Effluent		10,700	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	2.5
V1 Influent	01/20/15	ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V1 Intermediate		2,100	ND<10.9	ND<129	ND<29.6	ND<59.1	ND<29.6	0.5
V1 Effluent		2,660	ND<12.6	ND<149	ND<34.2	ND<68.5	ND<34.2	0.6
V1 Influent	02/25/15	ND<1750	ND<9.4	ND<22.2	ND<25.3	ND<50.7	ND<25.3	NC
V1 Intermediate		ND<2060	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	NC
V1 Effluent		ND<2060	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	NC
V1 Influent	03/18/15	1,970	ND<6.1	23.1	ND<82.5	44.4	ND<82.5	0.5
V1 Intermediate		3,310	19.4	342	ND<74.2	ND<29.6	ND<74.2	0.8
V1 Effluent		2,720	ND<3.3	10.2	ND<44.7	ND<17.8	ND<44.7	0.6
PSCAA Threshold Concentration *								200

Table 1. Vapor Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Sample Location	Sample Date	Analytical Vapor Results, Vapor Train 2 (EPA Method TO-15 for VOCs) (µg/m3)						*THCg (ppmv)
		THCg	Benzene	Toluene	Ethylbenzene	m&p Xylenes	o-Xylenes	
V2 Influent	01/27/14	179,000	ND<13.1	750	1,110	5,390	1,530	42.4
V2 Intermediate		62,300	ND<11.3	34.5	ND<30.6	ND<61.2	ND<30.6	14.8
V2 Effluent		32,500	ND<12.6	39.5	ND<34.1	ND<68.3	ND<34.1	7.7
V2 Influent	02/19/14	153,000	88	432	1,030	4,540	1,600	36.2
V2 Intermediate		5,700	ND<10.9	30.7	ND<29.6	ND<59.1	ND<29.6	1.3
V2 Effluent		7,750	ND<10.9	31.4	ND<29.6	ND<59.1	ND<29.6	1.8
V2 Influent	03/10/14	219,000	214	2,230	2,910	19,000	5,800	51.9
V2 Intermediate		9,140	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6	2.2
V2 Effluent		6,320	ND<12.2	ND<28.8	ND<32.9	ND<65.8	ND<32.9	1.5
V2 Influent	04/16/14	162,000	85	1,420	988	5,510	2,530	38.4
V2 Intermediate		ND<1220	ND<6.5	22.9	ND<17.6	ND<35.2	ND<17.6	NC
V2 Effluent		ND<1220	ND<6.5	30.3	ND<17.6	ND<35.2	ND<17.6	NC
V2 Influent	05/08/14	103,000	ND<16.2	435	711	8,340	2,660.0	24.4
V2 Intermediate		3,310	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	0.8
V2 Effluent		5,620	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	1.3
V2 Influent	06/25/14	23,200	ND<73.4	ND<174	ND<199	2,820	1,070	5.5
V2 Intermediate		12,900	19.4	143	34	ND<61.2	ND<30.6	3.1
V2 Effluent		ND<2040	12	ND<25.9	ND<29.6	ND<59.1	ND<29.6	NC
V2 Influent	07/09/14	46,000	ND<56.5	154	146	3,040	1,290	10.9
V2 Intermediate		ND<3520	ND<37.6	ND<44.6	ND<51.0	ND<102	ND<51.0	NC
V2 Effluent		6,900	ND<18.8	28.0	ND<25.5	ND<51.0	ND<25.5	1.6
V2 Influent	08/05/14	39,300	ND<22.0	83.7	ND<59.5	1,230	571	9.3
V2 Intermediate		ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<76.8	NC
V2 Effluent		10,600	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<79.5	2.5
V2 Influent	09/04/14	19,500	ND<10.9	39.3	ND<78.6	1,780	910	4.6
V2 Intermediate		ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V2 Effluent		ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V2 Influent	10/16/14	67,800	ND<13.1	ND<31.1	ND<35.6	238	171	16.1
V2 Intermediate		ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V2 Effluent		7,860	ND<9.4	ND<22.3	ND<25.5	ND<51.0	ND<25.5	1.9
V2 Influent	11/11/14	ND<1640	8.2	ND<48.3	ND<55.6	ND<111	58.0	NC
V2 Intermediate		ND<2060	ND<11.0	ND<64.7	ND<74.6	ND<149	ND<74.6	NC
V2 Effluent		ND<2060	ND<11.0	ND<64.7	ND<74.6	ND<149	ND<74.6	NC
V2 Influent	12/10/14	6,210	ND<7.3	ND<17.3	ND<19.8	ND<39.5	ND<19.8	1.5
V2 Intermediate		5,950	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	1.4
V2 Effluent		3,140	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	0.7
V2 Influent	01/20/15	ND<2190	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<31.7	NC
V2 Intermediate		ND<1760	ND<9.4	37.4	ND<63.9	ND<51.0	ND<25.5	NC
V2 Effluent		2,360	ND<12.2	ND<143	ND<32.9	ND<65.8	ND<32.9	0.6
V2 Influent	02/25/15	2,940	ND<7.4	ND<17.6	ND<20.2	ND<40.3	32.3	0.7
V2 Intermediate		ND<1980	ND<10.6	ND<25.1	ND<28.7	115	46.7	NC
V2 Effluent		2,530	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	0.6
V2 Influent	03/18/15	2,300	ND<5.8	ND<13.9	ND<79.5	39.7	ND<79.5	0.5
V2 Intermediate		1,500	ND<5.5	15.0	ND<74.2	ND<29.6	ND<74.2	0.4
V2 Effluent		3,470	ND<8.6	29.5	ND<117	ND<46.8	ND<117	0.8
PSCAA Threshold Concentration *								200

Table 1. Vapor Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Sample Location	Sample Date	Analytical Vapor Results, Vapor Train 3 (EPA Method TO-15 for VOCs) (µg/m3)						*THCg (ppmv)
		THCg	Benzene	Toluene	Ethylbenzene	m&p Xylenes	o-Xylenes	
V3 Influent	01/27/14	261,000	184	1,680	2,440	9,530	3,590	61.8
V3 Intermediate		108,000	ND<13.6	39.5	ND<37.0	ND<73.9	ND<37.0	25.6
V3 Effluent		31,800	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6	7.5
V3 Influent	02/19/14	165,000	85	456	1,070	4,550	1,650	39.1
V3 Intermediate		2,640	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6	0.6
V3 Effluent		3,220	ND<10.9	34.1	ND<29.6	ND<59.1	ND<29.6	0.8
V3 Influent	03/10/14	209,000	204	2,110	2,830	18,400	5,550	49.5
V3 Intermediate		8,010	ND<10.8	27.3	ND<29.5	ND<59.0	ND<29.5	1.9
V3 Effluent		4,980	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6	1.2
V3 Influent	04/16/14	167,000	78	1,320	882	6,860	2,290	39.5
V3 Intermediate		ND<1220	ND<6.5	18	ND<17.6	ND<35.2	ND<17.6	NC
V3 Effluent		ND<1220	ND<6.5	30.8	ND<17.6	ND<35.2	ND<17.6	NC
V3 Influent	05/08/14	134,000	33	641	1,060	11,600	3,690.0	31.7
V3 Intermediate		9,300	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	2.2
V3 Effluent		3,970	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	0.9
V3 Influent	06/25/14	ND<28400	ND<152	ND<360	ND<412	3,140	1,130	NC
V3 Intermediate		19,100	24.5	188	130	944	207	4.5
V3 Effluent		ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V3 Influent	07/09/14	83,400	ND<56.5	172	180	3,440	1,540	19.7
V3 Intermediate		ND<2120	ND<22.6	27.9	ND<30.6	ND<61.2	ND<30.6	NC
V3 Effluent		3,540	ND<18.8	22.7	ND<25.5	ND<51.0	ND<25.5	0.8
V3 Influent	08/05/14	35,700	ND<22.0	85.3	ND<59.5	1,140	519	8.5
V3 Intermediate		ND<2460	ND<13.1	ND<31.1	ND<35.6	ND<71.1	ND<89.2	NC
V3 Effluent		5,840	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<76.8	1.4
V3 Influent	09/04/14	4,850	ND<10.9	ND<25.9	ND<78.6	1,460	640	1.1
V3 Intermediate		ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V3 Effluent		ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V3 Influent	10/16/14	15,200	ND<13.1	ND<31.1	ND<35.6	241	170	3.7
V3 Intermediate		ND<2550	ND<13.6	ND<32.3	ND<37.0	ND<73.9	ND<37.0	NC
V3 Effluent		ND<1760	ND<9.4	ND<22.3	ND<25.5	ND<51.0	ND<25.5	NC
V3 Influent	11/11/14	ND<1750	ND<9.4	ND<55.2	ND<63.6	ND<127	65.6	NC
V3 Intermediate		ND<1760	ND<9.4	ND<55.4	ND<63.9	ND<128	ND<63.9	NC
V3 Effluent		ND<1540	ND<8.2	ND<48.4	ND<55.8	ND<112	ND<55.8	NC
V3 Influent	12/10/14	6,140	ND<9.4	ND<22.3	ND<25.5	ND<51.0	ND<25.5	1.5
V3 Intermediate		ND<2060	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	NC
V3 Effluent		7,100	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	1.7
V3 Influent	01/20/15	12,100	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<31.7	2.9
V3 Intermediate		ND<2270	ND<12.2	ND<28.8	ND<32.9	ND<65.8	ND<32.9	NC
V3 Effluent		ND<2550	ND<13.6	ND<161	ND<37.0	ND<73.9	ND<37.0	NC
V3 Influent	02/25/15	3,340	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<31.7	0.8
V3 Intermediate		ND<1980	ND<10.6	ND<25.1	ND<28.7	ND<57.3	ND<28.7	NC
V3 Effluent		ND<1980	ND<10.6	ND<25.1	ND<28.7	ND<57.3	ND<28.7	NC
V3 Influent	03/18/15	2,290	ND<5.7	14.8	ND<76.8	38.3	ND<76.8	0.5
V3 Intermediate		ND<1280	ND<6.8	28.4	ND<92.7	ND<37.0	ND<92.7	NC
V3 Effluent		2,240	ND<5.5	ND<12.9	ND<74.2	ND<29.6	ND<74.2	0.5
PSCAA Threshold Concentration *								200

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.

NC = Not Calculated due to concentration below laboratory MDL.

* THCg ppm = THCg (µg/m^3) /42.23 (conversion factor for molar volume @ STP)/M (molecular weight of THC [100]). PSCAA Permit (Registration #29548) requires a minimum control efficiency of 97% when the TPH (THC) influent concentration is greater than or equal to 200 ppmv.

Table 2. Liquid Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Sample Location	Sample Date	Analytical Water Results (NWTPH-Gx/8021 for THCg and EPA Method 8260 for VOCs) (µg/L)				
		THCg	Benzene	Toluene	Ethylbenzene	Total Xylenes
W-DSCHG	01/27/14	2,250	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INT		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF		ND (<100)	ND (<1.0)	1.5	ND (<1.0)	8.6
W-DSCHG	02/20/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	1.3	11.4
W-DSCHG	03/10/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	04/16/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	5.5
W-DSCG	05/08/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	06/25/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	07/09/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	08/13/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	09/04/14	*	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		*	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		*	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	10/16/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	11/11/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	12/10/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	01/21/15	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		827	10.2	82.1	11.4	86.2
W-DSCHG	02/25/15	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	03/18/15	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
KCIW Permit Limits			70	1,400	1,700	2,200

Notes:
There are a total of two liquid phase carbon units plumbed in series to treat water. Samples W-INF or W-INF-WS1 were collected from a sample port located prior to the first liquid phase carbon unit. Samples W-INT or W-OUT-WC1 were collected from a sample port located between the first and second liquid phase carbon units. Samples W-DSCHG or W-DSCG 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.

KCIW Permit Maximum Allowable Concentrations:
Benzene – 0.07 mg/L (70 µg/L); Ethylbenzene – 1.7 mg/L (1,700 µg/L); Toluene – 1.4 mg/L (1,400 µg/L); Total Xylenes – 2.2 mg/L (2,200 µg/L).

* THCg analysis was requested, but the laboratory inadvertently neglected to complete the THCg analysis.

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ATTACHMENTS

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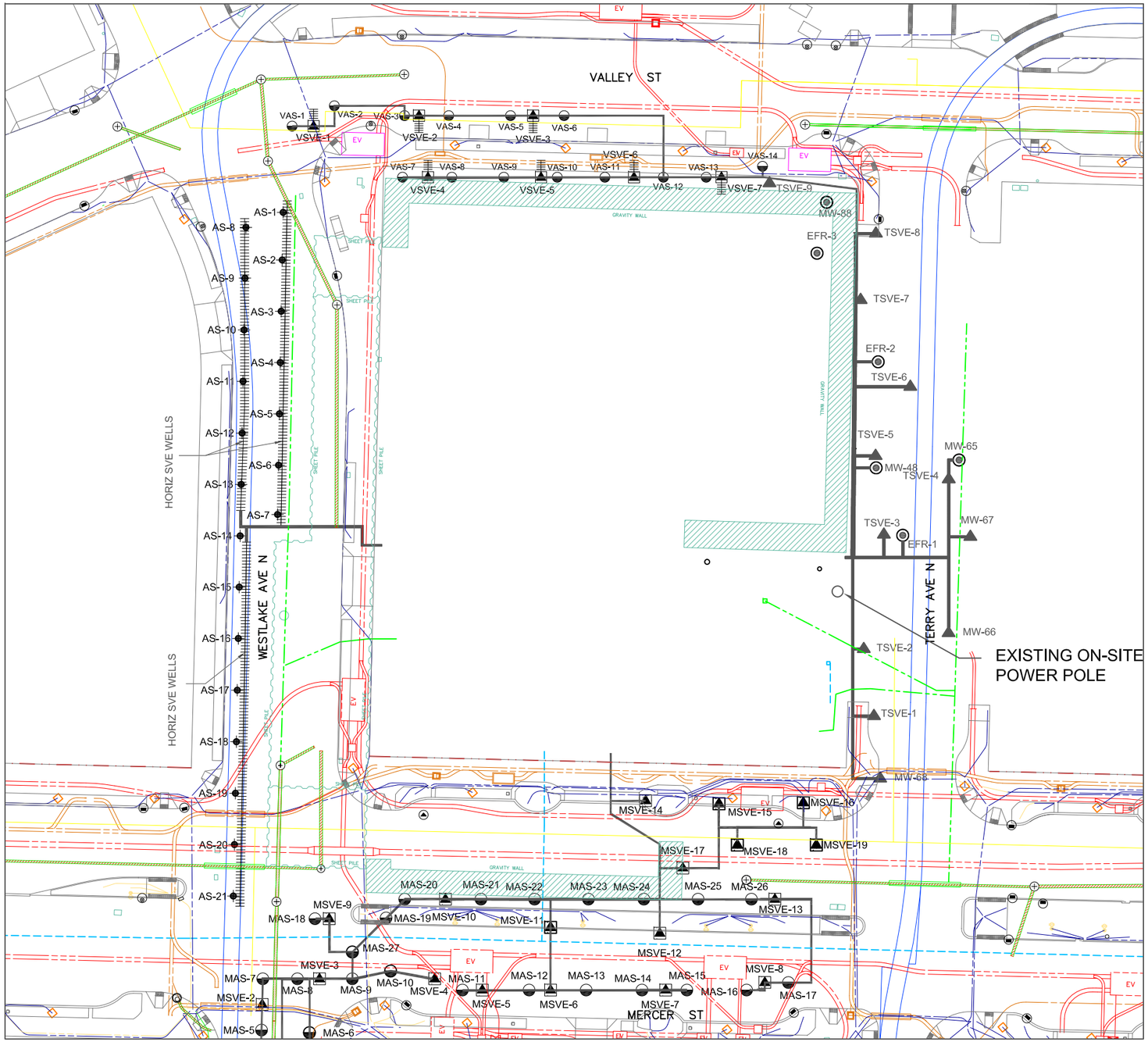
Acronym List

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
THCg	Total hydrocarbons as gasoline
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

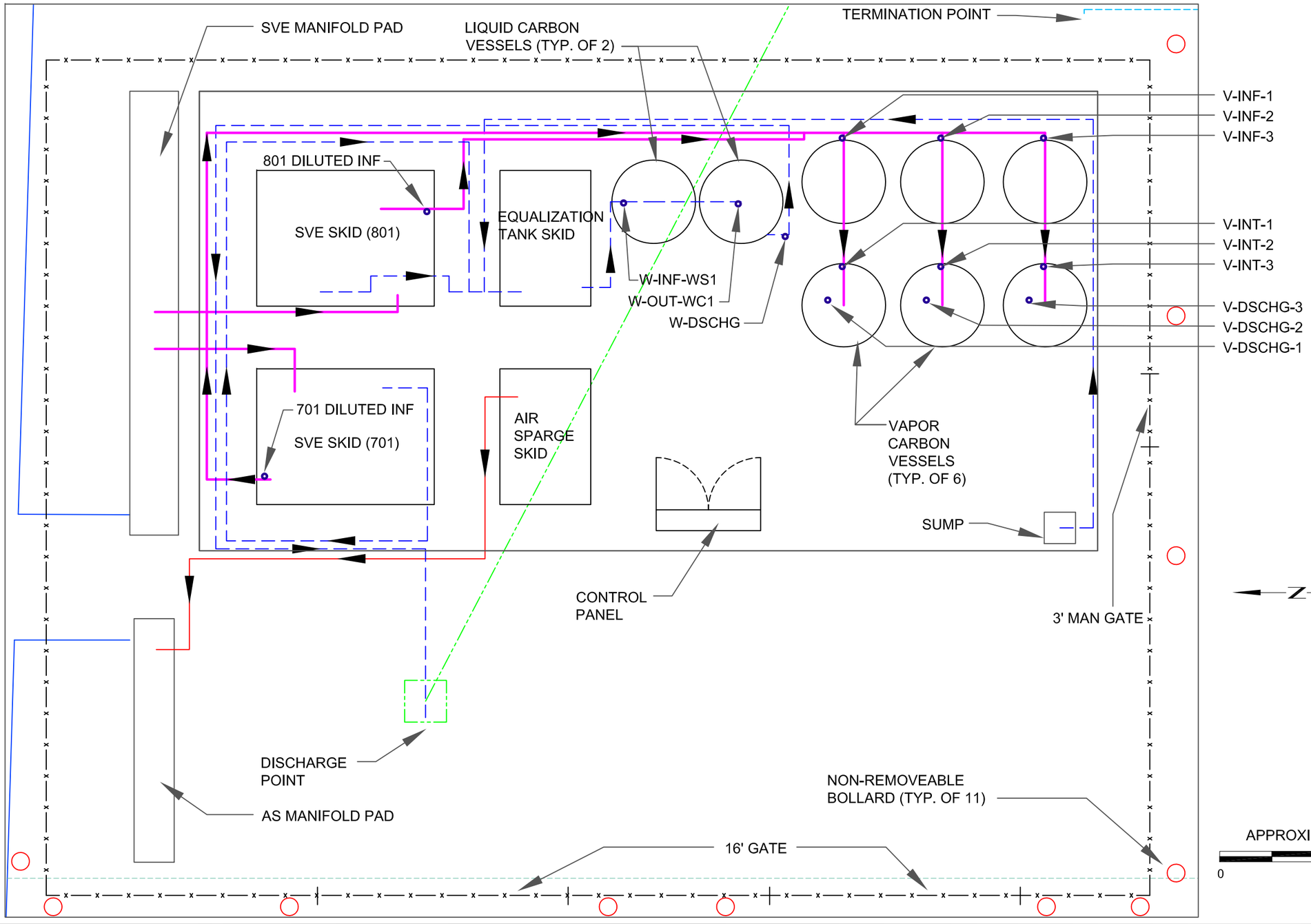
PLATE
1

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

Table 3. Remediation System Operational Data Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

