

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

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 917 1st Avenue North, Suite 3 Billings, Montana 59101

Cardno ATC Job No. Z076000073

April 17, 2015

: on behalf of Keith Fox

Senior Project Engineer

Kyle Sattle Senior Project Manager

Cardno' ATC Shaning the Future

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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, UTIL	LITIES, & PERMITS						
Remediation Equipment:		SVE: Two Sutorbilt 10-HP blowers. AS HP compressor.	: One Rietschle 10				
Utilities In Use:		Electrical Service, Seattle City Light, M	leter # 849179				
PSCAA Permit:		Registration No. 29548					
KCIW Permit:		Discharge Authorization No. 4262-01	i Trink za mili stij				
SVE SYSTEM OPERATIONAL	DATA						
Mercer-Westlake (Blower #B-701		Terry-Valley (Blower #B-801)	en la sue degen				
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 RATE	S						
TPHg Removed This Period:	Hard Street Barrier Barrier	21 pounds					
TPHg Removal Rate This Period:		0.013 pounds per hour, average for the	e period				
TPHg Removal Rate Previous Per	iod:	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. 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	Sample		*THCg (ppmv)					
Location	Date	THCg	Benzene	Toluene	(/m3) Ethylbenzene	m&p Xylenes	o- Xylenes	
V1 Influent		77,100	ND<12.6	121	86	411	81.8	18.3
V1 Intermediate	01/27/14	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		158,000	84	598	1,370	9,450	2,150.0	37.4
V1 Intermediate	02/19/14	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		181,000	227	2,380	3,110	21,000	9,420.0	42.9
V1 Intermediate	03/10/14	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		156,000	119	2,050	1,430	9,170	3,630.0	36.9
V1 Intermediate	04/16/14	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		107,000	28	483	745	7,240	2,720.0	25.3
V1 Intermediate	05/08/14	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		55,200	ND<76	309	277	5,840	2,280	13.1
V1 Intermediate	06/25/14	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		131,000	ND<58.4	235.0	253	5,360	2,460	31.0
V1 Intermediate	07/09/14	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		33,900	ND<37.6	127	ND<102	1,560	701	8.0
V1 Intermediate	08/05/14	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		20,500	ND<10.9	51.5	ND<78.6	3,730	1,720	4.9
V1 Intermediate	09/04/14	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		16,500	ND<13.1	ND<31.1	ND<35.6	372	246	3.9
V1 Intermediate	10/16/14	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		ND<1640	ND<8.7	ND<48.3	ND<55.6	ND<119	63.1	NC
V1 Intermediate	11/11/14	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		6,930	ND<6.0	14.8	ND<16.1	ND<32.3	ND<16.1	1.6
V1 Intermediate	12/10/14	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		ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V1 Intermediate	01/20/15	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		ND<1750	ND<9.4	ND<22.2	ND<25.3	ND<50.7	ND<25.3	NC
V1 Intermediate	02/25/15	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		1,970	ND<6.1	23.1	ND<82.5	44.4	ND<82.5	0.5
V1 Intermediate	03/18/15	3,310	19.4	342	ND<74.2	ND<29.6	ND<74.2	0.8
V1 Effluent	1	2,720	ND<3.3	10.2	ND<44.7	ND<17.8	ND<44.7	0.6
		PSCA	A Threshold Co	ncentration *				200