	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)	Period Operating Hours	Wells On-line (count)	Applied Vaccum (in. H_2O)	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	114	23	26	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	3	23	26	3	6	NM	95000	0.54	NM	74950	0.41	NM	54900	0.29	1.23	0.41	156.17
1/7/14	19	28	18	19	23	25	19	6	503.07	95000	3.40	485.37	74950	2.59	464.73	54900	1.82	7.81	0.41	163.98
1/8/14	28	28	18	28	23	26	28	5	NM	95000	0.00	NM	74950	0.00	NM	54900	0.00	0.00	0.00	163.98
1/9/14	24	28	22	24	23	26	24	8	515.92	95000	9.55	496.37	74950	7.25	496.38	54900	2.45	19.24	0.43	183.22
1/10/14	17	28	22	18	23	27	17	7.5	517.42	95000	3.13	502.21	74950	2.54	528.50	54900	1.96	7.62	0.43	190.84
1/13/14	79	28	22	79	23	26	80	6.5	508.97	95000	14.31	532.16	74950	11.80	548.73	54900	8.91	35.02	0.44	225.87
1/14/14	19	28	22	18	23	27	18	6.5	497.43	95000	3.36	523.97	74950	2.65	553.03	54900	2.05	8.06	0.44	233.92
1/15/14	28	28	23	28	23	27	26	7	512.50	95000	5.11	513.61	74950	4.04	537.68	54900	3.10	12.24	0.44	246.16
1/16/14	19	28	24	19	23	28	19	6	538.21	95000	3.64	533.57	74950	2.85	538.31	54900	2.10	8.59	0.45	254.75
1/17/14	25	28	34	26	23	44	25	6	441.06	95000	3.92	420.97	74950	3.07	464.49	54900	2.48	9.48	0.37	264.23
1/20/14	69	28	33	69	23	44	69	6.5	456.66	95000	11.21	452.21	74950	8.76	455.74	54900	6.47	26.44	0.38	290.67
1/21/14	29	28	46	29	23	53	29	5.5	429.86	95000	4.44	460.09	74950	3.75	466.58	54900	2.78	10.96	0.38	301.63
1/22/14	20	28	42	19	23	33	20	6.5	451.76	95000	3.22	462.40	74950	2.47	500.94	54900	1.96	7.64	0.39	309.27
1/23/14	30	28	40	30	23	32	30	8.5	418.24	95000	4.46	438.07	74950	3.69	471.91	54900	2.91	11.07	0.37	320.34
1/24/14	25	28	41	25	23	32	25	7	432.19	95000	3.84	439.34	74950	3.08	479.91	54900	2.47	9.40	0.38	329.73
1/27/14	66	28	41	66	23	31	66	6.5	431.90	77100	8.23	431.15	179000	19.08	475.41	261000	30.68	57.99	0.88	387.72
1/28/14	25	28	40	25	23	31	25	8	439.45	77100	3.17	441.02	179000	7.39	475.41	261000	11.62	22.18	0.89	409.91
1/29/14	23	28	44	23	23	59	23	8.5	450.89	77100	2.99	406.78	179000	6.27	454.55	261000	10.22	19.49	0.85	429.39
1/30/14	17	28	44	17	23	56	17	7	452.30	77100	2.22	433.34	179000	4.94	444.43	261000	7.39	14.55	0.86	443.94
1/31/14	3	28	46	3	23	47	3	8.5	429.59	77100	0.37	413.24	179000	0.83	414.10	261000	1.21	2.42	0.81	446.36
2/3/14	69	28	40	69	23	46	69	8.7	464.08	77100	9.25	430.25	179000	19.90	463.12	261000	31.24	60.39	0.88	506.75
2/4/14	28	28	46	28	23	48	28	8	399.93	77100	3.23	421.40	179000	7.91	448.73	261000	12.28	23.43	0.84	530.18
2/7/14	69	28	48	69	23	47	69	8	409.47	77100	8.16	424.23	179000	19.63	456.33	261000	30.78	58.57	0.85	588.75
2/11/14	97	28	50	97	23	51	98	6	449.75	77100	12.60	444.32	179000	28.90	451.16	261000	42.78	84.28	0.87	673.02
2/12/14	26	28	47	26	23	51	25	6	438.41	77100	3.29	482.88	179000	8.42	483.94	261000	12.30	24.01	0.92	697.03
2/13/14	19	28	48	19	23	51	20	6	422.95	77100	2.32	412.96	179000	5.26	458.18	261000	8.51	16.09	0.85	713.13
2/17/14	67	28	51	67	23	52	66	7	415.17	77100	8.03	427.60	179000	19.21	449.94	261000	29.47	56.71	0.85	769.84
2/19/14	25	28	49	25	23	49	26	7	432.53	158000	6.40	468.57	153000	6.71	487.13	165000	7.53	20.64	0.83	790.48
2/20/14	22	28	50	22	23	49	21	9	433.97	158000	5.65	458.83	153000	5.78	497.26	165000	6.76	18.20	0.83	808.68
2/25/14	122	28	48	122	23	46	122	10	438.82	158000	31.68	499.65	153000	34.93	493.41	165000	37.20	103.82	0.85	912.50
2/26/14	26	28	49	26	23	53	26	8.5	365.19	158000	5.62	395.49	153000	5.89	411.09	165000	6.61	18.12	0.70	930.62
2/27/14	23	28	50	23	23	63	23	9	359.08	158000	4.89	390.85	153000	5.15	419.23	165000	5.96	16.00	0.70	946.61
3/3/14	97	28	50	97	23	62	97	8	343.96	158000	19.75	381.85	153000	21.23	388.82	165000	23.31	64.28	0.66	1010.90
3/5/14	38	28	50	38	23	67	38	12.2	339.24	158000	7.63	370.37	153000	8.07	374.87	165000	8.80	24.50	0.64	1035.39
3/7/14	48	28	52	48	23	67	48	11.9	417.00	158000	11.85	473.58	153000	13.03	493.58	165000	14.64	39.52	0.82	1074.91
3/10/14	74	28	65	74	23	71	74	11.8	376.48	181000	18.89	415.20	219000	25.20	430.89	209000	24.96	69.05	0.93	1143.96
3/14/14	91	28	70	90	23	73	91	13.4	400.74	181000	24.72	428.35	219000	31.62	463.82	209000	32.68	89.03	0.99	1232.99
3/18/14	99	28	74	100	23	75	99	12.6	410.20	181000	27.53	442.68	219000	36.31	462.90	209000	36.24	100.08	1.00	1333.07
3/20/14	45	28	71	44	23	74	45	12.3	416.64	181000	12.71	438.17	219000	15.81	468.67	209000	16.14	44.67	1.01	1377.74
3/24/14	95	28	75	96	23	77	95	13.4	423.51	181000	27.28	473.84	219000	37.31	495.55	209000	37.24	101.83	1.06	1479.58
4/1/14	194	28	73	194	23	74	194	15.1	399.25	181000	52.51	428.93	219000	68.26	468.17	209000	71.10	191.87	0.99	1671.45
4/11/14	71	28	71	70	23	73	71	15.4	434.40	181000	20.91	478.15	219000	27.46	503.76	209000	27.61	75.97	1.08	1747.42
4/16/14	118	27	72	119	21	74	118	12.5	406.84	156000	28.05	496.74	162000	35.87	501.69	167000	37.34	101.27	0.85	1848.69
4/23/14	168	27	62	168	21	74	168	12.6	406.20	156000	39.88	464.92	162000	47.39	482.21	167000	50.67	137.95	0.82	1986.63
4/30/14	146	27	73	169	21	73	170	12.6	336.33	107000	45.29	351.75	103000	48.72	363.86	134000	65.56	159.58	0.45	2146.21
5/8/14	190	27	73	190	21	75	190	13	319.88	107000	13.08	334.30	103000	13.16	345.68	134000	17.70	43.93	0.43	2190.14
5/12/14	102	27	73	102	21	74	102	13.4	318.18	107000	29.97	333.56	103000	30.11	343.06	134000	40.29	100.37	0.43	2290.51
5/22/14	235	27	74	234	21	74	234	12.5	325.05	107000	13.03	336.54	103000	13.11	358.27	134000	18.16	44.30	0.44	2334.81

Table 3. Remediation System Operational Data Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

	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)	Period Operating Hours	Wells On-line (count)	Applied Vaccum (in. H_2O)	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.)
5/27/14	100	27	76	101	21	75	100	12.7	333.45	107000	22.45	376.74	103000	24.42	376.67	134000	31.76	78.63	0.47	2413.44
6/3/14	168	16	77	168	22	68	169	13.3	321.35	107000	21.38	371.88	103000	23.82	371.30	134000	30.94	76.13	0.46	2489.58
6/10/14	166	16	79	166	22	82	165	13.8	323.85	107000	18.69	339.19	103000	18.71	350.53	134000	25.16	62.56	0.44	2552.14
6/16/14	144	16	80	143	22	85	144	12.7	316.85	55200	13.95	348.40	23200	6.48	357.32	28400	8.13	28.57	0.13	2580.71
6/25/14	213	16	78	214	22	85	214	10.7	320.62	55200	0.13	337.27	23200	0.06	354.99	28400	0.08	0.27	0.13	2580.97
7/1/14	2	16	75	2	22	78	2	15.2	315.28	131000	30.17	343.08	46000	11.53	352.97	83400	21.50	63.20	0.32	2644.17
7/9/14	195	16	78	195	22	79	195	10.1	323.83	131000	11.60	376.45	46000	8.95	375.90	83400	16.21	36.76	0.34	2680.93
7/15/14	73	16	71	138	22	75	137	13.2	308.90	131000	22.28	343.61	46000	8.64	357.62	83400	16.31	47.24	0.32	2728.16
7/21/14	147	16	73	146	22	76	147	12	306.32	131000	12.78	343.95	46000	5.04	350.79	83400	9.31	27.13	0.32	2755.29
7/30/14	85	16	71	85	22	70	85	12.2	314.00	33900	5.50	338.85	39300	6.88	352.17	35700	6.50	18.88	0.14	2774.17
8/5/14	138	18	73	138	22	74	138	11.8	312.81	33900	7.31	328.88	39300	8.91	349.19	35700	8.59	24.81	0.13	2798.98
8/13/14	184	18	73	184	22	64	184	12.3	327.24	33900	7.65	343.02	39300	9.29	362.57	35700	8.92	25.86	0.14	2824.84
8/21/14	184	18	73	184	22	64	184	12	311.21	33900	4.82	388.48	39300	6.98	381.94	35700	6.23	18.03	0.15	2842.87
8/26/14	122	18	71	122	22	62	122	14.9	339.72	20500	5.50	439.51	19500	6.77	408.65	4850	1.57	13.84	0.07	2856.71
9/4/14	211	18	82	211	22	73	211	13	338.28	20500	3.79	473.59	19500	5.05	436.07	4850	1.16	10.00	0.07	2866.71
9/10/14	146	18	82	146	22	74	146	12.2	334.25	20500	4.26	462.21	19500	5.60	419.59	4850	1.27	11.13	0.07	2877.84
9/17/14	166	18	81	166	22	77	166	12.9	341.08	20500	3.30	454.77	19500	4.19	413.23	4850	0.95	8.43	0.07	2886.27
9/22/14	126	18	80	126	22	76	126	11.5	328.56	20500	5.63	452.80	19500	7.38	424.43	4850	1.72	14.72	0.07	2900.99
10/3/14	223	18	80	223	22	77	223	14	323.83	16500	6.16	416.06	67800	32.54	395.12	15200	6.93	45.64	0.15	2946.63
10/16/14	308	18	81	308	22	82	308	11	333.97	16500	6.94	426.08	67800	36.36	413.66	15200	7.91	51.21	0.15	2997.84
10/30/14	336	18	79	336	22	83	336	12.4	319.37	820	0.18	371.05	820	0.21	365.29	875	0.22	0.60	0.00	2998.44
11/11/14	181	18	79	181	22	75	181	13.1	310.64	820	0.34	401.50	820	0.44	377.78	875	0.44	1.23	0.00	2999.66
11/26/14	358	15	79	358	19	74	358	9.1	285.03	6930	1.37	337.16	6210	1.45	333.38	6140	1.42	4.24	0.02	3003.90
12/10/14	185	15	90	185	19	80	185	9	286.29	6930	2.19	350.27	6210	2.41	344.49	6140	2.35	6.95	0.02	3010.85
12/23/14	295	15	91	296	19	80	295	12.9	315.04	6930	2.33	334.14	6210	2.60	352.16	6140	2.71	7.65	0.02	3018.50
1/6/15	285	13	90	335	19	76	336	13	331.40	1060	0.44	405.42	1095	0.56	399.64	12100	6.05	7.04	0.02	3025.54
1/20/15	334	13	71	334	19	70	333	12.7	353.11	1060	0.47	301.76	1095	0.41	360.20	12100	5.44	6.32	0.02	3031.86
2/3/15	333	11	76	333	28	68	334	11.5	309.19	1060	0.09	333.62	1095	0.10	357.34	12100	1.23	1.43	0.02	3033.29
2/6/15	76	11	82	76	14	73	75	11.7	320.72	1060	0.12	343.69	1095	0.13	356.96	12100	1.54	1.79	0.02	3035.08
2/10/15	95	15	84	95	14	74	96	14.2	341.44	1060	0.09	351.01	1095	0.10	363.64	12100	1.12	1.31	0.02	3036.39
2/13/15	68	18	75	68	13	78	68	11.9	332.46	1060	0.03	323.87	1095	0.03	351.46	12100	0.32	0.37	0.02	3036.76
2/16/15	20	22	84	20	11	87	20	12.1	331.29	875	0.23	333.00	2940	0.79	341.66	3340	0.92	1.94	0.01	3038.70
2/25/15	214	22	84	215	21	87	214	11	135.72	875	0.08	158.62	2940	0.00	168.13	3340	0.00	0.08	0.00	3038.77
3/4/15	169	8	83	0	0	NM	169	10	144.32	875	0.09	162.42	2940	0.00	164.72	3340	0.00	0.09	0.00	3038.87
3/12/15	196	19	85	0	0	NM	196	9.3	134.97	1970	0.14	167.89	2300	0.00	169.75	2290	0.00	0.14	0.00	3039.01
3/18/15	140	9	100	0	0	NM	139	16.6	148.80	1970	0.13	154.76	2300	0.00	159.31	2290	0.00	0.13	0.00	3039.13
3/24/15	116	9	99	0	0	NM	117	8.5	142.43	1970	0.23	154.86	2300	0.00	159.26	2290	0.00	0.23	0.00	3039.36

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 met	TPHg	=	Total Petroleum Hydrocarbons (Gasoline)

Remediation System Removal Data
PHILLIPS 66 FACILITY #255353 (AOC 1396)

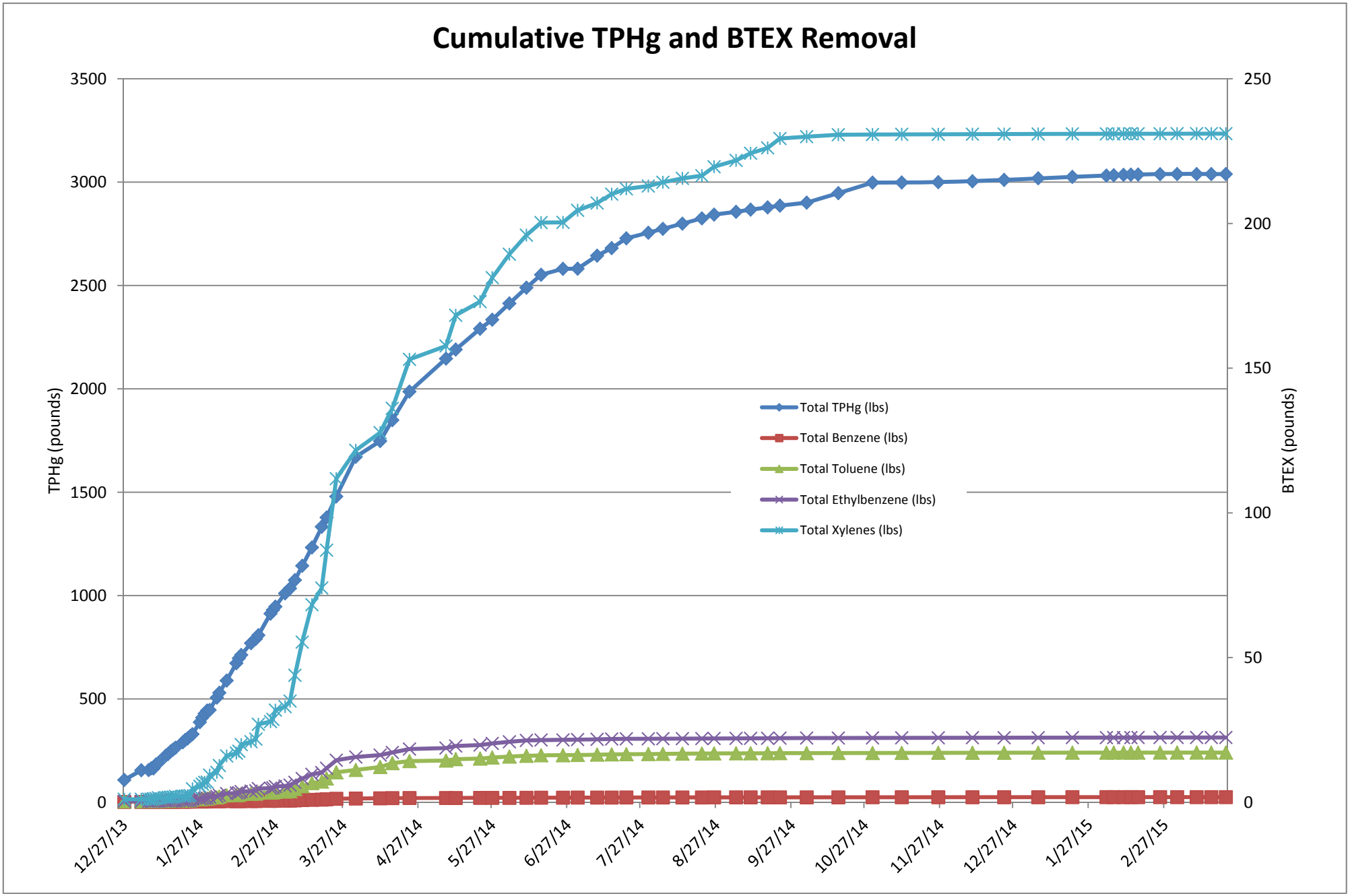

Table 4. SVE PID Data Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

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
4/16/2014	69	225	210	135	32	225	64	210	115
6/3/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL
8/5/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/26/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL
1/6/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
1/28/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
2/3/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
2/6/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
2/10/2015	OL	OL	OL	OL	OL	0	4	0.3	0.1
2/13/2015	0	0.1	6.2	0	4	0	0	0	0
2/16/2015	0	0	0	0	0	OL	OL	OL	OL
3/4/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
3/12/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
3/18/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL

Valley SVE Wells - PID Readings (ppm)							
V9	V7	V1	V6	V2	V5	V3	V4
7.8	3.3	2.4	4.3	15.1	38.8	3.3	69.4
4	1.8	2.3	1.6	2.3	35.8	3	2.8
5.3	1.4	2.6	2.3	9	32	2.3	2.9
4.6	1	1.1	0.8	3	42.5	2.4	5.3
3.2	1.2	1.4	2	4.8	35.2	1.4	2.1
1.4	1.2	1.7	1.4	3.3	26.9	1	1.1
0.9	0.8	1.2	1.2	2.2	27.5	1.1	2
0.8	1	0.9	1	1.5	17.3	1.3	1.1
0.7	0.6	0.7	1	1.8	31.3	0.6	0.8
0.7	0.6	0.6	0.9	1.9	31	0.4	0.8
0.6	0.7	0.4	1.5	1.5	51.1	0.5	0.3
0.1	0.1	0.1	0.1	W	81.1	W	0.1
0	0	0.1	0	0	22.8	W	0.1
--	--	--	--	--	22	W	--
--	0	W	--	W	0.1	0.3	0.7
0.2	0.4	OL	0.2	OL	0.2	OL	0.6
0.5	0.6	1	0.2	0.6	0.5	0.6	0.6
0.3	0.2	0.6	OL	0.1	0.2	OL	0.4
0	0	0.4	OL	0	0.2	OL	0.1
OL	0.1	0	OL	0.1	0	OL	0
OL	0.1	OL	OL	0	0	OL	0.1
OL	0	0.2	0	0.1	0	0	0
OL	OL	OL	OL	OL	OL	OL	OL
OL	OL	OL	OL	OL	OL	OL	OL
OL	OL	OL	OL	OL	OL	OL	OL

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
4/16/2014	W	0.4	0.1	2.6	49.3	1.6	0.3	0.2	0.1	0.1	1.1	0.1	0.1	0.1	183	8.3	154	118	8.5
6/3/2014	0.1	0	0.2	0.8	8	0	OL	0.1	0.1	W	1.1	0	OL	0.1	124	12.5	74.5	31	0.8
8/5/2014	--	--	--	--	7.3	--	--	--	--	W	--	--	--	--	74.1	5.1	63.7	13.1	--
11/26/2014	--	--	0.4	0.3	10.4	--	W	--	--	W	--	--	--	W	--	--	--	--	W
1/6/2015	1.9	1	OL	0.7	9	0.8	OL	0.7	1	OL	11	W	0.6	OL	7.4	4.6	9.6	4.5	OL
1/28/2015	2.9	1.4	1.5	2.5	8.9	2.5	0.1	1.3	0.2	0.2	0.4	0.8	0.2	20.5	9.5	2.6	12	3	0.8
2/3/2015	2.5	OL	0.8	2.1	9.3	2.3	OL	OL	OL	OL	OL	1.2	OL	14.9	11.5	4.8	10.7	3.8	OL
2/6/2015	1.9	OL	2.5	2.7	4.8	3	OL	OL	OL	OL	OL	4.5	OL	19.3	3.5	2.3	5.2	2	OL
2/10/2015	2	OL	0.1	0.1	2.1	0	OL	OL	OL	OL	OL	0.1	OL	11.1	4.6	0.1	6.8	0.1	OL
2/13/2015	0.1	OL	0.1	0.1	1	OL	OL	OL	OL	OL	OL	0	OL	10.6	3.8	OL	4	0	OL
2/16/2015	OL	OL	0.1	0	0.1	0	0	0	1	0	0	0	0	7.5	0.1	0	0.1	0	13.2
3/4/2015	OL	OL	0.3	0.2	1.8	OL	OL	OL	0	OL	OL	OL	OL	8.4	3.3	OL	2.1	OL	3.7
3/12/2015	0	0.3	0	0.1	1.6	10.1	0	0	0	0	0	0	0.1	8.2	1.8	1.2	1.1	1	2.4
3/18/2015	OL	OL	OL	0	0.3	0.1	OL	OL	0.5	OL	OL	OL	OL	4.9	0.9	0.1	0	OL	0.8

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
4/16/2014	3.2	1.5	0.8	0.2	2.5	45	1.8	1	0.2	0.3	0.2	0.1	0	0.1	16.1
6/3/2014	0.8	0.5	0.3	0.2	0.6	30.7	1.3	0.4	0.1	0.1	0	0	0.1	0	0.3
8/5/2014	--	--	--	--	--	16.3	--	--	--	--	--	--	--	--	--
11/26/2014	--	--	OL	--	--	--	--	--	--	--	--	--	OL	--	--
1/6/2015	1.9	1.4	1.9	0.3	1	0.5	0	0.5	0.4	1.4	0.3	0.4	OL	0.1	0.1
1/28/2015	1	0.9	1.9	1.8	0.6	0.6	0.7	0.7	0.7	1	0.5	0.8	0.7	0.7	0.3
2/3/2015	OL	0.1	OL	0.2	OL	OL	0.3	0.5	0.3	OL	0.2	0.4	OL	0.7	OL
2/6/2015	OL	0.4	OL	0.3	OL	OL	0.2	0.3	0.4	OL	0	0.1	OL	0.1	OL
2/10/2015	OL	0	OL	0.1	OL	OL	0.1	0	0.1	OL	0.1	0.1	OL	0.1	OL
2/13/2015	OL	OL	OL	0	OL	OL	0	0	0.1	OL	0	0.1	OL	0	OL
2/16/2015	0	0	0	0	0	0	0	0	0.1	OL	0.1	0	0	0	0
3/4/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
3/12/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
3/18/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL

SVE = Soil Vapor Extraction
PID = Photo Ionization Detector
ppm = parts per million
-- = Not Measured
OL = Offline
W = Water in Well

Table 5. AS Flow Data Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

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
5/27/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
7/9/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/26/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
2/13/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
3/4/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL

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
5/27/2014	14	25	0	0	0	6.5	7	7	10	15	6.5	8	7	25	25	0	16	5	11	11.5	6	16	1	1	25	9	0
7/9/2014	12	25	0	0	0	5	6	7	9	12	7	6	7	20	25	0	13	5	12	10	4	16	1	1	25	7	0
11/26/2014	--	20	--	--	0	--	--	--	--	--	7	--	--	--	--	1	14	--	--	--	--	--	0	--	--	--	1
2/13/2015	11	20	0	10	OL	0	4	11	15	3	OL	6	7	0	8	OL	14	6	11	0	3	11	0	1	25	7	0
3/4/2015	--	--	--	10	OL	0	--	10	18	3	OL	--	--	1	9	OL	--	--	--	0	--	12	--	0	--	--	--

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
5/27/2014	1	18	5	3	8	0	17	2	3	8	8	12	0	6
7/9/2014	1	13	4	5	6	0	16	2	2	2	6	12	0	5
11/26/2014	3	7	6	0	5	1	--	3	--	8	4	4	3	--
2/13/2015	3	7	5	0	4	1	0	2	0	7	5	4	5	0
3/4/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL

Notes:
AS = Air Sparge
SCFM = Standard Cubic Feet per Minute
-- = Not Measured
OL = Offline

Operation and Maintenance Log Field Notes
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Date	Time	Name	Comments
1/6/15	12:45 PM	ejb	System operational upon arrival/departure. PID readings completed. V-belts on B-701 were replaced.
1/20/15	2:00 PM	ejb	System operational upon arrival/departure. System was shut down during vac truck operation. Monthly vapor samples were collected.
2/3/15	11:45 AM	ejb	System operational upon arrival/departure. PID readings completed. Insufficient water for pressure readings. System readings taken before wells shut down. B-701 operating at 51% and B-801 operating at 42%. After adjustments B-701 Vac into VLS 89" and B-801 Vac into VLS 74".
2/6/15	3:00 PM	ejb	System operational upon arrival/departure. PID readings completed. System readings taken before wells shut down. B-701 operating at 55% and B-801 operating at 43%.
2/10/15	2:15 PM	ejb	System operational upon arrival/departure. PID readings of open wells completed. System readings taken before wells shut down or opened. Wells WB1, WA3, WA2, WA1 were opened. B-701 operating at 59% and B-801 operating at 45%. After adjustments B-701 Vac into VLS 77" and B-801 Vac into VLS 80".
2/13/15	12:00 PM	ejb	System operational upon arrival/departure. PID readings of open wells completed. System readings taken before wells shut down or opened. Wells WB1, WA3, WA2, WA1 were closed. Wells WC1, WC2, WC3, WB3, WB2 were opened. B-701 operating at 59% and B-801 operating at 45%. After adjustments B-701 Vac into VLS 88" and B-801 Vac into VLS 84".
2/16/15	12:30 PM	ejb	System down upon arrival. System restarted. System alarms upon arrival: VFDA-8201 PNL, VFDA-8202 PNL, PWRA-8201 PNL @ 06:13 2/14/15 and FSPF ALM @ 20:17 2/14/15. System went down 2/14/15. PID readings of open wells completed. System readings taken before wells shut down or opened. Wells WC1, WC2, WC3, WB3, WB2, and M18 were closed. Wells M4, M19 and V1 were opened. B-701 operating at 57% and B-801 operating at 44%. After adjustments B-701 Vac into VLS 88" and B-801 Vac into VLS 82". System operational upon departure.
2/25/15	9:00 AM	MJM	System running on arrival. Monthly samples taken. Skid 801 was shutdown for rebound.
3/4/15	11:30 AM	ejb	System running on arrival. PID readings were taken of operating SVE wells. B-701 VFD was moved to 58%. AS readings of half of Mercer wells.
3/12/15	3:45 PM	ejb	System running on arrival. PID readings were taken of all Mercer SVE wells. Insufficient water for pressure readings. Well M10 was closed and M4 was partially closed. Wells M1 and M16 were opened. System operational upon departure.
3/18/15	12:15 PM	ejb	System running on arrival. PID readings were taken of operating Mercer SVE wells. Monthly water and vapor samples were collected. B-701 VFD was moved to 57%. System operational upon departure.
3/24/15	3:00 PM	ejb	(System was shut down on 3/23-3/24 for GWS) System down upon arrival. Sightglasses on VLS were cleaned. AS readings of half of Mercer wells. System operational upon departure.

DAILY FIELD REPORT

DATE:	01/05/15	**ARRIVAL TIME:**	12:15
SITE ID:	AOC 1396	**DEPARTURE TIME:**	14:15
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Nicholas Gerkin

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart

	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
Name	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
Nicholas Gerkin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: O&M System Restart

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Wet
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
N	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The 701 blower was down upon arrival.
A tailgate safety meeting and site walk were conducted.

The 701 blower belts were found shredded.

The remnants were removed and the 801 blower was temporarily LOTO to identify the belts used.

Belts were ordered, 701 blower was LOTO and the 801 blower was restarted.

The belts will be available tomorrow.

The 801 blower was operational upon departure.

DAILY FIELD REPORT

DATE:	01/06/15	**ARRIVAL TIME:**	11:10
SITE ID:	AOC 1396	**DEPARTURE TIME:**	14:00
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart

	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
Name	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
Nicholas Gerkin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: O&M System Restart

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Wet
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
N	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The 701 blower was LOTO upon arrival.
A tailgate safety meeting and site walk were conducted.

The system was shut down.

The 701 blower belts were replaced, and the guards were replaced.

The system was restarted.

The system operating parameters were recorded.

PID readings were taken on the operating SVE wells.

The system was operational upon departure.

Open Extraction Wells: M1, M3, M4, M6, M7, M8, M9, M11, M13, M14, M15, M16, M17, M18, TSVE3, TEFR1 AIR, TMW65 AIR, TSVE4, TSVE10, TSVE11, TSVE2, TSVE1, TSVE7, TSVE12, V9, V7, V6, V5, V4, TSVE5, TSVE6, TEFR2 AIR, TSVE8, TMW48 AIR

DAILY FIELD REPORT

DATE:	01/20/15	**ARRIVAL TIME:**	08:00
SITE ID:	AOC 1396	**DEPARTURE TIME:**	16:00
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart

Name	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour / working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: O&M System Restart

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Wet
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
Y	Samples Collected	Vapor samples collected
Y	Out of Scope Activities	Vac truck operation to clear wells
N	Waste Generated	

WORK START & STOP TIMES

The system was operational upon arrival.
A tailgate safety meeting and site walk were conducted with vacuum truck operator.

The system was shut down. And the vacuum truck was connected to B-701 manifold.

@ 9:00 – started on M12 first 2 min was solid water column coming up. By 9:05 mostly air being pulled up, very small amounts of water left.

@ 9:07 – moved to M13 first 3 min mostly water with a little air being pulled up. By 9:13 mostly air being pulled up, with traces of water.

@ 9:14 – Started on M5 mostly water for the first minute. By 9:21 water was basically cleared.

@ 9:25 – Started on M2 water was pulled up to sight glass level but it doesn't appear that much water is actually being removed.

@ 9:36 – moved to M19 a lot of water was pulled up for the first 2 minutes, water was slightly silty. Water was cleared.

Moved quickly through wells M8, M9, M10, very little water was drawn up, wells were clear.

Spent about 15 minutes on M7 and M6 1st minutes on each well pulled significant water up.

M19 water still bubbling in sight glass, couldn't clear all the water.

M1 and M2 also have bubbling water. Stayed on each for another 5 minutes but couldn't completely clear the water.

Wells clear: M4, M5, M14, M13, M15, M12, M11, M17, M18
Wells with some water left: M16, M3, M2, M19

@ 10:35 – switched over to B-801 manifold

@10:43 – started on TSVE3, operated on for about 5 minutes.

@ 10:49 – moved to TEFR1 air ran on for about 6 minutes.

@ 10:55 – moved to TMW65 air, lots of water. Ran on the well for about 10 minutes, removed a lot of water but there was still water bubbling up in the sight glass.

@ 11:04 – moved to TSVE4, solid column of water for the first minute, after that splashing water up into sight glass.

@ 11:15 – moved to V1, pulled up a lot of water for the first 2 minutes. V1 was mostly cleared of water, constant small stream of water.

@ 11:22 moved to V2, pulled up a lot of water.

Wells V1, V2, V7, V9, TMW48, TSVE1, and TSVE7 were cleared.

V4 continuously pulled up a lot of water; could not clear water. Water continuously flowing into the well.

TSVE12 still had some water remaining.

The system was started back up.

@ 12:40 started emptying the vacuum truck back into secondary containment ~1,400gal was removed from wells.

Operating parameters were measured and recorded.

Monthly air samples were collected.

The system was operational upon departure.

Open Extraction Wells: M1, M2, M3, M4, M5, M6, M7, M8, M9, M10, M11, M12, M13, M14, M15, M16, M17, M18, M19, TSVE3, TEFR1 AIR, TMW65 AIR, TSVE4, TSVE10, TSVE11, TSVE2, TSVE1, TSVE7, TSVE12, V9, V7, V6, V5, V4, V3, V2, V1, TSVE5, TSVE6, TEFR2 AIR, TSVE8, TMW48 AIR

DAILY FIELD REPORT

DATE:	02/03/15	**ARRIVAL TIME:**	11:45
SITE ID:	AOC 1396	**DEPARTURE TIME:**	16:45
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart

	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
Name	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
Nicholas Gerkin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: Routine System O&M and PID Readings

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Cool and wet
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
N	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The system was operational upon arrival.
A tailgate safety meeting and site walk were conducted.

The system operating parameters were recorded.

PID readings were taken of the wells that were currently operating, and then select SVE wells were shut down to try and increase system vac and concentrations.

SVE wells that were closed: M3, M4, M5, M7, M14, M15, TSVE3, TSVE10, TSVE11, TSVE12, TEFR2 Air, V3, V6

SVE well vacuum readings were recorded after wells were closed and blower VFDs were checked to verify that blower motor amps would not exceed the set points.

The system was operational upon departure.

Open Extraction Wells: M1, M6, M8, M9, M10, M11, M12, M13, M16, M17, M18, TEFR1 AIR, TSVE4, TSVE2, TSVE1, TSVE7, V9, V7, V5, V4, V2, V1, TSVE5, TSVE6, TSVE8

DAILY FIELD REPORT

DATE:	02/06/15	**ARRIVAL TIME:**	14:30
SITE ID:	AOC 1396	**DEPARTURE TIME:**	17:00
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci, Kaden Reed

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart

Name	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: Routine System O&M and PID Readings

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Cool and wet
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
N	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The system was operational upon arrival.
A tailgate safety meeting and site walk were conducted.

The system operating parameters were recorded.

PID readings were taken of the wells that were currently operating, and SVE well V9 was shut down to try and increase system vac and concentrations.

SVE well that was closed: V9

VFDs were ramped up slightly to B-701 set @ 55% and B-801 set @ 43% and blower VFDs were checked to verify that blower motor amps would not exceed the set points.

The system was operational upon departure.

Open Extraction Wells: M1, M6, M8, M9, M10, M11, M12, M13, M16, M17, M18, TEFR1 AIR, TSVE4, TSVE2, TSVE1, TSVE7, V7, V5, V4, V2, V1, TSVE5, TSVE6, TSVE8

DAILY FIELD REPORT

DATE:	02/10/15	**ARRIVAL TIME:**	14:15
SITE ID:	AOC 1396	**DEPARTURE TIME:**	17:00
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart

Name	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: Routine System O&M and PID Readings

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Warm and clear
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
N	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The system was operational upon arrival.
A tailgate safety meeting and site walk were conducted.

The system operating parameters were recorded.

PID readings were taken of the wells that were currently operating, and SVE wells M1, M16, TEFR1 Air, and V1 were shut down to try and increase system vac and concentrations. Wells TSVE4 and TSVE1 were partially closed as well.

SVE wells that were closed: M1, M16, TEFR1 Air, and V1
SVE wells that were partially closed: TSVE4 and TSVE1
SVE wells that were opened: WB1, WA3, WA2, WA1

VFDs were ramped up slightly to B-701 set @ 59% and B-801 set @ 45% and blower VFDs were checked to verify that blower motor amps would not exceed the set points.

The system was operational upon departure.

Open Extraction Wells: M6, M8, M9, M10, M11, M12, M13, M17, M18, WB1, WA3, WA2, WA1, TSVE4, TSVE2, TSVE1, TSVE7, V7, V5, V4, V2, TSVE5, TSVE6, TSVE8

DAILY FIELD REPORT

DATE:	02/13/15	**ARRIVAL TIME:**	10:45
SITE ID:	AOC 1396	**DEPARTURE TIME:**	13:45
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart

Name	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour / working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: Routine System O&M and PID Readings

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Overcast and warm
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
N	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The system was operational upon arrival.
A tailgate safety meeting and site walk were conducted.

The system operating parameters were recorded.

PID readings were taken of the wells that were currently operating, and SVE wells M6, M13, and TSVE4 were shut down to try and increase system vac and concentrations. Wells WB1, WA3, WA2 and WA1 were closed to rotate through the Westlake SVE wells. Wells TSVE2, M18 and TSVE1 were partially closed as well.

SVE wells that were closed: M6, M13, TSVE4, WB1, WA3, WA2, and WA1
SVE wells that were partially closed: TSVE2, M18, and TSVE1
SVE wells that were opened: WC1, WC2, WC3, WB3, and WB2

VFDs were not changed, B-701 remained set @ 59% and B-801 @ 45% and blower VFDs were checked to verify that blower motor amps would not exceed the set points.

After wells were closed and opened, B-701 vacuum at VLS was 88" and vacuum at the blower was measured at 86", B-801 vacuum at VLS was 84" and vacuum at the blower was measured at 83".

The system was operational upon departure.

Open Extraction Wells: M8, M9, M10, M11, M12, M17, M18, WB1, WA3, WA2, WA1, TSVE2, TSVE1, TSVE7, V7, V5, V4, V2, TSVE5, TSVE6, TSVE8

DAILY FIELD REPORT

DATE:	02/16/15	**ARRIVAL TIME:**	11:45
SITE ID:	AOC 1396	**DEPARTURE TIME:**	14:50
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart																
	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
Name	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: Routine System O&M and PID Readings

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Sunny and clear
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
N	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The system was down upon arrival.
A tailgate safety meeting and site walk were conducted.