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Sample Location	Sample Date		*THCg (ppmv					
Location	Date	THCg	THCg Benzene Toluene Ethylbenzene M&p Xylenes		o- Xylenes	-		
V2 Influent		179,000	ND<13.1	750	1,110	5,390	1,530	42.4
V2 Intermediate	01/27/14	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		153,000	88	432	1,030	4,540	1,600	36.2
V2 Intermediate	02/19/14	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		219,000	214	2,230	2,910	19,000	5,800	51.9
V2 Intermediate	03/10/14	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		162,000	85	1,420	988	5,510	2,530	38.4
V2 Intermediate	04/16/14	ND<1220	ND<6.5	22.9	ND<17.6	ND<35.2	ND<17.6	NC
V2 Effluent	1	ND<1220	ND<6.5	30.3	ND<17.6	ND<35.2	ND<17.6	NC
V2 Influent		103,000	ND<16.2	435	711	8,340	2,660.0	24.4
V2 Intermediate	05/08/14	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		23,200	ND<73.4	ND<174	ND<199	2,820	1,070	5.5
V2 Intermediate	06/25/14	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		46,000	ND<56.5	154	146	3,040	1,290	10.9
V2 Intermediate	07/09/14	ND<3520	ND<37.6	ND<44.6	ND<51.0	ND<102	ND<51.0	NC
V2 Effluent	07/09/14	6,900	ND<18.8	28.0	ND<25.5	ND<102	ND<25.5	1.6
V2 Influent		39,300	ND<22.0	83.7	ND<59.5	1,230	571	9.3
V2 Intermediate	08/05/14	ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<76.8	NC
V2 Effluent	00/03/14	10,600	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<79.5	2.5
V2 Influent		19,500	ND<10.9	39.3	ND<78.6	1,780	910	4.6
V2 Intermediate	09/04/14	ND<2040	ND<10.9	ND<25.9	ND<78.6	1,780 ND<59.1	ND<29.6	NC
V2 Effluent	0)/04/14	ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V2 Influent		67,800	ND<13.1	ND<31.1	ND<35.6	238	171	16.1
V2 Infuent V2 Intermediate	10/16/14	ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V2 Effluent	10/10/14	7,860	ND<9.4	ND<22.3	ND<25.5	ND<01.2	ND<30.0	1.9
V2 Influent		7,800 ND<1640	ND<9.4 8.2	ND<22.3 ND<48.3	ND<55.6	ND<31.0	58.0	NC
	11/11/14	ND<2060	0.2 ND<11.0	ND<48.3	ND<74.6	ND<149	ND<74.6	NC
V2 Intermediate	11/11/14	ND<2060	ND<11.0	ND<64.7			ND<74.6	NC
V2 Effluent					ND<74.6	ND<149 ND<39.5		
V2 Influent	12/10/14	6,210	ND<7.3	ND<17.3	ND<19.8		ND<19.8	1.5
V2 Intermediate	12/10/14	5,950	ND<11.0	ND<26.0 ND<26.0	ND<29.7	ND<59.5	ND<29.7	0.7
V2 Effluent		3,140	ND<11.0		ND<29.7	ND<59.5	ND<29.7	
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	01/20/15	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	02/25/15	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	02/10/17	2,300	ND<5.8	ND<13.9	ND<79.5	39.7	ND<79.5	0.5
V2 Intermediate	03/18/15	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

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

Sample	Sample		*THCg (ppmv)					
Location	Date	THCg	Benzene	Toluene	Ethylbenzene	m&p Xylenes	o- Xylenes	
V3 Influent		261,000	184	1,680	2,440	9,530	3,590	61.8
V3 Intermediate	01/27/14	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		165,000	85	456	1,070	4,550	1,650	39.1
V3 Intermediate	02/19/14	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		209,000	204	2,110	2,830	18,400	5,550	49.5
V3 Intermediate	03/10/14	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		167,000	78	1,320	882	6,860	2,290	39.5
V3 Intermediate	04/16/14	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		134,000	33	641	1,060	11,600	3,690.0	31.7
V3 Intermediate	05/08/14	9,300	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	2.2
V3 Effluent	1	3,970	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	0.9
V3 Influent		ND<28400	ND<152	ND<360	ND<412	3,140	1,130	NC
V3 Intermediate	06/25/14	19,100	24.5	188	130	944	207	4.5
V3 Effluent	00/25/11	ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V3 Influent		83,400	ND<56.5	172	180	3,440	1,540	19.7
V3 Intermediate	07/09/14	ND<2120	ND<22.6	27.9	ND<30.6	ND<61.2	ND<30.6	NC
V3 Effluent	0//0//14	3,540	ND<18.8	27.9	ND<25.5	ND<01.2	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<22.0	ND<31.1	ND<35.6	ND<71.1	ND<89.2	NC 8.5
	08/03/14	5,840	ND<11.3	ND<31.1 ND<26.8		ND<71.1	ND<89.2 ND<76.8	1.4
V3 Effluent V3 Influent		4,850	ND<10.9	ND<25.9	ND<30.6 ND<78.6		640	1.4
	09/04/14					1,460		1.1 NC
V3 Intermediate	09/04/14	ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	
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	10/16/14	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	11/11/14	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	10/10/14	6,140	ND<9.4	ND<22.3	ND<25.5	ND<51.0	ND<25.5	1.5
V3 Intermediate	12/10/14	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	01/00/17	12,100	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<31.7	2.9
V3 Intermediate	01/20/15	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		3,340	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<31.7	0.8
V3 Intermediate	02/25/15	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	_	2,290	ND<5.7	14.8	ND<76.8	38.3	ND<76.8	0.5
V3 Intermediate	03/18/15	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