System alarms upon arrival: VFDA-8201 PNL@ 06:13 2/14/15, VFDA-8202 PNL@ 06:13 2/14/15, PWRA-8201 PNL@ 06:13 2/14/15, FSPF ALM@ 20:17 2/14/15. Based on the alarms it was concluded that there was a power failure onsite that occurred at 06:13 and the PLC recovered at 20:17 on 2/14/15.

The system was restarted.

The system operating parameters were recorded.

PID readings were taken of the wells that were currently operating and some closed wells, and SVE well M18 was shut down to try and increase system vac and concentrations. Wells WC1, WC2, WC3, WB3 and WB2 were closed after rotating through the Westlake SVE wells. Wells TSVE2 and TSVE1 were partially closed as well.

SVE wells that were closed: M18, WC1, WC2, WC3, WB3 and WB2
SVE wells that were partially closed: TSVE2 and TSVE1
SVE wells that were opened: M4, M19, and V1

VFDs were changed because of closing Westlake wells, B-701 set @ 57% and B-801 @ 44% and blower VFDs were checked to verify that blower motor amps would not exceed the set points.

After wells were closed and opened, B-701 vacuum at VLS was 88” and B-801 vacuum at VLS was 82”.

The system was operational upon departure.

Open Extraction Wells: M4, M8, M9, M10, M11, M12, M17, M19, TSVE2, TSVE1, TSVE7, V7, V5, V4, V2, V1, TSVE5, TSVE6, TSVE8

DAILY FIELD REPORT

DATE:	02/25/15	**ARRIVAL TIME:**	09:00
SITE ID:	AOC 1396	**DEPARTURE TIME:**	12:30
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Michael Miller

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart

	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
Name	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: Routine System O&M and PID Readings

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Overcast and warm
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
N	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The system was operational upon arrival.
A tailgate safety meeting and site walk were conducted.

The system operating parameters were recorded.

Monthly samples were taken.

Skid 801 was shut down for rebound monitoring.

The system was operational upon departure.

Open Extraction Wells: M8, M9, M10, M11, M12, M17, M18, WB1, WA3, WA2, WA1

DAILY FIELD REPORT

DATE:	03/04/15	**ARRIVAL TIME:**	11:00
SITE ID:	AOC 1396	**DEPARTURE TIME:**	13:00
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart																
	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
Name	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: Routine System O&M and PID Readings

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Sunny and clear
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
N	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The system was operational upon arrival.
A tailgate safety meeting and site walk were conducted.

B-801 and Valley AS were taken offline during the last visit.

The system operating parameters were recorded.

PID readings were taken of the wells that were currently operating.

AS readings were taken on half of the Mercer wells.

SVE wells that were closed: None
SVE wells that were opened: None

VFD was changed, B-701 set @ 58% blower B-701 VFD was checked to verify that blower motor amps would not exceed the set points.

The system was operational upon departure.

Open Extraction Wells: M4, M8, M9, M10, M11, M12, M17, M19

DAILY FIELD REPORT

DATE:	03/12/15	**ARRIVAL TIME:**	15:00
SITE ID:	AOC 1396	**DEPARTURE TIME:**	17:30
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart																
	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
Name	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: Routine System O&M and PID Readings

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Sunny and clear
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
N	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The system was operational upon arrival.
A tailgate safety meeting and site walk were conducted.

The system operating parameters were recorded.

PID readings were taken of all Mercer SVE wells.

SVE wells that were closed: M10
SVE wells that were partially closed: M4
SVE wells that were opened: M1, M16

VFD B-701 remained at set @ 58%, blower B-701 VFD was checked to verify that blower motor amps would not exceed the set points.

The system was operational upon departure.

Open Extraction Wells: M1, M4, M8, M9, M11, M12, M16, M17, M19

DAILY FIELD REPORT

DATE:	03/18/15	**ARRIVAL TIME:**	11:30
SITE ID:	AOC 1396	**DEPARTURE TIME:**	15:00
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart

	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
Name	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: Routine System O&M and PID Readings

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Sunny and clear
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
Y	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The system was operational upon arrival.
A tailgate safety meeting and site walk were conducted.

The system operating parameters were recorded.

Monthly vapor and water samples were collected.
Vapor: 12:25-13:05
Water: 13:30-13:40

Sight glasses on AWS tanks were cleaned.

PID readings were taken of operating Mercer SVE wells.

SVE wells that were closed: None
SVE wells that were partially closed: None
SVE wells that were opened: None

VFD B-701 was lowered to @ 57%, blower B-701 VFD was checked to verify that blower motor amps would not exceed the set points.

The system was operational upon departure.

Open Extraction Wells: M1, M4, M8, M9, M11, M12, M16, M17, M19

DAILY FIELD REPORT

DATE:	03/24/15	**ARRIVAL TIME:**	14:00
SITE ID:	AOC 1396	**DEPARTURE TIME:**	16:00
P66 PM:	Ed Ralston	**LUNCH:**	N/A
CARDNO ERI #:	031326	**MTRL ACQUISITION:**	N/A
CARDNO PM:	Kyle Sattler	**TRAVEL >100 MILES:**	N/A

PERSONNEL: Edward Burnacci

SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart																
	Hour 1		Hour 2		Hour 3		Hour 4		Hour 5		Hour 6		Hour 7		Hour 8	
Name	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm	qty	bpm
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Water = recommended 32 ounces per hour **/** working pulse = 180 - age beats per minute (bpm)

FIELD ACTIVITIES CONDUCTED: Routine System O&M and PID Readings

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3rd Party Notifications	
Y	Site Walk/Site Conditions	Overcast
Y	Tailgate Safety Meeting Conducted	
Y	Equipment Calibrated & Type	PID
N/A	2-at-10 Safety Meeting/Example SPSA	
N/A	2-at-2 Safety Meeting/Example SPSA	
N	Work Permit(s)	
Y	Samples Collected	
N	Out of Scope Activities	
N	Waste Generated	

WORK START & STOP TIMES

The system was down upon arrival.
A tailgate safety meeting and site walk were conducted.

The system was shutdown on 3/23-3/24 for groundwater sampling.

The system was restarted.

Sight glasses on AWS tanks were cleaned.

The system operating parameters were recorded.

SVE wells that were closed: None
SVE wells that were partially closed: None
SVE wells that were opened: None

AS readings were taken on the other half of the Mercer street wells.

The system was operational upon departure.

Open Extraction Wells: M1, M4, M8, M9, M11, M12, M16, M17, M19

P-66

1/6/15

C1	Temp	95.7
	Vel	3660
C2	Temp	94.0
	Vel	3870
C3	Temp	93.5
	Vel	4075

1
- Carbon 1 2.0
- Carbon 2 0.9
- out 0.4

2
- Carbon 1 1.7
- Carbon 2 1.0
- out 0.5

3
- Carbon 1 1.6
- Carbon 2 0.8
- out 0.4

PID readings

	Vac	ppmv
M6	62	1.9
M7	60	1.0
M9	63	0.7
M8	63	9.0
M1	39	0.8
M3	42	0.7
M4	40	1.0
M14	44	11.0
M13	46	H_2O Sat
M15	45	0.6
M11	45	7.4
M16	51	4.6
M17	47	9.6
M18	57	4.5

Skid 701	mag "H_2O	0.17
	Vac VLS	90
	Vac blower	90
	temp Dschg	108
	Press Dschg	22
	HC blow out	3.2
Skid 801	mag "H_2O	0.21
	Vac VLS	76
	Vac blow	78
	temp dschg	97
	Press dschg	22
	HC blow out	0.6
AS Skid	Temp in HX	185
	press in HX	14
	temp out HX	58
	press out HX	13
	mag "H_2O	6.0

B-701	8111	
B-801	8212	
C-2201	8247	
P-401	2	
P-501	69	
P-5501	97	
Totalizer	73476	
Trans pump	4.3	

* B-701 was lota upon arrival
* Belts on 701 were replaced
* everything restarted

	Vac	ppmv
TSUE 3	58	1.9
TEFR1 Air	64	1.4
Tmw65 Air	57	1.9
TSUE 4	54	0.3
TSUE 11	52	1.0
TSUE 10	49	0.5
TSUE 2	48	0.0
TSUE 1	43	0.5
TSUE 7	45	0.4
TSUE 12	44	1.4
V9	35	0.2
V7	38	0.4
V6	39	0.2
V5	41	0.2
V4	47	0.6
TSUE 5	47	0.3
TSUE 6	51	0.4
TSUE 8	56	0.1
Tmw48 Air	57	0.1

P-66 west/mcc 1/20/15

* System operational upon arrival
* met van - truck operator onsite

System shut down, & vac truck connected to 701 main
900 Started on M12 lots H_2O @ 905 mostly air
907 moved to M13 lots H_2O for 3 min @ 913 mostly air
914 Started M5 mostly H_2O for 1 min @ 921 air
0925 M2 H_2O couldn't be pulled up
936 M19 lots of H_2O for 2 min (salty H_2O) water cleared
945 moved to M8 no H_2O
M9 no H_2O
M10 no H_2O
moved to M7 1 min lots of H_2O then air
M6 1 min lots of H_2O then air
@ M19 pulled up H_2O but still water remaining
M1 & M2 bubbling H_2O ≈ 5 min each H_2O still there

@ 1035 moved to Terry/Valley main
1043 TSVE 3, Strong air ≈ 5 min lots H_2O cleared
1049 TEFR1 air lots H_2O, Started ≈ 6 min
1055 TMW 65 air lots H_2O ≈ 10 min still bubbling H_2O
1104 TSVE 4 Solid H_2O for 1 min, Some splashes H_2O still
1145 V1, lots H_2O for 2 min. V1 mostly clear
1122 V2, lots of H_2O
V4 continuous H_2O flow - could not clear - H_2O flowing into well
TSVE 12 still some H_2O coolant clear

* Restarted System

1240 Started emptying Vac truck ≈ 1400 gal removed

* Air samples collected

C1	temp	89.4	Shut 701	mag "H2O	0.23	D-701	8445
	vel	3780		Vac V/s	71	D-801	8546
C2	temp	88.9		Vac blow	71	C-2201	8580
	vel	4620		temp dsch	100	P-401	2
C3	temp	88.4		pres dsch	25	P-501	69
	vel	4550		Htr blow out	5.6	P-5801	102
						totalizer	75698
						trans prof	6.3

Rite in the Rain

P-66 1/20/15

1	C1	3.8	Shrd 80	mg H_2O	0.24	AS Shrd	Temp in H_2O	175
	C2	0.7		Vac VIs	70		Press in H_2O	14
	out	0.4		Vac blow	70		temp out H_2O	55
				temp dsch	94		press out H_2O	12.7
2	C1	2.6		press dsch	25		mg " H_2O	7.0
	C2	0.6		Hc blow out	1.2			
	out	0.6						
3	C1	2.6						
	C2	0.6						
	out	0.6						

P-66 wait/mw 1/29/15

* only PID readings post vac truck

	Vac	PID
M6	46	2.9
M7	48	1.4
M10	46	1.5
M9	62	2.5
M8	51	8.9
M1	42	2.5
M2	46	0.1 well closed
M3	40	1.3
M4	33	0.2 well ½ closed
M5	20	0.2 well ½ closed
M14	38	0.4
M13	32	0.8
M15	36	0.2
M12	61	20.5
M11	32	9.5
M16	39	2.6
M17	50	12.0
M18	44	3.0
M19	42	0.8

	Vac	PID
TSUE3	63	1.0
TCPR1 Aux	58	0.9
TMW65	55	1.9 well closed
TSUE4	56	1.8
TSUE11	50	0.6 well ½ closed
TSUE10	55	0.6 well ½ closed
TSUE2	41	0.7
TSUE1	34	0.7
TSUE7	38	0.7
TSUE12	45	1.0
V9	20	0.5 well ½ closed
V7	15	0.6
V1	29	1.0
V6	25	0.2
V2	15	0.6
V5	17	0.5
V3	35	0.6
V4	48	0.6
TSUE5	50	0.5
TSUE6	55	0.8
TCPR2	50	0.7
TSUE8	49	0.7
TMW48	54	0.3 well closed

P-66 mg/mesc 2/3-15

C1	temp	87.0	Shed 701	mag " H_2O	0.22	B-701	8778
	vel	4010		vac U/S	76	B-801	8879
C2	temp	85.9		Vac blower	75	C-2201	8914
	vel	3420		temp dschg	100	P-401	2
C3	temp	85.6		press dschg	26	P-501	69
	vel	4080		HC blower out	1.7	P-5501	104
						total	75992
1 Carbon 1	1.3		Shed 801	mag " H_2O	0.24	trans pump	nr
1 Carbon 2	0.0			Vac U/S	68		
1 out	0.0			Vac blow	66	* sys operating upon	
				temp dschg	91	arrival	
2 Carbon 1	1.1			press dschg	24	* no H_2O for trans	
2 Carbon 2	0.1			HC blow out	0.1	pump press readings	
2 out	0.0					* readings taken before	
			AS Shed	Temp in HX	180	wells closed	
3 Carbon 1	1.5			press in HX	12	B-701 51"	
3 Carbon 2	0.1			temp out HX	54	B-801 42"	
3 out	0.0			press out HX	11.5	* After adj	
				mag " H_2O	8.5	B-701 u/s 89"	
						B801 u/s 74"	

	Vac	PID		Vac	PID
M6	48	2.5 well ½ closed	Tefr 1	60	0.1
M7	48	0.7 well closed	TSVE 4	56	0.2
M10	46	0.8	TSVE 11	51	0.4 well closed
M9	62	2.1	TSVE 10	55	0.4 well closed
M8	52	9.3	TSVE 2	43	0.3
M1	43	2.3	TSVE 1	35	0.5
M3	42	0.5 well closed	TSVE 7	38	0.3
M4	34	0.7 well closed	V9	21	0.3 well ½ closed
M5	21	0.8 well closed	V7	18	0.2
M14	38	0.6 well closed	V1	30	0.6
M13	32	1.2	V2	16	0.1
M15	37	1.0 well closed	V5	17	0.2
M12	61	14.9	V3	36	0.1 well closed
M11	34	11.5	V4	48	0.4
M16	39	4.8	TSVE 5	50	0.2
M17	51	10.7	TSVE 6	55	0.4
M18	46	3.8	TSVE 8	50	0.7

Rite in the Rain

P-66 2-6-15

C1	temp	92.3
	vel	3570
C2	temp	92.0
	vel	3850
C3	temp	91.5
	vel	4120

1	Carbon 1	2.0
	Carbon 2	1.7
	out	1.2
2	Carbon 1	1.6
	Carbon 2	1.4
	out	1.5
3	Carbon 1	1.9
	Carbon 2	1.4
	out	1.2

	Vac	PID
M6	56	1.9
M10	54	2.5
M9	62	2.7
M8	60	4.8
M1	53	3.0
M13	55	4.5
M12	62	19.3
M11	52	3.5
M16	58	2.3
M17	62	5.2
M18	60	2.0

Shed 701	mag "H_2O	0.20
	Vac ULS	82
	Vac blow	81
	temp dschg	105
	press dschg	22
	Hc blow out	4.7
Shed 801	mag "H_2O	0.22
	Vac ULS	73
	Vac blow	72
	temp dschg	98
	press dschg	22
	Hc blow out	0.2
AS Shed	Temp on HX	190
	press on HX	12
	temp out HX	60
	press out HX	11.7
	mag "H_2O	6.0

	Vac	PID
Tefr 1	62	0.4
TSUE 4	60	0.3
TSUE 2	45	0.2
TSUE 1	41	0.3
TSUE 7	45	0.4
V9	15	0.0 well closed
V7	22	0.0
V1	36	0.4
V2	21	0.0
V5	27	0.2
V4	35	0.1
TSUE 5	56	0.0
TSUE 6	60	0.1
TSUE 8	61	0.1

B-701	8854
B-801	8955
C-2201	8988
P-401	2
P-501	69
P-5501	106
totalizer	76910
trans pump	4.1

* syst operational upon arrival

* sys ready to leave before wells shutdown

B-701 @ 55

B-801 @ 43

* sys operational upon depart

P-66 2-10-15

C1	temp	99.1	Shed 701	Mag "H_2O	0.22	B-701	8949
	vel	3740		Vac VLS	84	B-801	9050
C2	temp	98.0		Vac blow	83	C-2201	9085
	vel	4000		temp dschg	111	P-401	2
C3	temp	97.4		press dschg	23	P-501	69
	vel	4150		HC blow out	1.1	P-5501	108
						total	77556
1 Carb 1		0.4	Shed 801	mag "H_2O	0.22	true pmp	4.2
1 Carb 2		0.0		Vac VLS	74	* Sys operator upon arrival	
1 out		0.0		Vac blow	73		
				temp dschg	102	* sys readings taken	
2 Carb 1		0.5		press dschg	23	before wells shut/	
2 Carb 2		0.1		HC blow out	0.1	open	
2 out		0.0				B-701 @ 59%	
			AS Shed	temp in HX	197	B-801 @ 45%	
3 Carb 1		0.4		press in HX	15	After adj	
3 Carb 2		0.1		temp out HX	62	B-701 VLS 77"	
3 out		0.0		press out HX	14.2	B801 VLS 80"	
				Mag "H_2O	6.0		

	vac	PID		vac	PID
WB1	18	0.0			
WA3	25	4.0	TEFR1	—	0.0 well closed
WA2	62	0.3	TSVE4	62	0.1 well closed
WA1	41	0.1	TSVE2	47	0.1
M6	28	2.0	TSVE1	44	0.0 well closed
M10	28	0.1	TSVE7	46	0.1
M9	51	0.1	V7	23	0.1
M8	39	2.1	V1	38	0.0 well closed
M1	—	0.0 well closed	V2	23	0.1
M13	46	0.1	V5	28	0.0
M12	62	11.1	V4	37	0.0
M11	42	4.6	TSVE5	58	0.1
M16	47	0.1	TSVE6	62	0.1
M17	53	6.8	TSVE8	61	0.1
M18	46	0.1			

Rite in the Rain

F-66 2-18-15

C1	temp	95.3
	vel	3950
C2	temp	95.2
	vel	4060
C3	temp	94.4
	vel	4200

Shroud 701	mag "H2O	0.24
	Vac ULS	75
	Vac blow	73
	temp disch	105
	press disch	24
	HC blow out	0.2
Shroud 801	mag "H2O	0.23
	Vac ULS	78
	Vac blow	77
	temp disch	102
	press disch	23
	HC blow out	0.1
AS Shroud	temp in HC	185
	press in HC	12.5
	Temp out HC	58
	press out HC	11.9
	mag "H2O	6.5

B-701	9017	
B-801	9118	
C-2201	9153	
P-401	2	
P-501	69	
P-5501	108	
totalizer	77556	
trans pump	—	

1	Carbon	0.2
	C2	0.0
	out	0.0
2	C1	0.2
	C2	0.0
	out	0.0
3	C1	0.1
	C2	0.1
	out	0.0

* Sys operators upon arrival

* Sys readings taken before wells shut/open

Closed: WB1, WA3, WA2 WA1

open: WC1, WC2, WC3, WB3, WB2

B-701 @ 59%

B-801 @ 45%

After adj

B-701 VLS @ 88"

B-801 ULS @ 84"

	Vac	PID
WC1	23	0.0
WC2	27	0.1
WC3	45	6.2
WB3	28	0.0
WB2	38	4.0
WB1	—	0.0 well closed
WA3	—	0.0 well closed
WA2	—	0.0 well closed
WA1	—	0.0 well closed
M6	—	0.1 well closed
M10	32	0.1
M9	55	0.1
M8	46	1.0
M13	—	0.0 well closed
M12	70	10.6
M11	50	3.8
M17	62	4.0
M18	55	0.0 well closed