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 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/m³) /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		2,250	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-DSCHG W-INT	01/27/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-INF	01/2//11	ND (<100)	ND (<1.0)	1.5	ND (<1.0)	8.6					
W-DSCHG		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	02/20/14	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	03/10/14	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	1	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	04/16/14	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	05/08/14	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	06/25/14	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	07/09/14	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	08/13/14	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		*	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	09/04/14	*	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	10/16/14	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	11/11/14	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	12/10/14	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	01/21/15	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	02/25/15	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		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)					
W-OUT-WC1	03/18/15	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 F	Permit Limit	ts	70	1,400	1,700	2,200					

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 Acronym List Figure I – Site Layout Diagram Figure 2 – Remediation System Layout Table 3. Remediation System Operational Data Summary Cumulative TPHg and BTEX Removal Graph Table 4. SVE PID Data Summary Table 5. AS Flow Data Summary O&M Log Field Notes Appendix A - Laboratory Analytical Reports and Chain of Custody Documents Appendix B – PSCAA Permit



Acronym List

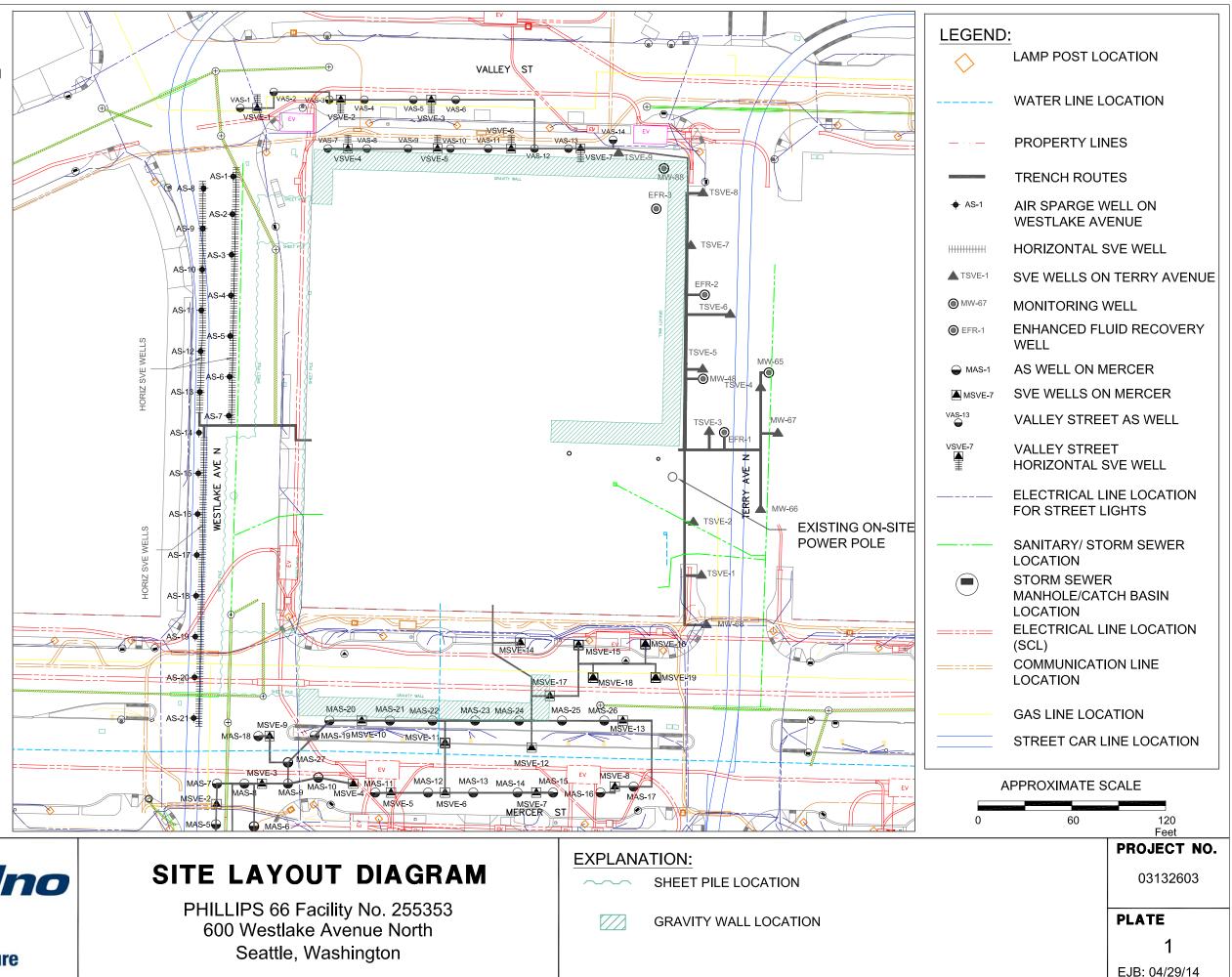
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µg/L	Micrograms per liter	NAI	Natural attenuation indicators
μs	Microsiemens	NAPL	Non-aqueous phase liquid
1,2-DCA	1.2-dichloroethane	NEPA	National Environmental Policy Act
	,		
acfm	Actual cubic feet per minute	NGVD	National Geodetic Vertical Datum
AS	Air sparge	NPDES	National Pollutant Discharge Elimination
			System
bgs	Below ground surface	O&M	Operations and Maintenance
BTEX	Benzene, toluene, ethylbenzene, and total	ORP	Oxidation-reduction potential