	Vac	PID
TSVE4	—	0.0 well closed
TSVE2	51	0.0 well closed
TSVE1	40	0.0 well closed
TSVE7	50	0.1
V7	28	0.1
V2	28	0.0
V5	31	0.0
V4	40	0.1
TSVE5	61	0.0
TSVE6	62	0.1
TSVE8	62	0.0

AS

	Press	Q
V-6	7	3
V-7	3	7
V-8	6	5
V-9	5	0
V-10	7	4
V-5	4	1
V-11	3	0
V-4	7	2
V-12	1	0

	Press	Q
V-3	9	7
V-13	1	5
V-2	8	4
V-14	8	5
V-1	2	0
M-8	1	11
M-20	5	20
M-26	2	0
M-2	5	10
M-27		
M-16	5	0
M-3	3	4
M-9	5	11
M-17	6	15
M-5	3	3
M-19		
M-15	5	6
M-7	5	7
M-10	2	0
M-14	1	8
M-18		
M-6	10	14
M-13	5	6
M-4	6	11

P-66 2-13-15

	P	Q		P	Q
M-22	6	0	M-11	6	1
M-12	6	3	M-25	5	25
M-1	3	11	M-24	5	7
M-23	10	0	M-21	10	0

P-66 2-16-15

* System down upon arrival
Alarms: VFDA-8201 PNL, VFDA-8202 PNL, PWRA-8201 PNL @ 06:15 2/14/15 and ESPF ALM @ 2017 2/14/15 Sys went down 2/14/15
* System was restarted
* PID readings of open wells were taken
* Sys readings taken before wells were opened or shut

C1	temp	102.1	Shed 701	mag "H_2O	0.24	B-701	9037
	vel	3900		Vac WLS	84	B-801	9138
C2	temp	102.2		Vac blow	83	C-2201	9173
	vel	3800		temp dschg	112	P-401	2
C3	temp	101.7		press dschg	23	P-501	69
	vel	4120		HC blow out	0.1	P-5501	108
						totalizer	77556
1 Carbon 1		0.2	Shed 801	mag "H_2O	0.24	trans pump	~~
1 Carbon 2		0.1		Vac WLS	87		
1 out		0.0		Vac blow	87	* Not enough water to maintain pressure	
				temp dschg	110		
2 Carbon 1		0.1		press dschg	22.5		
2 Carbon 2		0.0		HC blow out	0.1	B-701 @ 57%	
2 out		0.0				B-801 @ 44%.	
3 Carbon 1		0.1	AS Shed	temp in HX	185		
3 Carbon 2		0.0		press in HX	13	B-701 vac WLS 88"	
3 out		0.0		temp out HX	66	B-801 vac WLS 82"	
				press out AS	12.1		
				mag "H_2O	7.0		

Rite in the Rain

P-66 2/16/15

Well	Vac	PID		Well	PID	
WC1	23	0.0	closed after runs	M1	0.0	All wells closed
WC2	27	0.0		M2	0.0	
WC3	45	0.0		M3	0.0	
WB3	28	0.0		M5	0.0	
WB2	38	0.0		M14	0.0	
M10	57	0.1		M13	0.0	
M9	70	0.0		M15	0.0	
M8	62	0.1		M16	0.0	
M4	62	1.0		M18	0.0	
M12	70	7.5		TSVE 3	0.0	
M11	56	6.1		TMW5	0.0	
M17	70	0.1		TEFR1	0.0	
M19	70	13.2		TSVE 4	0.0	
TSVE2	55	0.0	partially closed	TSVE 11	0.0	
TSVE1	25	0.0		TSVE 10	0.0	
TSVE7	53	0.1		V6	0.0	
V7	22	0.0		V3	0.0	
V1	35	0.2		TEFR2	0.0	
V2	23	0.1		TMW48	0.0	
V5	28	0.0				
V4	39	0.0				
TSVE5	60	0.1				
TSVE6	62	0.0				
TSVE8	62	0.0				

P-66 weekly/monitor 3-4-15

* sys operating upon arrival

C1	temp	94.7	Shed 701	mag" H_2O	0.24	B-701	9420
	vel	1600		Vac VLS	83	B-801	9353
C2	temp	94.7		Vac blower	82	C-2201	9556
	vel	1870		temp disch	104	P-401	2
C3	temp	94.1		blowdown	15	P-501	69
	vel	1980		Hx blow out	1.4	P-5501	108
						total	77927
1 Carb1	1.2		AS Shed	temp in Hx	165	tray pump	~
1 Carb2	0.1			press in Hx	10	* not enough	
1 out	0.0			temp out Hx	58	water to maintain	
2 Carb1	1.1			press out Hx	10	press.	
2 Carb2	0.0			mag "H_2O	3.0		
2 Out	0.0						
3 Carb1	1.5						
3 Carb2	0.1						
3 out	0.1						

well	vac	PID
M10	54	0.3
M9	70	0.2
M8	58	1.8
M4	55	0.0
M12	70	8.4
M11	47	3.3
~~M16~~	—	~~[illegible]~~
M17	60	2.1
M19	70	3.7

well	Press	Q
M-2	5	10
M-16	5	0
M-9	5	10
M-17	7	18
M-5	3	3
M-10	2	1
M-14	1	9
M-22	6	0
M-1	3	12
M-11	3	0

Rite in the Rain.

P-66 3.12.15

C1	temp	102.4	Shed 701	mag "H_2O	0.25	B-701	9616
	vel	1725		Vac VLS	85	B-801	9353
C2	temp	102.0		Vac blw	80	C-2201	9752
	vel	1940		temp dischg	111	P-401	2
C3	temp	101.3		pres dischg	15	P-501	69
	vel	1965		Hc blow at	1.3	P-5501	108
						total	77927
Carb1	1.4		AS Shed	temp in HX	180	trans prep	~~~
Carb2	0.0			pres in HX	10	* not enough linear to read pres	
out	0.0			temp out HX	71		
Carb1	1.5			pres out HX	9.3		
Carb2	0.0			mag "H_2O	3.5		
out	0.1						
Carb1	1.3						
Carb2	0.0						
out	0.0						

unit	vac	PID	
M16	—	6.0	
M17	—	0.3	
M10	—	0.0	partially closed
M9	70	0.1	
M8	70	1.6	
M1	56	10.1	opened
M2	—	0.0	
M3	—	0.0	
M4	38	0.0	partially closed
M5	—	0.0	
M14	—	0.0	
M13	—	0.0	
M15	—	0.1	
M12	70	8.2	
M11	52	1.8	
M16	58	1.2	opened
M17	64	1.1	
M18	—	1.0	
M19	70	2.4	

P-66 3-18-15

C1	temp	109.0	Shed 701	mag "H2O	0.22	B-701	9756
	vel	1640		Vac ULS	100	B-801	9353
C2	temp	109.0		Vac blow	99	C-2201	9891
	vel	2040		temp dschg	117	P-401	2
C3	temp	108.3		press dschg	13	P-501	69
	vel	2060		HC blow out	1.2	P-5501	112
						totalizer	79648
1 Carb 1		0.6	AS Shed	temp in HX	200	trans pump	4.1
1 Carb 2		0.0		press in H/O	17		
1 out		0.0		temp out HX	58	* monthly samples	
2 Carb 1		1.2		press out HX	16.6	were collected	
2 Carb 2		0.0		mag "H2O	2.5	* sys operated upon	
2 out		0.0				arrival	
3 Carb 1		1.0				* B-701 VFD raised	
3 Carb 2		0.0				to 57%	
3 out		0.0					

Wells	Vac	PID	Wells	Vac	PID
M9	70	0.0	M12	70	4.9
M8	70	0.3	M11	57	0.9
M1	59	0.1	M16	64	0.1
M4	40	0.5	M17	70	0.0
			M19	70	0.8

P-66 3-24-15

C1	temp	100.2	Shed 701	mag "H2O	0.20	B-701	9872
	vel	1780		Vac ULS	99	B-801	9353
C2	temp	99.8		Vac blow	98	C-2201	10008
	vel	1850		temp dschg	115	P-401	2
C3	temp	98.5		press dschg	13	P-501	69
	vel	1900		HC blow out	0.1	P-5501	112
						totalizer	79912
1 Carb 1		0.1	AS Shed	temp in HX	165	trans pump	8.7
1 Carb 2		0.0		press in HX	9	* sys shut down	
1 out		0.0		temp out HX	60	3/23-3/24 for GWS	
2 Carb 1		0.1		press out HX	8.5	* sys down upon arrival	
2 Carb 2		0.0		mag "H2O	3.5	* sight glasses cleaned	
2 out		0.0				* AS Rudys	
3 Carb 1		0.1					
3 Carb 2		0.0					
3 out		0.0					

Rite in the Rain

AS Readings

	P	Q
M-8	2	11
M-20	5	17
M-26	5	0
M-3	4	4
M-19	OL	OL
M-15	5	5
M-7	5	6
M-6	7	13
M-13	5	7
M-4	6	10
M-12	5	2
M-23	8	0
M-25	5	25
M-24	5	7
M-21	8	0

Cardno ATC
Shaping the Future

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

Appendix A
Laboratory Data

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

February 02, 2015

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

RE: Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on January 22, 2015. 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

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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
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 #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
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
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
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
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10294735001	**V-DSCHG-1**	Air	01/20/15 14:45	01/22/15 09:35
10294735002	**V-DSCHG-2**	Air	01/20/15 14:50	01/22/15 09:35
10294735003	**V-DSCHG-3**	Air	01/20/15 14:55	01/22/15 09:35
10294735004	**V-INT-1**	Air	01/20/15 15:10	01/22/15 09:35
10294735005	**V-INT-2**	Air	01/20/15 15:05	01/22/15 09:35
10294735006	**V-INT-3**	Air	01/20/15 15:00	01/22/15 09:35
10294735007	**V-INF-1**	Air	01/20/15 15:15	01/22/15 09:35
10294735008	**V-INF-2**	Air	01/20/15 15:20	01/22/15 09:35
10294735009	**V-INF-3**	Air	01/20/15 15:25	01/22/15 09:35

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SAMPLE ANALYTE COUNT

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10294735001	**V-DSCHG-1**	TO-15	DR1	6	PASI-M
10294735002	**V-DSCHG-2**	TO-15	DR1	6	PASI-M
10294735003	**V-DSCHG-3**	TO-15	DR1	6	PASI-M
10294735004	**V-INT-1**	TO-15	DR1	6	PASI-M
10294735005	**V-INT-2**	TO-15	MJL	6	PASI-M
10294735006	**V-INT-3**	TO-15	DL1	6	PASI-M
10294735007	**V-INF-1**	TO-15	DL1	6	PASI-M
10294735008	**V-INF-2**	TO-15	DL1	6	PASI-M
10294735009	**V-INF-3**	TO-15	DL1	6	PASI-M

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

Sample: V-DSCHG-1 **Lab ID: 10294735001** Collected: 01/20/15 14:45 Received: 01/22/15 09:35 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	12.6	38.9		01/30/15 20:19	71-43-2	A4
Ethylbenzene	ND	ug/m3	34.2	38.9		01/30/15 20:19	100-41-4	
THC as Gas	**2660**	ug/m3	2370	38.9		01/30/15 20:19		
Toluene	ND	ug/m3	149	38.9		01/30/15 20:19	108-88-3	
m&p-Xylene	ND	ug/m3	68.5	38.9		01/30/15 20:19	179601-23-1	
o-Xylene	ND	ug/m3	34.2	38.9		01/30/15 20:19	95-47-6	

Sample: V-DSCHG-2 **Lab ID: 10294735002** Collected: 01/20/15 14:50 Received: 01/22/15 09:35 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		01/30/15 20:42	71-43-2	A4
Ethylbenzene	ND	ug/m3	32.9	37.4		01/30/15 20:42	100-41-4	
THC as Gas	**2360**	ug/m3	2270	37.4		01/30/15 20:42		
Toluene	ND	ug/m3	143	37.4		01/30/15 20:42	108-88-3	
m&p-Xylene	ND	ug/m3	65.8	37.4		01/30/15 20:42	179601-23-1	
o-Xylene	ND	ug/m3	32.9	37.4		01/30/15 20:42	95-47-6	

Sample: V-DSCHG-3 **Lab ID: 10294735003** Collected: 01/20/15 14:55 Received: 01/22/15 09:35 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		01/30/15 21:28	71-43-2	A4
Ethylbenzene	ND	ug/m3	37.0	42		01/30/15 21:28	100-41-4	
THC as Gas	ND	ug/m3	2550	42		01/30/15 21:28		
Toluene	ND	ug/m3	161	42		01/30/15 21:28	108-88-3	
m&p-Xylene	ND	ug/m3	73.9	42		01/30/15 21:28	179601-23-1	
o-Xylene	ND	ug/m3	37.0	42		01/30/15 21:28	95-47-6	

Sample: V-INT-1 **Lab ID: 10294735004** Collected: 01/20/15 15:10 Received: 01/22/15 09:35 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		01/30/15 21:05	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.6	33.6		01/30/15 21:05	100-41-4	
THC as Gas	**2100**	ug/m3	2040	33.6		01/30/15 21:05		
Toluene	ND	ug/m3	129	33.6		01/30/15 21:05	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		01/30/15 21:05	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		01/30/15 21:05	95-47-6	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

Sample: V-INT-2 **Lab ID: 10294735005** Collected: 01/20/15 15:05 Received: 01/22/15 09:35 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		01/28/15 12:26	71-43-2	A4
Ethylbenzene	ND	ug/m3	63.9	28.95		01/28/15 12:26	100-41-4	
THC as Gas	ND	ug/m3	1760	28.95		01/28/15 12:26		
Toluene	**37.4**	ug/m3	22.3	28.95		01/28/15 12:26	108-88-3	
m&p-Xylene	ND	ug/m3	51.0	28.95		01/28/15 12:26	179601-23-1	
o-Xylene	ND	ug/m3	25.5	28.95		01/28/15 12:26	95-47-6	

Sample: V-INT-3 **Lab ID: 10294735006** Collected: 01/20/15 15:00 Received: 01/22/15 09:35 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		01/27/15 00:46	71-43-2	A4
Ethylbenzene	ND	ug/m3	32.9	37.4		01/27/15 00:46	100-41-4	
THC as Gas	ND	ug/m3	2270	37.4		01/27/15 00:46		
Toluene	ND	ug/m3	28.8	37.4		01/27/15 00:46	108-88-3	
m&p-Xylene	ND	ug/m3	65.8	37.4		01/27/15 00:46	179601-23-1	
o-Xylene	ND	ug/m3	32.9	37.4		01/27/15 00:46	95-47-6	

Sample: V-INF-1 **Lab ID: 10294735007** Collected: 01/20/15 15:15 Received: 01/22/15 09:35 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		01/27/15 01:08	71-43-2	A4
Ethylbenzene	ND	ug/m3	30.6	34.8		01/27/15 01:08	100-41-4	
THC as Gas	ND	ug/m3	2120	34.8		01/27/15 01:08		
Toluene	ND	ug/m3	26.8	34.8		01/27/15 01:08	108-88-3	
m&p-Xylene	ND	ug/m3	61.2	34.8		01/27/15 01:08	179601-23-1	
o-Xylene	ND	ug/m3	30.6	34.8		01/27/15 01:08	95-47-6	

Sample: V-INF-2 **Lab ID: 10294735008** Collected: 01/20/15 15:20 Received: 01/22/15 09:35 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.7	36		01/27/15 01:30	71-43-2	A4
Ethylbenzene	ND	ug/m3	31.7	36		01/27/15 01:30	100-41-4	
THC as Gas	ND	ug/m3	2190	36		01/27/15 01:30		
Toluene	ND	ug/m3	27.7	36		01/27/15 01:30	108-88-3	
m&p-Xylene	ND	ug/m3	63.4	36		01/27/15 01:30	179601-23-1	
o-Xylene	ND	ug/m3	31.7	36		01/27/15 01:30	95-47-6	

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

Sample: V-INF-3 **Lab ID: 10294735009** Collected: 01/20/15 15:25 Received: 01/22/15 09:35 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.7	36		01/27/15 00:24	71-43-2	A4
Ethylbenzene	ND	ug/m3	31.7	36		01/27/15 00:24	100-41-4	
THC as Gas	**12100**	ug/m3	2190	36		01/27/15 00:24		
Toluene	ND	ug/m3	27.7	36		01/27/15 00:24	108-88-3	
m&p-Xylene	ND	ug/m3	63.4	36		01/27/15 00:24	179601-23-1	
o-Xylene	ND	ug/m3	31.7	36		01/27/15 00:24	95-47-6	

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

QC Batch: AIR/22358 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10294735006, 10294735007, 10294735008, 10294735009

METHOD BLANK: 1888553 Matrix: Air
Associated Lab Samples: 10294735006, 10294735007, 10294735008, 10294735009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	01/27/15 00:02	
Ethylbenzene	ug/m3	ND	0.88	01/27/15 00:02	
m&p-Xylene	ug/m3	ND	1.8	01/27/15 00:02	
o-Xylene	ug/m3	ND	0.88	01/27/15 00:02	
THC as Gas	ug/m3	ND	60.8	01/27/15 00:02	
Toluene	ug/m3	ND	0.77	01/27/15 00:02	

LABORATORY CONTROL SAMPLE: 1888554

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	33.2	102	64-139	
Ethylbenzene	ug/m3	44.2	45.0	102	71-136	
m&p-Xylene	ug/m3	88.3	91.9	104	71-134	
o-Xylene	ug/m3	44.2	45.6	103	75-134	
THC as Gas	ug/m3	3520	3580	102	66-135	
Toluene	ug/m3	38.3	44.8	117	70-129	

SAMPLE DUPLICATE: 1888944

Parameter	Units	10294733003 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	2420	2260	7	25	
Ethylbenzene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	ND	296J		25	
THC as Gas	ug/m3	914000	841000	8	25	
Toluene	ug/m3	706	657	7	25	

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

QC Batch: AIR/22391 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10294735001, 10294735002, 10294735003, 10294735004

METHOD BLANK: 1891699 Matrix: Air
Associated Lab Samples: 10294735001, 10294735002, 10294735003, 10294735004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	01/30/15 12:35	
Ethylbenzene	ug/m3	ND	0.88	01/30/15 12:35	
m&p-Xylene	ug/m3	ND	1.8	01/30/15 12:35	
o-Xylene	ug/m3	ND	0.88	01/30/15 12:35	
THC as Gas	ug/m3	ND	60.8	01/30/15 12:35	
Toluene	ug/m3	ND	3.8	01/30/15 12:35	

LABORATORY CONTROL SAMPLE: 1891700

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	27.7	85	64-139	
Ethylbenzene	ug/m3	44.2	48.6	110	71-136	
m&p-Xylene	ug/m3	88.3	95.6	108	71-134	
o-Xylene	ug/m3	44.2	48.3	109	75-134	
THC as Gas	ug/m3	3520	2830	81	66-135	
Toluene	ug/m3	38.3	29.7	78	70-129	

SAMPLE DUPLICATE: 1892169

Parameter	Units	10295195005 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	0.85	0.84	1	25	
Ethylbenzene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	1.1J		25	
o-Xylene	ug/m3	ND	ND		25	
THC as Gas	ug/m3	245	244	1	25	
Toluene	ug/m3	ND	.63J		25	

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

QC Batch: AIR/22399
QC Batch Method: TO-15
Analysis Method: TO-15
Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10294735005

METHOD BLANK: 1892232
Matrix: Air
Associated Lab Samples: 10294735005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	01/27/15 20:09	
Ethylbenzene	ug/m3	ND	2.2	01/27/15 20:09	
m&p-Xylene	ug/m3	ND	1.8	01/27/15 20:09	
o-Xylene	ug/m3	ND	0.88	01/27/15 20:09	
THC as Gas	ug/m3	ND	60.8	01/27/15 20:09	
Toluene	ug/m3	ND	0.77	01/27/15 20:09	

LABORATORY CONTROL SAMPLE: 1892233

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	34.6	106	64-139	
Ethylbenzene	ug/m3	44.2	45.7	103	71-136	
m&p-Xylene	ug/m3	88.3	91.0	103	71-134	
o-Xylene	ug/m3	44.2	45.7	104	75-134	
THC as Gas	ug/m3	3520	3780	107	66-135	
Toluene	ug/m3	38.3	41.5	108	70-129	

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QUALIFIERS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

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.