DILA		ON	Oxidation reduction potential
	xylenes	00114	
cfm	Cubic feet per minute	OSHA	Occupational Safety and Health
			Administration
COC	Chain of Custody	OVA	Organic vapor analyzer
CPT	Cone Penetration (Penetrometer) Test	P&ID	Process & Instrumentation Diagram
DIPE	Di-isopropyl ether	PAH	Polycyclic aromatic hydrocarbon
DO		PCB	
	Dissolved oxygen	-	Polychlorinated biphenyl
DOT	Department of Transportation	PCE	Tetrachloroethene or perchloroethylene
DPE	Dual-phase extraction	PID	Photo-ionization detector
DTW	Depth to water	PLC	Programmable logic control
EDB	1,2-dibromoethane	POTW	Publicly owned treatment works
EPA	Environmental Protection Agency	ppmv	Parts per million by volume
ESL	Environmental screening level	PQL	Practical quantitation limit
-			
ETBE	Ethyl tertiary butyl ether	PSCAA	Puget Sound Clean Air Agency
FID	Flame-ionization detector	psi	Pounds per square inch
fpm	Feet per minute	PVC	Polyvinyl chloride
ĠAC	Granular activated carbon	QA/QC	Quality assurance/quality control
gpd	Gallons per day	RBSL	Risk-based screening levels
	Gallons per minute	RCRA	Resource Conservation and Recovery Act
gpm		-	
GWPTS	Groundwater pump and treat system	RL	Reporting limit
HVOC	Halogenated volatile organic compound	scfm	Standard cubic feet per minute
J	Estimated value between MDL and PQL	SSTL	Site-specific target level
	(RL)		
KCIW	King County Industrial Waste	STLC	Soluble threshold limit concentration
LEL	Lower explosive limit	SVE	Soil vapor extraction
LPC	Liquid-phase carbon	SVOC	Semivolatile organic compound
LRP	Liquid-ring pump	TAME	Tertiary amyl methyl ether
LUFT	Leaking underground fuel tank	TBA	Tertiary butyl alcohol
LUST	Leaking underground storage tank	TCE	Trichloroethene
MCL	Maximum contaminant level	THCg	Total hydrocarbons as gasoline
MDL	Method detection limit	тос	Top of well casing elevation; datum is msl
mg/kg	Milligrams per kilogram	TOG	Total oil and grease
mg/L	Milligrams per liter	TPHd	Total petroleum hydrocarbons as diesel
mg/m ³	Milligrams per cubic meter	TPHg	Total petroleum hydrocarbons as gasoline
MPE	Multi-phase extraction	TPHmo	Total petroleum hydrocarbons as motor oil
MRL	Method reporting limit	TPHs	Total petroleum hydrocarbons as stoddard
	1 0		solvent
msl	Mean sea level	TRPH	Total recoverable petroleum hydrocarbons
MTBE		UCL	Upper confidence level
	Methyl tertiary butyl ether		
MTCA	Model Toxics Control Act	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
			vapor-priase carbon

NOTES:

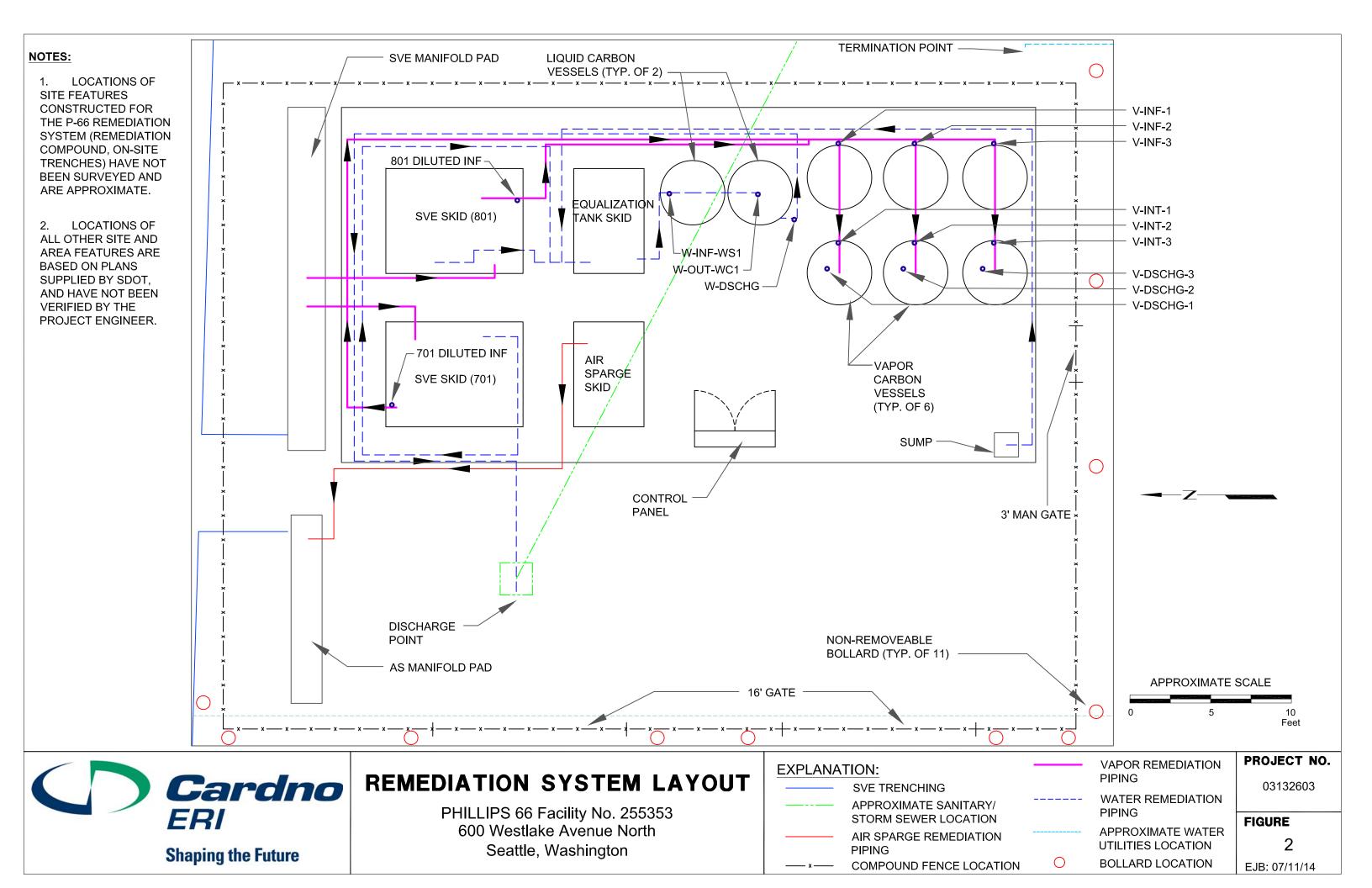
1. LOCATIONS OF SITE FEATURES CONSTRUCTED FOR THE P-66 REMEDIATION SYSTEM (REMEDIATION COMPOUND, **ON-SITE TRENCHES, TERRY AVE. TRENCH** EXTENSION) HAVE NOT BEEN SURVEYED AND ARE APPROXIMATE.