PQL - Practical Quantitation 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

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294735

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10294735001	**V-DSCHG-1**	TO-15	AIR/22391		
10294735002	**V-DSCHG-2**	TO-15	AIR/22391		
10294735003	**V-DSCHG-3**	TO-15	AIR/22391		
10294735004	**V-INT-1**	TO-15	AIR/22391		
10294735005	**V-INT-2**	TO-15	AIR/22399		
10294735006	**V-INT-3**	TO-15	AIR/22358		
10294735007	**V-INF-1**	TO-15	AIR/22358		
10294735008	**V-INF-2**	TO-15	AIR/22358		
10294735009	**V-INF-3**	TO-15	AIR/22358		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

102 94735

Page : 1 Of 1

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 #:	

Regulatory Agency: PSCAA

State / Location: WA

SAMPLE ID

One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

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

ITEM#	SAMPLE ID	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 Y/N	TO-15	Residual Chlorine (Y/N)	
1	V-DSCHG-1	AR	G			01/20/15	14:45		2	X									X		001
2	V-DSCHG-2	AR	G			01/20/15	14:50		2	X									X		002
3	V-DSCHG-3	AR	G			01/20/15	14:55		2	X									X		003
4	V-INT-1	AR	G			01/20/15	15:10		2	X									X		004
5	V-INT-2	AR	G			01/20/15	15:05		2	X									X		005
6	V-INT-3	AR	G			01/20/15	15:00		2	X									X		006
7	V-INF-1	AR	G			01/20/15	15:15		2	X									X		007
8	V-INF-2	AR	G			01/20/15	15:20		2	X									X		008
9	V-INF-3	AR	G			01/20/15	15:25		2	X									X		009
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
				PACE	1-21-15	1130	1.6.5	N	N	Y
	PACE	1-21-15	1600		12215	0935	Ambs	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Edward Bumacci

SIGNATURE of SAMPLER:

DATE Signed: 1/20/2015

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: ATC - OR

Project #: WO# : 10294735

10294735

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

Tracking Number: 5779 5332 8186

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 TO13 samples only) (°C): Corrected Temp (°C): Thermom. Used: ☐ B88A912167504 ☐ B88A9132521491 ☐ 72337080 ☐ 80512447

Temp should be above freezing to 6°C Correction Factor: Date & Initials of Person Examining Contents: 1/22/15

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. T-Bay
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.
Media: air bag				11.
Sample Labels Match COC?	☑ 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: JENN GROSS Date: 01/22/15

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 Services, Inc.
1700 Elm Street - Suite 200
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March 03, 2015

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

RE: Project: AOC 1396-P-66 Westlake/Mercer
Pace Project No.: 10298020

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on February 27, 2015. 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

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: AOC 1396-P-66 Westlake/Mercer
Pace Project No.: 10298020

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
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 #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
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
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
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
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: AOC 1396-P-66 Westlake/Mercer
Pace Project No.: 10298020

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10298020001	**V-DSCHG-1**	Air	02/25/15 09:30	02/27/15 09:55
10298020002	**V-DSCHG-2**	Air	02/25/15 09:35	02/27/15 09:55
10298020003	**V-DSCHG-3**	Air	02/25/15 09:40	02/27/15 09:55
10298020004	**V-INT-1**	Air	02/25/15 09:45	02/27/15 09:55
10298020005	**V-INT-2**	Air	02/25/15 09:50	02/27/15 09:55
10298020006	**V-INT-3**	Air	02/25/15 09:55	02/27/15 09:55
10298020007	**V-INF-1**	Air	02/25/15 10:00	02/27/15 09:55
10298020008	**V-INF-2**	Air	02/25/15 10:05	02/27/15 09:55
10298020009	**V-INF-3**	Air	02/25/15 10:10	02/27/15 09:55

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AOC 1396-P-66 Westlake/Mercer
Pace Project No.: 10298020

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10298020001	**V-DSCHG-1**	TO-15	MJL	6	PASI-M
10298020002	**V-DSCHG-2**	TO-15	MJL	6	PASI-M
10298020003	**V-DSCHG-3**	TO-15	MJL	6	PASI-M
10298020004	**V-INT-1**	TO-15	MJL	6	PASI-M
10298020005	**V-INT-2**	TO-15	MJL	6	PASI-M
10298020006	**V-INT-3**	TO-15	MJL	6	PASI-M
10298020007	**V-INF-1**	TO-15	MJL	6	PASI-M
10298020008	**V-INF-2**	TO-15	MJL	6	PASI-M
10298020009	**V-INF-3**	TO-15	MJL	6	PASI-M

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ANALYTICAL RESULTS

Project: AOC 1396-P-66 Westlake/Mercer
Pace Project No.: 10298020

Sample: V-DSCHG-1 **Lab ID: 10298020001** Collected: 02/25/15 09:30 Received: 02/27/15 09:55 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		03/01/15 23:54	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.7	33.8		03/01/15 23:54	100-41-4	
THC as Gas	ND	ug/m3	2060	33.8		03/01/15 23:54		
Toluene	ND	ug/m3	26.0	33.8		03/01/15 23:54	108-88-3	
m&p-Xylene	ND	ug/m3	59.5	33.8		03/01/15 23:54	179601-23-1	
o-Xylene	ND	ug/m3	29.7	33.8		03/01/15 23:54	95-47-6	

Sample: V-DSCHG-2 **Lab ID: 10298020002** Collected: 02/25/15 09:35 Received: 02/27/15 09:55 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		03/01/15 21:58	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.7	33.8		03/01/15 21:58	100-41-4	
THC as Gas	**2530**	ug/m3	2060	33.8		03/01/15 21:58		
Toluene	ND	ug/m3	26.0	33.8		03/01/15 21:58	108-88-3	
m&p-Xylene	ND	ug/m3	59.5	33.8		03/01/15 21:58	179601-23-1	
o-Xylene	ND	ug/m3	29.7	33.8		03/01/15 21:58	95-47-6	

Sample: V-DSCHG-3 **Lab ID: 10298020003** Collected: 02/25/15 09:40 Received: 02/27/15 09:55 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.6	32.56		03/01/15 23:10	71-43-2	A4
Ethylbenzene	ND	ug/m3	28.7	32.56		03/01/15 23:10	100-41-4	
THC as Gas	ND	ug/m3	1980	32.56		03/01/15 23:10		
Toluene	ND	ug/m3	25.1	32.56		03/01/15 23:10	108-88-3	
m&p-Xylene	ND	ug/m3	57.3	32.56		03/01/15 23:10	179601-23-1	
o-Xylene	ND	ug/m3	28.7	32.56		03/01/15 23:10	95-47-6	

Sample: V-INT-1 **Lab ID: 10298020004** Collected: 02/25/15 09:45 Received: 02/27/15 09:55 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		03/01/15 22:26	71-43-2	A4
Ethylbenzene	ND	ug/m3	29.7	33.8		03/01/15 22:26	100-41-4	
THC as Gas	ND	ug/m3	2060	33.8		03/01/15 22:26		
Toluene	ND	ug/m3	26.0	33.8		03/01/15 22:26	108-88-3	
m&p-Xylene	ND	ug/m3	59.5	33.8		03/01/15 22:26	179601-23-1	
o-Xylene	ND	ug/m3	29.7	33.8		03/01/15 22:26	95-47-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AOC 1396-P-66 Westlake/Mercer
Pace Project No.: 10298020

Sample: V-INT-2 **Lab ID: 10298020005** Collected: 02/25/15 09:50 Received: 02/27/15 09:55 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.6	32.56		03/01/15 22:48	71-43-2	A4
Ethylbenzene	ND	ug/m3	28.7	32.56		03/01/15 22:48	100-41-4	
THC as Gas	ND	ug/m3	1980	32.56		03/01/15 22:48		
Toluene	ND	ug/m3	25.1	32.56		03/01/15 22:48	108-88-3	
m&p-Xylene	**115**	ug/m3	57.3	32.56		03/01/15 22:48	179601-23-1	
o-Xylene	**46.7**	ug/m3	28.7	32.56		03/01/15 22:48	95-47-6	

Sample: V-INT-3 **Lab ID: 10298020006** Collected: 02/25/15 09:55 Received: 02/27/15 09:55 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.6	32.56		03/01/15 23:32	71-43-2	A4
Ethylbenzene	ND	ug/m3	28.7	32.56		03/01/15 23:32	100-41-4	
THC as Gas	ND	ug/m3	1980	32.56		03/01/15 23:32		
Toluene	ND	ug/m3	25.1	32.56		03/01/15 23:32	108-88-3	
m&p-Xylene	ND	ug/m3	57.3	32.56		03/01/15 23:32	179601-23-1	
o-Xylene	ND	ug/m3	28.7	32.56		03/01/15 23:32	95-47-6	

Sample: V-INF-1 **Lab ID: 10298020007** Collected: 02/25/15 10:00 Received: 02/27/15 09:55 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	28.8		03/02/15 00:16	71-43-2	A4
Ethylbenzene	ND	ug/m3	25.3	28.8		03/02/15 00:16	100-41-4	
THC as Gas	ND	ug/m3	1750	28.8		03/02/15 00:16		
Toluene	ND	ug/m3	22.2	28.8		03/02/15 00:16	108-88-3	
m&p-Xylene	ND	ug/m3	50.7	28.8		03/02/15 00:16	179601-23-1	
o-Xylene	ND	ug/m3	25.3	28.8		03/02/15 00:16	95-47-6	

Sample: V-INF-2 **Lab ID: 10298020008** Collected: 02/25/15 10:05 Received: 02/27/15 09:55 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	7.4	22.9		03/01/15 21:36	71-43-2	A4
Ethylbenzene	ND	ug/m3	20.2	22.9		03/01/15 21:36	100-41-4	
THC as Gas	**2940**	ug/m3	1390	22.9		03/01/15 21:36		
Toluene	ND	ug/m3	17.6	22.9		03/01/15 21:36	108-88-3	
m&p-Xylene	ND	ug/m3	40.3	22.9		03/01/15 21:36	179601-23-1	
o-Xylene	**32.3**	ug/m3	20.2	22.9		03/01/15 21:36	95-47-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AOC 1396-P-66 Westlake/Mercer
Pace Project No.: 10298020

Sample: V-INF-3 **Lab ID: 10298020009** Collected: 02/25/15 10:10 Received: 02/27/15 09:55 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.7	36		03/01/15 21:14	71-43-2	A4
Ethylbenzene	ND	ug/m3	31.7	36		03/01/15 21:14	100-41-4	
THC as Gas	**3340**	ug/m3	2190	36		03/01/15 21:14		
Toluene	ND	ug/m3	27.7	36		03/01/15 21:14	108-88-3	
m&p-Xylene	ND	ug/m3	63.4	36		03/01/15 21:14	179601-23-1	
o-Xylene	ND	ug/m3	31.7	36		03/01/15 21:14	95-47-6	

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QUALITY CONTROL DATA

Project: AOC 1396-P-66 Westlake/Mercer
Pace Project No.: 10298020

QC Batch: AIR/22619 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10298020001, 10298020002, 10298020003, 10298020004, 10298020005, 10298020006, 10298020007, 10298020008, 10298020009

METHOD BLANK: 1909174 Matrix: Air
Associated Lab Samples: 10298020001, 10298020002, 10298020003, 10298020004, 10298020005, 10298020006, 10298020007, 10298020008, 10298020009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	03/01/15 13:57	
Ethylbenzene	ug/m3	ND	0.88	03/01/15 13:57	
m&p-Xylene	ug/m3	ND	1.8	03/01/15 13:57	
o-Xylene	ug/m3	ND	0.88	03/01/15 13:57	
THC as Gas	ug/m3	ND	60.8	03/01/15 13:57	
Toluene	ug/m3	ND	0.77	03/01/15 13:57	

LABORATORY CONTROL SAMPLE: 1909175

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	37.3	115	64-139	
Ethylbenzene	ug/m3	44.2	51.9	118	71-136	
m&p-Xylene	ug/m3	88.3	103	117	71-134	
o-Xylene	ug/m3	44.2	51.7	117	75-134	
THC as Gas	ug/m3	3520	3670	104	66-135	
Toluene	ug/m3	38.3	43.5	114	70-129	

SAMPLE DUPLICATE: 1909440

Parameter	Units	10297676001 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	0.86	0.75	14	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	484	506	5	25	
Toluene	ug/m3	115	110	5	25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: AOC 1396-P-66 Westlake/Mercer
Pace Project No.: 10298020

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

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.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P-66 Westlake/Mercer
Pace Project No.: 10298020

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10298020001	**V-DSCHG-1**	TO-15	AIR/22619		
10298020002	**V-DSCHG-2**	TO-15	AIR/22619		
10298020003	**V-DSCHG-3**	TO-15	AIR/22619		
10298020004	**V-INT-1**	TO-15	AIR/22619		
10298020005	**V-INT-2**	TO-15	AIR/22619		
10298020006	**V-INT-3**	TO-15	AIR/22619		
10298020007	**V-INF-1**	TO-15	AIR/22619		
10298020008	**V-INF-2**	TO-15	AIR/22619		
10298020009	**V-INF-3**	TO-15	AIR/22619		

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10248020

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

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 Tigard, OR 97223	Copy To:	Keith Fox	Company Name:	
				Address:	
Email To:	kyle.sattler@cardno.com	Purchase Order No:	031326038	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 #:	33352 # 2

Regulatory Agency	
	PSCAA
State / Location	
	WA

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

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

ITEM#	SAMPLE ID	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 Y/N	Requested Analysis Filtered (Y/N): TO-15	Residual Chlorine (Y/N)	
1	V-DSCHG-1	AR	G			02/25/15	9:30		2	X									X		001
2	V-DSCHG-2	AR	G			02/25/15	9:35		2	X									X		002
3	V-DSCHG-3	AR	G			02/25/15	9:40		2	X									X		003
4	V-INT-1	AR	G			02/25/15	9:45		2	X									X		004
5	V-INT-2	AR	G			02/25/15	9:50		2	X									X		005
6	V-INT-3	AR	G			02/25/15	9:55		2	X									X		006
7	V-INF-1	AR	G			02/25/15	10:00		2	X									X		007
8	V-INF-2	AR	G			02/25/15	10:05		2	X									X		008
9	V-INF-3	AR	G			02/25/15	10:10		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)
				FACE	2-25-15	1430	19.9	N	N	Y
	FACE	2-26-15	1500	DACE	2/27/15	955	20.0	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Michael Miller

SIGNATURE of SAMPLER: [signature] DATE Signed: 2/25/2015

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#: 10298020

10298020

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

Tracking Number: 5779 5333 0747

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

Optional: Proj. Due Date: Proj. Name:

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

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

Temp should be above freezing to 6°C **Correction Factor:** — **Date & Initials of Person Examining Contents:** NS 2/27/15

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. 48hr - TBag
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: Tedlar				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: _____ **Date:** _____

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 Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

March 24, 2015

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

RE: Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300007

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on March 19, 2015. 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

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CERTIFICATIONS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300007

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
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 #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
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
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
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
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300007

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10300007001	**V-DSCHG-1**	Air	03/18/15 12:25	03/19/15 09:30
10300007002	**V-DSCHG-2**	Air	03/18/15 12:30	03/19/15 09:30
10300007003	**V-DSCHG-3**	Air	03/18/15 12:35	03/19/15 09:30
10300007004	**V-INT-1**	Air	03/18/15 12:50	03/19/15 09:30
10300007005	**V-INT-2**	Air	03/18/15 12:45	03/19/15 09:30
10300007006	**V-INT-3**	Air	03/18/15 12:40	03/19/15 09:30
10300007007	**V-INF-1**	Air	03/18/15 12:55	03/19/15 09:30
10300007008	**V-INF-2**	Air	03/18/15 13:00	03/19/15 09:30
10300007009	**V-INF-3**	Air	03/18/15 13:05	03/19/15 09:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300007

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10300007001	**V-DSCHG-1**	TO-15	AH2	6	PASI-M
10300007002	**V-DSCHG-2**	TO-15	AH2	6	PASI-M
10300007003	**V-DSCHG-3**	TO-15	AH2	6	PASI-M
10300007004	**V-INT-1**	TO-15	AH2	6	PASI-M
10300007005	**V-INT-2**	TO-15	AH2	6	PASI-M
10300007006	**V-INT-3**	TO-15	AH2	6	PASI-M
10300007007	**V-INF-1**	TO-15	AH2	6	PASI-M
10300007008	**V-INF-2**	TO-15	AH2	6	PASI-M
10300007009	**V-INF-3**	TO-15	AH2	6	PASI-M

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300007

Sample: V-DSCHG-1 **Lab ID: 10300007001** Collected: 03/18/15 12:25 Received: 03/19/15 09:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	3.3	10.12		03/23/15 13:04	71-43-2	2M
Ethylbenzene	ND	ug/m3	44.7	10.12		03/23/15 13:04	100-41-4	
THC as Gas	**2720**	ug/m3	615	10.12		03/23/15 13:04		
Toluene	**10.2**	ug/m3	7.8	10.12		03/23/15 13:04	108-88-3	
m&p-Xylene	ND	ug/m3	17.8	10.12		03/23/15 13:04	179601-23-1	
o-Xylene	ND	ug/m3	44.7	10.12		03/23/15 13:04	95-47-6	

Sample: V-DSCHG-2 **Lab ID: 10300007002** Collected: 03/18/15 12:30 Received: 03/19/15 09:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	8.6	26.6		03/23/15 13:26	71-43-2	2M
Ethylbenzene	ND	ug/m3	117	26.6		03/23/15 13:26	100-41-4	
THC as Gas	**3470**	ug/m3	1620	26.6		03/23/15 13:26		
Toluene	**29.5**	ug/m3	20.5	26.6		03/23/15 13:26	108-88-3	
m&p-Xylene	ND	ug/m3	46.8	26.6		03/23/15 13:26	179601-23-1	
o-Xylene	ND	ug/m3	117	26.6		03/23/15 13:26	95-47-6	

Sample: V-DSCHG-3 **Lab ID: 10300007003** Collected: 03/18/15 12:35 Received: 03/19/15 09:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	5.5	16.8		03/23/15 13:48	71-43-2	2M
Ethylbenzene	ND	ug/m3	74.2	16.8		03/23/15 13:48	100-41-4	
THC as Gas	**2240**	ug/m3	1020	16.8		03/23/15 13:48		
Toluene	ND	ug/m3	12.9	16.8		03/23/15 13:48	108-88-3	
m&p-Xylene	ND	ug/m3	29.6	16.8		03/23/15 13:48	179601-23-1	
o-Xylene	ND	ug/m3	74.2	16.8		03/23/15 13:48	95-47-6	