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.



Cardno ERI **Shaping the Future**

EXPLANA	TION:
~~~~	SHEET PILE LOCATION
	GRAVITY WALL LOCAT



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

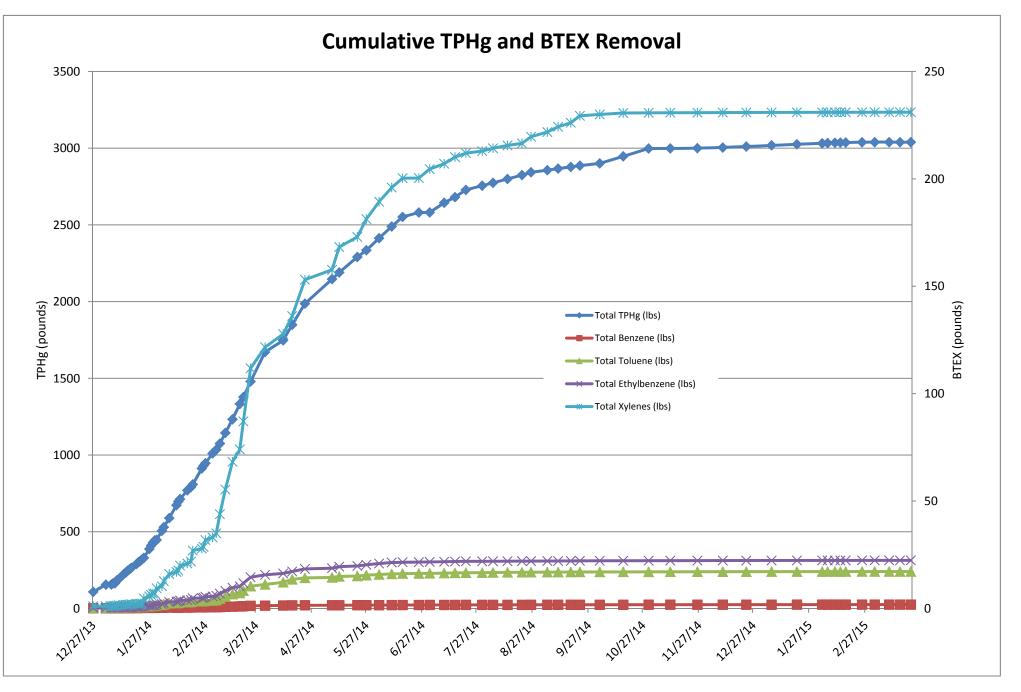
Unicon-Vesalar Vision         Valley Party View         AS System         VPC-1         VPC-2         VPC-2         VPC-3         Expected by the particular parts of the particular parts of the parts of th				SVE S	System								Off-gas	Treatment	System						
Period Determing         Wells Originary (Louron)         Period Applied         Applied Determing         Period (Louron)         Applied (Louron)         Period (Louron)         Applied (Louron)         Period (Louron)         <		Merc	cer-Westlake			lley-Terry We	ells	AS Sy	stem		VPC-1		Ŭ				VPC-3 System To			System Tota	als
Period         Wells on Insure         Applied (no.m)         Period (no.m)         Applied (no.m)         Period (no.m)         Period (no.																				Estimated	
Operative Data         Waccom (count)         Vaccom (mun)         Operative (mun)         Waccom (mun)												Estimated			Estimated			Estimated	Estimated	TPHg	Cumulative
bits         bits <td></td> <td>Period</td> <td>Wells On-</td> <td>Applied</td> <td>Period</td> <td>Wells On-</td> <td>Applied</td> <td>Period</td> <td>Applied</td> <td></td> <td></td> <td>TPHg</td> <td>Flow</td> <td></td> <td>TPHg</td> <td>Flow</td> <td></td> <td>TPHg</td> <td>TPHg</td> <td>Removal</td> <td>TPHg</td>		Period	Wells On-	Applied	Period	Wells On-	Applied	Period	Applied			TPHg	Flow		TPHg	Flow		TPHg	TPHg	Removal	TPHg
1000         114         20         114         6.5         Nal         96000         21.4         Nal         7600         15.5         Nal         5600         12.4         Nal         7600         12.5         Nal         5600         12.4         Nal         7600         12.4         Nal         7600         12.4         Mal         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         12.4         7600         7600         7600         7600         7600         7600         <		Operating	line	Vaccum	Operating	line	Vaccum	Operating	Pressure		Conc.	Removed	Rate	Conc.	Removed	Rate	Conc.	Removed	Removed	Rate	Removed
1101         114         23         28         114         23         28         114         6.5         NM         98000         25.4         NM         78600         15.5         NM         98000         15.6         77.6         94000         15.2         741         0.41         163           1811         28         28         18         28         28         28         28         28         28         28         18         755         7460         725         7480         28         18         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6         74.6	Date	Hours	(count)	(in. H ₂ O)	Hours	(count)	(in. H ₂ O)	Hours	(psi)	(scfm)	(µg/m³)	(lbs.)	(scfm)	(µg/m ³ )	(lbs.)	(scfm)	(µg/m³)	(lbs.)	(lbs.)	(lbs./hr)	(lbs.)
Intria         3         28         28         3         27         3         6         NM         98000         3.64         MM         74850         6.1         NM         5600         1.23         0.23         1.23         0.41         1553           10714         19         28         18         28         23         28         23         28         44.7         58400         1.23         0.41         1580           10714         21         28         22         24         23         28         23         28         22         24         23         25         133         631         133         531         1400         144         1400         144         1400         140         143         53.1         74800         24         530         2500         34.6         35.1         53.3         74800         24.8         25.0         25.0         44.1         25.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0         55.0 </td <td></td>																					