Sample: V-INT-1 **Lab ID: 10300007004** Collected: 03/18/15 12:50 Received: 03/19/15 09:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**19.4**	ug/m3	5.5	16.8		03/23/15 14:10	71-43-2	1M
Ethylbenzene	ND	ug/m3	74.2	16.8		03/23/15 14:10	100-41-4	
THC as Gas	**3310**	ug/m3	1020	16.8		03/23/15 14:10		
Toluene	**342**	ug/m3	12.9	16.8		03/23/15 14:10	108-88-3	
m&p-Xylene	ND	ug/m3	29.6	16.8		03/23/15 14:10	179601-23-1	
o-Xylene	ND	ug/m3	74.2	16.8		03/23/15 14:10	95-47-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300007

Sample: V-INT-2 **Lab ID: 10300007005** Collected: 03/18/15 12:45 Received: 03/19/15 09:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	5.5	16.8		03/23/15 14:31	71-43-2	1M
Ethylbenzene	ND	ug/m3	74.2	16.8		03/23/15 14:31	100-41-4	
THC as Gas	**1500**	ug/m3	1020	16.8		03/23/15 14:31		
Toluene	**15.0**	ug/m3	12.9	16.8		03/23/15 14:31	108-88-3	
m&p-Xylene	ND	ug/m3	29.6	16.8		03/23/15 14:31	179601-23-1	
o-Xylene	ND	ug/m3	74.2	16.8		03/23/15 14:31	95-47-6	

Sample: V-INT-3 **Lab ID: 10300007006** Collected: 03/18/15 12:40 Received: 03/19/15 09:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	6.8	21		03/23/15 15:04	71-43-2	2M
Ethylbenzene	ND	ug/m3	92.7	21		03/23/15 15:04	100-41-4	
THC as Gas	ND	ug/m3	1280	21		03/23/15 15:04		
Toluene	**28.4**	ug/m3	16.2	21		03/23/15 15:04	108-88-3	
m&p-Xylene	ND	ug/m3	37.0	21		03/23/15 15:04	179601-23-1	
o-Xylene	ND	ug/m3	92.7	21		03/23/15 15:04	95-47-6	

Sample: V-INF-1 **Lab ID: 10300007007** Collected: 03/18/15 12:55 Received: 03/19/15 09:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	6.1	18.7		03/23/15 15:25	71-43-2	1M
Ethylbenzene	ND	ug/m3	82.5	18.7		03/23/15 15:25	100-41-4	
THC as Gas	**1970**	ug/m3	1140	18.7		03/23/15 15:25		
Toluene	**23.1**	ug/m3	14.4	18.7		03/23/15 15:25	108-88-3	
m&p-Xylene	**44.4**	ug/m3	32.9	18.7		03/23/15 15:25	179601-23-1	
o-Xylene	ND	ug/m3	82.5	18.7		03/23/15 15:25	95-47-6	

Sample: V-INF-2 **Lab ID: 10300007008** Collected: 03/18/15 13:00 Received: 03/19/15 09:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	5.8	18		03/23/15 15:47	71-43-2	1M
Ethylbenzene	ND	ug/m3	79.5	18		03/23/15 15:47	100-41-4	
THC as Gas	**2300**	ug/m3	1090	18		03/23/15 15:47		
Toluene	ND	ug/m3	13.9	18		03/23/15 15:47	108-88-3	
m&p-Xylene	**39.7**	ug/m3	31.7	18		03/23/15 15:47	179601-23-1	
o-Xylene	ND	ug/m3	79.5	18		03/23/15 15:47	95-47-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300007

Sample: V-INF-3 **Lab ID: 10300007009** Collected: 03/18/15 13:05 Received: 03/19/15 09:30 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	5.7	17.4		03/23/15 16:09	71-43-2	1M
Ethylbenzene	ND	ug/m3	76.8	17.4		03/23/15 16:09	100-41-4	
THC as Gas	**2290**	ug/m3	1060	17.4		03/23/15 16:09		
Toluene	**14.8**	ug/m3	13.4	17.4		03/23/15 16:09	108-88-3	
m&p-Xylene	**38.3**	ug/m3	30.6	17.4		03/23/15 16:09	179601-23-1	
o-Xylene	ND	ug/m3	76.8	17.4		03/23/15 16:09	95-47-6	

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300007

QC Batch: AIR/22808 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10300007001, 10300007002, 10300007003, 10300007004, 10300007005, 10300007006, 10300007007, 10300007008, 10300007009

METHOD BLANK: 1923553 Matrix: Air
Associated Lab Samples: 10300007001, 10300007002, 10300007003, 10300007004, 10300007005, 10300007006, 10300007007, 10300007008, 10300007009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	03/23/15 10:24	
Ethylbenzene	ug/m3	ND	4.4	03/23/15 10:24	
m&p-Xylene	ug/m3	ND	1.8	03/23/15 10:24	
o-Xylene	ug/m3	ND	4.4	03/23/15 10:24	
THC as Gas	ug/m3	ND	60.8	03/23/15 10:24	
Toluene	ug/m3	ND	0.77	03/23/15 10:24	

LABORATORY CONTROL SAMPLE: 1923554

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	37.3	115	64-139	
Ethylbenzene	ug/m3	44.2	54.1	122	71-136	
m&p-Xylene	ug/m3	88.3	105	119	71-134	
o-Xylene	ug/m3	44.2	54.5	123	75-134	
THC as Gas	ug/m3	3520	3640	103	66-135	
Toluene	ug/m3	38.3	44.3	116	70-129	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300007

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

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.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

ANALYTE QUALIFIERS

1M	Sample was transferred from a sampling bag into a Summa Canister within 72 hours of collection
2M	Sample was transferred from a sampling bag into a Summa Canister within 72 hours of collection.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300007

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10300007001	**V-DSCHG-1**	TO-15	AIR/22808		
10300007002	**V-DSCHG-2**	TO-15	AIR/22808		
10300007003	**V-DSCHG-3**	TO-15	AIR/22808		
10300007004	**V-INT-1**	TO-15	AIR/22808		
10300007005	**V-INT-2**	TO-15	AIR/22808		
10300007006	**V-INT-3**	TO-15	AIR/22808		
10300007007	**V-INF-1**	TO-15	AIR/22808		
10300007008	**V-INF-2**	TO-15	AIR/22808		
10300007009	**V-INF-3**	TO-15	AIR/22808		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

10300007

Page : 1 Of 1

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 #:	

Regulatory Agency
PSCAA
State / Location
WA

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

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

ITEM#	SAMPLE ID	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 Y/N	Analyses Test: TO-15	Residual Chlorine (Y/N)	Requested Analysis Filtered (Y/N)
1	V-DSCHG-1	AR	G			03/18/15	12:25		3	X									X		001
2	V-DSCHG-2	AR	G			03/18/15	12:30		3	X									X		002
3	V-DSCHG-3	AR	G			03/18/15	12:35		2	X									X		003
4	V-INT-1	AR	G			03/18/15	12:50		2	X									X		004
5	V-INT-2	AR	G			03/18/15	12:45		2	X									X		005
6	V-INT-3	AR	G			03/18/15	12:40		2	X									X		006
7	V-INF-1	AR	G			03/18/15	12:55		2	X									X		007
8	V-INF-2	AR	G			03/18/15	13:00		2	X									X		008
9	V-INF-3	AR	G			03/18/15	13:05		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)
				PACE	3-18-15	1645	26.1	N	N	Y
	PACE	3/18/15	1700	pace	3/19/15	0930	AMB	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Edward Burnacci

SIGNATURE of SAMPLER: DATE Signed: 3/18/2015

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: ATC - OR

Project #: WO# : 10300007

10300007

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

Tracking Number: 577953331618

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): — **Corrected Temp (°C):** — **Thermom. Used:** [ ] B88A912167504 [ ] B88A9132521491 [ ] 72337080 [ ] 80512447

Temp should be above freezing to 6°C **Correction Factor:** — **Date & Initials of Person Examining Contents:** 3/19/15

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. T-BAG
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?	[ ] Yes	[x] No	[ ] N/A	10. V-INT-2 flat
Media: Air 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 [x] No

Person Contacted: Date/Time:

Comments/Resolution: Two Tedlars per sample, one remains for V-INT-2

Project Manager Review: JENNY GROSS **Date:** 3/19/15

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 Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

January 28, 2015

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

RE: Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on January 23, 2015. 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

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CERTIFICATIONS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
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 #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
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
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
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
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10294897001	**W-DSCHG**	Water	01/21/15 11:50	01/23/15 09:45
10294897002	**W-OUT-WC1**	Water	01/21/15 11:55	01/23/15 09:45
10294897003	**W-INF-WS1**	Water	01/21/15 12:00	01/23/15 09:45

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10294897001	**W-DSCHG**	NWTPH-Gx	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10294897002	**W-OUT-WC1**	NWTPH-Gx	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10294897003	**W-INF-WS1**	NWTPH-Gx	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

Sample: W-DSCHG **Lab ID: 10294897001** Collected: 01/21/15 11:50 Received: 01/23/15 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		01/27/15 02:34		
Surrogates								
a,a,a-Trifluorotoluene (S)	87	%.	50-150	1		01/27/15 02:34	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		01/25/15 13:55	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		01/25/15 13:55	100-41-4	
Toluene	ND	ug/L	1.0	1		01/25/15 13:55	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		01/25/15 13:55	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	1		01/25/15 13:55	17060-07-0	
Toluene-d8 (S)	103	%.	75-125	1		01/25/15 13:55	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	75-125	1		01/25/15 13:55	460-00-4	

Sample: W-OUT-WC1 **Lab ID: 10294897002** Collected: 01/21/15 11:55 Received: 01/23/15 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		01/27/15 02:55		
Surrogates								
a,a,a-Trifluorotoluene (S)	88	%.	50-150	1		01/27/15 02:55	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		01/25/15 14:12	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		01/25/15 14:12	100-41-4	
Toluene	ND	ug/L	1.0	1		01/25/15 14:12	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		01/25/15 14:12	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	1		01/25/15 14:12	17060-07-0	
Toluene-d8 (S)	104	%.	75-125	1		01/25/15 14:12	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		01/25/15 14:12	460-00-4	

Sample: W-INF-WS1 **Lab ID: 10294897003** Collected: 01/21/15 12:00 Received: 01/23/15 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	**827**	ug/L	100	1		01/27/15 03:15		
Surrogates								
a,a,a-Trifluorotoluene (S)	89	%.	50-150	1		01/27/15 03:15	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	**10.2**	ug/L	1.0	1		01/25/15 14:28	71-43-2	
Ethylbenzene	**11.4**	ug/L	1.0	1		01/25/15 14:28	100-41-4	

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

Sample: W-INF-WS1 **Lab ID: 10294897003** Collected: 01/21/15 12:00 Received: 01/23/15 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260							
Toluene	**82.1**	ug/L	1.0	1		01/25/15 14:28	108-88-3	
Xylene (Total)	**86.2**	ug/L	3.0	1		01/25/15 14:28	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%.	75-125	1		01/25/15 14:28	17060-07-0	
Toluene-d8 (S)	103	%.	75-125	1		01/25/15 14:28	2037-26-5	
4-Bromofluorobenzene (S)	106	%.	75-125	1		01/25/15 14:28	460-00-4	

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

QC Batch: GCV/13263 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10294897001, 10294897002, 10294897003

METHOD BLANK: 1888116 Matrix: Water
Associated Lab Samples: 10294897001, 10294897002, 10294897003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	01/27/15 01:54	
a,a,a-Trifluorotoluene (S)	%.	90	50-150	01/27/15 01:54	

LABORATORY CONTROL SAMPLE & LCSD: 1888118 1888119

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	1040	1010	104	101	65-125	3	20	
a,a,a-Trifluorotoluene (S)	%.				94	91	50-150			

MATRIX SPIKE SAMPLE: 1889758

Parameter	Units	10294628004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
TPH as Gas	ug/L	207	1000	1140	93	50-150	
a,a,a-Trifluorotoluene (S)	%.				87	50-150	

SAMPLE DUPLICATE: 1889757

Parameter	Units	10294628003 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	5650	5660	0	30	
a,a,a-Trifluorotoluene (S)	%.	93	99	7		

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

QC Batch: MSV/30216 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10294897001, 10294897002, 10294897003

METHOD BLANK: 1887831 Matrix: Water
Associated Lab Samples: 10294897001, 10294897002, 10294897003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	01/25/15 12:49	
Ethylbenzene	ug/L	ND	1.0	01/25/15 12:49	
Toluene	ug/L	ND	1.0	01/25/15 12:49	
Xylene (Total)	ug/L	ND	3.0	01/25/15 12:49	
1,2-Dichloroethane-d4 (S)	%.	99	75-125	01/25/15 12:49	
4-Bromofluorobenzene (S)	%.	102	75-125	01/25/15 12:49	
Toluene-d8 (S)	%.	102	75-125	01/25/15 12:49	

LABORATORY CONTROL SAMPLE: 1887832

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	20.2	101	42-143	
Ethylbenzene	ug/L	20	18.2	91	75-125	
Toluene	ug/L	20	18.5	92	74-125	
Xylene (Total)	ug/L	60	57.8	96	75-125	
1,2-Dichloroethane-d4 (S)	%.			102	75-125	
4-Bromofluorobenzene (S)	%.			103	75-125	
Toluene-d8 (S)	%.			103	75-125	

MATRIX SPIKE SAMPLE: 1888143

Parameter	Units	10294897001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	ND	20	23.3	117	30-150	
Ethylbenzene	ug/L	ND	20	20.9	105	55-139	
Toluene	ug/L	ND	20	21.4	107	52-148	
Xylene (Total)	ug/L	ND	60	65.0	108	54-144	
1,2-Dichloroethane-d4 (S)	%.				98	75-125	
4-Bromofluorobenzene (S)	%.				102	75-125	
Toluene-d8 (S)	%.				105	75-125	

SAMPLE DUPLICATE: 1888144

Parameter	Units	10294897002 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	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

SAMPLE DUPLICATE: 1888144

Parameter	Units	10294897002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane-d4 (S)	%.	101	104	3		
4-Bromofluorobenzene (S)	%.	103	105	1		
Toluene-d8 (S)	%.	104	103	1		

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QUALIFIERS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

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.

PQL - Practical Quantitation 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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10294897

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10294897001	**W-DSCHG**	NWTPH-Gx	GCV/13263		
10294897002	**W-OUT-WC1**	NWTPH-Gx	GCV/13263		
10294897003	**W-INF-WS1**	NWTPH-Gx	GCV/13263		
10294897001	**W-DSCHG**	EPA 8260	MSV/30216		
10294897002	**W-OUT-WC1**	EPA 8260	MSV/30216		
10294897003	**W-INF-WS1**	EPA 8260	MSV/30216		

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Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

10254897

Page : 1 Of 1

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 #:	31955 # 3

Regulatory Agency: KCW

State / Location: WA

Requested Analysis Filtered (Y/N)

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 Y/N	TPH-Gx & BTEX by 8260B	FOG Analysis by 1664	Residual Chlorine (Y/N)	
1	W-DSCHG	WT	G	01/21/15	11:50				3				X						X			DUP
2	W-OUT-WC1	WT	G	01/21/15	11:55				3				X						X			DUP
3	W-INF-WS1	WT	G	01/21/15	12:00				3				X						X			DUP
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
				PACE	1-22-15	1430	2.3	Y	N	Y
	Jenni Gross / Pace	1/22/15	15:00	PACE	1-23-15	945	2.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Edward Bumacci

SIGNATURE of SAMPLER: DATE Signed: 1/21/2015

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

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Cardno ATC

Project #: WO#: 10294897

10294897

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 6779 5332 9011

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: ☑ B88A9130516413 ☐ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on Ice, cooling process has begun

Cooler Temp Read (°C): 2.1 **Cooler Temp Corrected (°C):** 2.3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A
Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** 1-23-15 MM

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?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation have been checked?	☐ 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 >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☐ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☑ Yes	☐ No		Initial when completed: 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):				

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

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: ENM/GLOSS **Date:** 01/23/15

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 Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

March 13, 2015

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

RE: Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on February 27, 2015. 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

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CERTIFICATIONS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
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 #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
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
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
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
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10298090001	**W-DSCHG**	Water	02/25/15 09:10	02/27/15 09:55
10298090002	**W-OUT-WC1**	Water	02/25/15 09:15	02/27/15 09:55
10298090003	**W-INF-WS1**	Water	02/25/15 09:20	02/27/15 09:55

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SAMPLE ANALYTE COUNT

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10298090001	**W-DSCHG**	NWTPH-Gx	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10298090002	**W-OUT-WC1**	NWTPH-Gx	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10298090003	**W-INF-WS1**	NWTPH-Gx	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

Sample: W-DSCHG **Lab ID: 10298090001** Collected: 02/25/15 09:10 Received: 02/27/15 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/05/15 20:32		
Surrogates								
a,a,a-Trifluorotoluene (S)	89	%.	50-150	1		03/05/15 20:32	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/04/15 06:16	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/04/15 06:16	100-41-4	
Toluene	ND	ug/L	1.0	1		03/04/15 06:16	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/04/15 06:16	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		03/04/15 06:16	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		03/04/15 06:16	2037-26-5	
4-Bromofluorobenzene (S)	106	%.	75-125	1		03/04/15 06:16	460-00-4	

Sample: W-OUT-WC1 **Lab ID: 10298090002** Collected: 02/25/15 09:15 Received: 02/27/15 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/05/15 20:53		
Surrogates								
a,a,a-Trifluorotoluene (S)	89	%.	50-150	1		03/05/15 20:53	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/04/15 06:31	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/04/15 06:31	100-41-4	
Toluene	ND	ug/L	1.0	1		03/04/15 06:31	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/04/15 06:31	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	98	%.	75-125	1		03/04/15 06:31	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		03/04/15 06:31	2037-26-5	
4-Bromofluorobenzene (S)	108	%.	75-125	1		03/04/15 06:31	460-00-4	

Sample: W-INF-WS1 **Lab ID: 10298090003** Collected: 02/25/15 09:20 Received: 02/27/15 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/05/15 21:13		
Surrogates								
a,a,a-Trifluorotoluene (S)	87	%.	50-150	1		03/05/15 21:13	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/04/15 06:46	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/04/15 06:46	100-41-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

Sample: W-INF-WS1 **Lab ID: 10298090003** Collected: 02/25/15 09:20 Received: 02/27/15 09:55 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		03/04/15 06:46	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/04/15 06:46	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		03/04/15 06:46	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		03/04/15 06:46	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	75-125	1		03/04/15 06:46	460-00-4	

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

QC Batch: GCV/13418 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10298090001, 10298090002, 10298090003

METHOD BLANK: 1910690 Matrix: Water
Associated Lab Samples: 10298090001, 10298090002, 10298090003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	03/05/15 11:26	
a,a,a-Trifluorotoluene (S)	%.	90	50-150	03/05/15 11:26	

METHOD BLANK: 1910691 Matrix: Water
Associated Lab Samples: 10298090001, 10298090002, 10298090003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	03/05/15 15:08	
a,a,a-Trifluorotoluene (S)	%.	88	50-150	03/05/15 15:08	

LABORATORY CONTROL SAMPLE & LCSD: 1910692 1910693

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	1070	999	107	100	65-125	6	20	
a,a,a-Trifluorotoluene (S)	%.				95	84	50-150			

MATRIX SPIKE SAMPLE: 1911697

Parameter	Units	10297771002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
TPH as Gas	ug/L	9050	20000	29300	101	50-150	
a,a,a-Trifluorotoluene (S)	%.				98	50-150	

SAMPLE DUPLICATE: 1911698

Parameter	Units	10297771003 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	6780	6670	2	30	
a,a,a-Trifluorotoluene (S)	%.	89	90	1		

SAMPLE DUPLICATE: 1911699

Parameter	Units	10297771004 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	27300	25000	9	30	
a,a,a-Trifluorotoluene (S)	%.	90	88	2		

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

QC Batch: MSV/30634 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10298090001, 10298090002, 10298090003

METHOD BLANK: 1910258 Matrix: Water
Associated Lab Samples: 10298090001, 10298090002, 10298090003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	03/04/15 05:03	
Ethylbenzene	ug/L	ND	1.0	03/04/15 05:03	
Toluene	ug/L	ND	1.0	03/04/15 05:03	
Xylene (Total)	ug/L	ND	3.0	03/04/15 05:03	
1,2-Dichloroethane-d4 (S)	%.	97	75-125	03/04/15 05:03	
4-Bromofluorobenzene (S)	%.	106	75-125	03/04/15 05:03	
Toluene-d8 (S)	%.	99	75-125	03/04/15 05:03	

LABORATORY CONTROL SAMPLE: 1910259

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	22.5	113	42-143	
Ethylbenzene	ug/L	20	20.5	102	75-125	
Toluene	ug/L	20	22.6	113	74-125	
Xylene (Total)	ug/L	60	66.3	110	75-125	
1,2-Dichloroethane-d4 (S)	%.			99	75-125	
4-Bromofluorobenzene (S)	%.			102	75-125	
Toluene-d8 (S)	%.			99	75-125	

MATRIX SPIKE SAMPLE: 1911388

Parameter	Units	10297995001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	ND	20	21.2	106	30-150	
Ethylbenzene	ug/L	ND	20	19.1	95	55-139	
Toluene	ug/L	ND	20	20.8	104	52-148	
Xylene (Total)	ug/L	ND	60	61.6	103	54-144	
1,2-Dichloroethane-d4 (S)	%.				101	75-125	
4-Bromofluorobenzene (S)	%.				104	75-125	
Toluene-d8 (S)	%.				99	75-125	

SAMPLE DUPLICATE: 1911389

Parameter	Units	10297995002 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	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

SAMPLE DUPLICATE: 1911389

Parameter	Units	10297995002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane-d4 (S)	%.	103	102	1		
4-Bromofluorobenzene (S)	%.	109	109	0		
Toluene-d8 (S)	%.	100	98	2		

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QUALIFIERS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

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.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10298090

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10298090001	**W-DSCHG**	NWTPH-Gx	GCV/13418		
10298090002	**W-OUT-WC1**	NWTPH-Gx	GCV/13418		
10298090003	**W-INF-WS1**	NWTPH-Gx	GCV/13418		
10298090001	**W-DSCHG**	EPA 8260	MSV/30634		
10298090002	**W-OUT-WC1**	EPA 8260	MSV/30634		
10298090003	**W-INF-WS1**	EPA 8260	MSV/30634		

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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

02980910

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 #:	33332 #1

Regulatory Agency: KCIW

State / Location: WA

Requested Analysis Filtered (Y/N)

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 Y/N	TPH-Gx & BTEX by 8260B	FOG Analysis by 1664	Residual Chlorine (Y/N)	
1	W-DSCHG	WT	G	02/25/15	9:10				3				X						X			001
2	W-OUT-WC1	WT	G	02/25/15	9:15				3				X						X			002
3	W-INF-WS1	WT	G	02/25/15	9:20				3				X						X			003
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

MATRIX CODE: 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: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
				PACE	2-25-15	1430	1.5	Y	N	Y
				Alyssa Pulu	2/27/15	955	3.3	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Michael Miller

SIGNATURE of SAMPLER: MJM DATE Signed: 2/25/2015

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Cardno ATC

Project #: WO#: 10298090

10298090

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

Tracking Number: 5779 5333 0736

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: ☐B88A9130516413 ☒B88A912167504 ☐B88A9132521491 **Type of Ice:** ☒Wet ☐Blue ☐None ☐Samples on ice, cooling process has begun

Cooler Temp Read (°C): 3.3 **Cooler Temp Corrected (°C):** 3.4 **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.1 **Date and Initials of Person Examining Contents:** AMP 2-27-15

				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?	☐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 >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☒N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐Yes	☒No		Initial when completed:_____ 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):_____				

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

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 3/3/15

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

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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March 31, 2015

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

RE: Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on March 19, 2015. 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

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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
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 #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
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
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
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
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10300059001	**W-DSCHG**	Water	03/18/15 13:30	03/19/15 09:30
10300059002	**W-OUT-WC1**	Water	03/18/15 13:35	03/19/15 09:30
10300059003	**W-INF-WS1**	Water	03/18/15 13:40	03/19/15 09:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10300059001	**W-DSCHG**	NWTPH-Gx	LLC	2	PASI-M
		EPA 8260	DJB	7	PASI-M
10300059002	**W-OUT-WC1**	NWTPH-Gx	LLC	2	PASI-M
		EPA 8260	DJB	7	PASI-M
10300059003	**W-INF-WS1**	NWTPH-Gx	LLC	2	PASI-M
		EPA 8260	DJB	7	PASI-M

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

Sample: W-DSCHG **Lab ID: 10300059001** Collected: 03/18/15 13:30 Received: 03/19/15 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/30/15 14:23		
Surrogates								
a,a,a-Trifluorotoluene (S)	96	%.	50-150	1		03/30/15 14:23	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/24/15 23:02	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/24/15 23:02	100-41-4	
Toluene	ND	ug/L	1.0	1		03/24/15 23:02	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/24/15 23:02	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1		03/24/15 23:02	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		03/24/15 23:02	2037-26-5	
4-Bromofluorobenzene (S)	106	%.	75-125	1		03/24/15 23:02	460-00-4	

Sample: W-OUT-WC1 **Lab ID: 10300059002** Collected: 03/18/15 13:35 Received: 03/19/15 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/30/15 14:02		
Surrogates								
a,a,a-Trifluorotoluene (S)	97	%.	50-150	1		03/30/15 14:02	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/24/15 23:18	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/24/15 23:18	100-41-4	
Toluene	ND	ug/L	1.0	1		03/24/15 23:18	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/24/15 23:18	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%.	75-125	1		03/24/15 23:18	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		03/24/15 23:18	2037-26-5	
4-Bromofluorobenzene (S)	108	%.	75-125	1		03/24/15 23:18	460-00-4	

Sample: W-INF-WS1 **Lab ID: 10300059003** Collected: 03/18/15 13:40 Received: 03/19/15 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx							
TPH as Gas	ND	ug/L	100	1		03/30/15 17:52		
Surrogates								
a,a,a-Trifluorotoluene (S)	98	%.	50-150	1		03/30/15 17:52	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/24/15 23:35	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/24/15 23:35	100-41-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

Sample: W-INF-WS1 **Lab ID: 10300059003** Collected: 03/18/15 13:40 Received: 03/19/15 09:30 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		03/24/15 23:35	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/24/15 23:35	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	97	%.	75-125	1		03/24/15 23:35	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		03/24/15 23:35	2037-26-5	
4-Bromofluorobenzene (S)	107	%.	75-125	1		03/24/15 23:35	460-00-4	

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

QC Batch: GCV/13536 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10300059001, 10300059002

METHOD BLANK: 1926775 Matrix: Water
Associated Lab Samples: 10300059001, 10300059002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	03/30/15 05:29	
a,a,a-Trifluorotoluene (S)	%.	97	50-150	03/30/15 05:29	

METHOD BLANK: 1926776 Matrix: Water
Associated Lab Samples: 10300059001, 10300059002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	03/30/15 09:14	
a,a,a-Trifluorotoluene (S)	%.	95	50-150	03/30/15 09:14	

LABORATORY CONTROL SAMPLE & LCSD: 1926777 1926778

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	1020	935	102	93	65-125	9	20	
a,a,a-Trifluorotoluene (S)	%.				103	98	50-150			

MATRIX SPIKE SAMPLE: 1928685

Parameter	Units	10300053006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
TPH as Gas	ug/L	ND	1000	980	98	50-150	
a,a,a-Trifluorotoluene (S)	%.				95	50-150	

SAMPLE DUPLICATE: 1928686

Parameter	Units	10300053007 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	ND	ND		30	
a,a,a-Trifluorotoluene (S)	%.	94	96	2		

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

QC Batch: GCV/13547 Analysis Method: NWTPH-Gx
QC Batch Method: NWTPH-Gx Analysis Description: NWTPH-Gx Water
Associated Lab Samples: 10300059003

METHOD BLANK: 1928194 Matrix: Water
Associated Lab Samples: 10300059003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	03/30/15 16:49	
a,a,a-Trifluorotoluene (S)	%.	93	50-150	03/30/15 16:49	

METHOD BLANK: 1928197 Matrix: Water
Associated Lab Samples: 10300059003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	03/30/15 20:40	
a,a,a-Trifluorotoluene (S)	%.	99	50-150	03/30/15 20:40	

LABORATORY CONTROL SAMPLE & LCSD: 1928195 1928196

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	1040	939	104	94	65-125	10	20	
a,a,a-Trifluorotoluene (S)	%.				104	92	50-150			

MATRIX SPIKE SAMPLE: 1928642

Parameter	Units	10300053001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
TPH as Gas	ug/L	222000	500000	729000	101	50-150	
a,a,a-Trifluorotoluene (S)	%.				111	50-150	

SAMPLE DUPLICATE: 1928643

Parameter	Units	10300053002 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	47900	45900	4	30	
a,a,a-Trifluorotoluene (S)	%.	106	104	2		

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

QC Batch: MSV/30869 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10300059001, 10300059002, 10300059003

METHOD BLANK: 1924201 Matrix: Water
Associated Lab Samples: 10300059001, 10300059002, 10300059003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	03/24/15 18:42	
Ethylbenzene	ug/L	ND	1.0	03/24/15 18:42	
Toluene	ug/L	ND	1.0	03/24/15 18:42	
Xylene (Total)	ug/L	ND	3.0	03/24/15 18:42	
1,2-Dichloroethane-d4 (S)	%.	95	75-125	03/24/15 18:42	
4-Bromofluorobenzene (S)	%.	106	75-125	03/24/15 18:42	
Toluene-d8 (S)	%.	103	75-125	03/24/15 18:42	

LABORATORY CONTROL SAMPLE: 1924202

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	18.4	92	71-125	
Ethylbenzene	ug/L	20	19.0	95	75-125	
Toluene	ug/L	20	19.5	97	74-125	
Xylene (Total)	ug/L	60	57.4	96	75-125	
1,2-Dichloroethane-d4 (S)	%.			96	75-125	
4-Bromofluorobenzene (S)	%.			106	75-125	
Toluene-d8 (S)	%.			102	75-125	

MATRIX SPIKE SAMPLE: 1924294

Parameter	Units	10300072001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	5630	20	1120	-22500	53-139	E,M1
Ethylbenzene	ug/L	77.7	20	93.6	79	55-139	
Toluene	ug/L	25.8	20	42.0	81	52-148	
Xylene (Total)	ug/L	20.3	60	71.1	85	54-144	
1,2-Dichloroethane-d4 (S)	%.				96	75-125	
4-Bromofluorobenzene (S)	%.				105	75-125	
Toluene-d8 (S)	%.				102	75-125	

SAMPLE DUPLICATE: 1924295

Parameter	Units	10300072002 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	256	266	4	30	E
Ethylbenzene	ug/L	455	381	18	30	E
Toluene	ug/L	22.9	24.2	6	30	
Xylene (Total)	ug/L	1160	985	16	30	ES

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QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

SAMPLE DUPLICATE: 1924295

Parameter	Units	10300072002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane-d4 (S)	%.	99	95	4		
4-Bromofluorobenzene (S)	%.	101	100	1		
Toluene-d8 (S)	%.	102	103	2		

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QUALIFIERS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

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.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
ES	The reported result is estimated because one or more of the constituent results are qualified as such.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10300059

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10300059001	**W-DSCHG**	NWTPH-Gx	GCV/13536		
10300059002	**W-OUT-WC1**	NWTPH-Gx	GCV/13536		
10300059003	**W-INF-WS1**	NWTPH-Gx	GCV/13547		
10300059001	**W-DSCHG**	EPA 8260	MSV/30869		
10300059002	**W-OUT-WC1**	EPA 8260	MSV/30869		
10300059003	**W-INF-WS1**	EPA 8260	MSV/30869		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

103000 Sg

Page : 1 Of 1

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 #:	

Regulatory Agency: KCW

State / Location: 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	Analysis Test Y/N	Requested Analysis Filtered (Y/N): TPH-Gx & BTEX by 8260B	FOG Analysis by 1664	Residual Chlorine (Y/N)	
1	W-DSCHG	WT	G	03/18/15	13:30				3				X						X				OCN
2	W-OUT-WC1	WT	G	03/18/15	13:35				3				X						X				OCN
3	W-INF-WS1	WT	G	03/18/15	13:40				3				X						X				OCN
4																							
5																							
6																							
7																							
8																							
9																							
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)
				PACE	3/18/15	16:45	1.8	Y	N	Y
	PACE	3/18/15	17:00	Pace	3/19/15	9:30	4.8	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Edward Burnocci

SIGNATURE of SAMPLER: DATE Signed: 3/18/2015

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Cardno ATC

Project #: WO# : 10300059

10300059

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 6779 5333 1618

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: ☑ B88A9130516413 ☐ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☑ Wet ☑ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 4.8 **Cooler Temp Corrected (°C):** 4.8 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** True **Date and Initials of Person Examining Contents:** 3-19-15 MK

				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?	☐ 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 >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☑ Yes	☐ No		Initial when completed: 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):				

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

Person Contacted: **Date/Time:**

Comments/Resolution:

Project Manager Review: JENNIFER ROSS **Date:** 3/20/15

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)

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

Appendix B
PSCAA Permit

PUGET SOUND Clean Air Agency

Construction No. 10816

Registration No. 29548

Date SEP 2 2 2014

HEREBY ISSUES AN ORDER OF APPROVAL TO CONSTRUCT, INSTALL, OR ESTABLISH

Modification of Approval No. 10602 for the following:

1. To allow monitoring breakthrough once every two weeks.

2. To revise the detection threshold for the carbon change out and using isobutylene as the calibration standard.

3. To allow for operating without control when the pollutant concentration in the influent is below level that might cause concern.

APPLICANT

Keith Fox
Cardno ERI
801 2nd Ave, Suite 700
Seattle, WA 98104

OWNER

Former Phillips 66 Facility No. 255353
801 2nd Ave, Suite 700
Seattle, WA 98104

INSTALLATION ADDRESS

Former Phillips 66 Facility No. 255353, 600 Westlake Ave N, Seattle, WA, 98107

THIS ORDER IS ISSUED SUBJECT TO THE FOLLOWING RESTRICTIONS AND CONDITIONS

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Clean Air Agency to the applicant to install or establish the equipment, device or process described hereon at the INSTALLATION ADDRESS in accordance with the plans and specifications on file in the Engineering Division of the Puget Sound Clean Air Agency.

2. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.

3. All vapors from the remediation extraction system shall be vented to the carbon adsorption system for control. The maximum influent flow rate to each carbon adsorption system shall not exceed 500 standard cubic feet per minute (scfm). Cardno ERI shall measure and record the influent flowrate to the carbon adsorption system at least once per month.

4. The control efficiency of the carbon adsorption system shall be maintained at a minimum of 97% for Total Petroleum Hydrocarbon (TPH) when the TPH influent concentration to the carbon adsorption system is greater than or equal to 200 ppmv.

5. Within 30 days after the initial startup of the carbon adsorption system and at least once a month afterward, Cardno ERI shall demonstrate compliance with condition No. 4 of this order in accordance with the following requirements:

a. Determine the concentration of TPH in the gas at the inlet to the carbon adsorption system and the exhaust of the carbon adsorption system using EPA Method 18, or other equivalent method following approval from the Agency.

b. Calculate the control efficiency based on the inlet and exhaust TPH concentrations as determined under condition No. 5.a. to demonstrate compliance.

Cardno ERI shall keep records of each sampling, analysis, calculation results and date they were taken.

6. During operation of the activated carbon vessels, Cardno ERI shall contemporaneously monitor the gas stream with a photo-ionization detector (PID) or flame-ionization detector (FID) to prevent breakthrough at least once every 2 weeks at the following locations:

a. At the inlet to the second to the last carbon vessel in series.

b. At the inlet to the last carbon vessel in series.

7. Cardno ERI shall immediately change out the second to last carbon vessel with unspent carbon upon breakthrough defined as the detection at its outlet of the higher than 10 ppmv.

8. Cardno ERI shall maintain the following information of operation of the activated carbon vessels:

a. Hours and time of operation.

b. The analysis or monitoring results for the day of operation they were taken.

c. The date change out occurred and the number of carbon vessel(s) changed.

9. The activated carbon monitoring schedule as required by condition No. 6 of this order may be changed based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels following approval from the Agency.

10. Cardno ERI shall report any non-compliance with Condition No 4 of this Order to the Agency no later than 30 days in which it is first discovered. Cardno ERI shall detail the corrective action taken and include the data showing the exceedance as well as the time of occurrence in the submittal.

11. Cardno ERI may operate the soil vapor extraction system without the control when the sampling data from two or more consecutive months shows that:

a. The pre-control TPH emission rate is equal to or less than 2.74 lbs/day; AND

b. The pre-control benzene emission rate is equal to or less than 0.018 lb/day.

Cardno shall notify PSCAA and obtain approval prior to removing the control system. The notice shall be in writing and include the most recent two months monitoring data and emission rate estimation for TPH and benzene.

12. Records to be maintained by this Order of Approval shall be kept for at least two years from the date of generation, and made available to Puget Sound Clean Air Agency personnel upon request.

13. This Order of Approval will cancel and supersede Order of Approval No.10602 issued 9/20/2013.

APPEAL RIGHTS

Pursuant to Puget Sound Clean Air Agency's Regulation I, Section 3.17 and RCW 43.21B.310, this Order may be appealed to the Pollution Control Hearings Board (PCHB). To appeal to the PCHB, a written notice of appeal must be filed with the PCHB and a copy served upon Puget Sound Clean Air Agency within 30 days of the date the applicant receives this Order.

SEP 2 2 2014

MengChiu Lim
Reviewing Engineer

ns

Carole Cenci PE
Carole Cenci
Senior Engineer

WARNING:

Regulation I, Section 6.09, requires that the owner or applicant notify the Agency of the completion of the work covered by the application and when its operation will begin. This form is provided for your convenience to assist you in complying with this part of the Regulation.

APPLICANT or OWNER SECTION

Mail to: Puget Sound Clean Air Agency
Compliance Division
1904 3rd Ave, Ste 105
Seattle, WA 98101-3317

The project described below was completed on _____.

_____	_____	_____-_____	_____
Signature of Owner and/or Applicant	Title	Phone	Date

FOR AGENCY USE ONLY

Notice of Construction No. **10816**
Registration No. **29548**

Project Description

Modification of Approval No. 10602 for the following:

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2. To revise the detection threshold for the carbon change out and using isobutylene as the calibration standard.

3. To allow for operating without control when the pollutant concentration in the influent is below level that might cause concern.

[X] Conditions on Reverse Side

Applicant

Keith Fox
Cardno ERI
801 2nd Ave, Suite 700
Seattle, WA, 98104

Owner

Former Phillips 66 Facility No. 255353
801 2nd Ave, Suite 700
Seattle, WA, 98104

Location

Former Phillips 66 Facility No. 255353, 600 Westlake Ave N, Seattle, WA, 98107

☐ Inspector Check ☐ Engineer **MCL** and Inspector check.

Follow up _____ (Estimated completion date plus 7)

Date Inspected _____ Inspector _____

Remarks _____

_____

_____

_____

CONDITIONS

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