17.774         19         28         18         19         28         26         19         6         60307         99000         0.00         NN         7641         0.25         7641         0.25         7641         0.26         0.00         NN         7640         0.25         7640         0.00         NN         7640         1.15         752         745         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         775         7757         7757         7757																					154.94
18/14         28         28         18         28         28         5         NM         94800         0.00         NM         54800         0.00         0.00         0.00         0.00         NM         54807         7486         0.00         NM         54807         7486         725         453.8         64907         746         75         75         75         747         75         75         77         75         75         77         75         75         77         75         75         77         75         75         77         75         75         77         75         75         77         75         77         75         77         75         77         74         75         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74         74 </td <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>-</td> <td></td> <td>156.17</td>		-						-	-												156.17
1014         24         28         22         14         28         748         5182         9800         18.5         698.7         74850         7455         5142         9900         31.5         692.7         74850         7455         5142         9900         31.5         692.7         74850         7450         54900         80.7         6400         8400         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         8410         841																					163.98
Introl         17         28         22         18         23         27         17         7         5         517.42         78500         313         512.1         7850         24.5         528.0         11.80         546.7         54000         14.31         47.3         45000         14.30         546.7         54000         2.0         8.66         0.44         225           11.414         19         28         22         18         2.7         18         6.5         407.43         95000         3.11         55000         2.0         8.66         0.44         2.24           11.111         18         29         24         19         6         55.4         450         55.4         450         55.4         450         57.4         450         7452         74850         2.77         19.8         0.33         230         2.4         440         4900         744         930         2.4         490         2.4         4900         2.4         4900         2.4         4900         2.4         4900         2.4         4900         2.4         4900         2.4         4900         2.4         4900         2.4         4900         2.4         4900<																					163.98
Intrart         Typ         28         22         79         23         26         80         6.5         50.87         50.800         14.31         53.216         74800         18.30         5487.3         54800         5.31         5480         5487.3         54800         5.31         5480         2.55         568.0         6.44         233           11/15/14         28         28         23         27         26         7         512.50         5000         5.11         513.61         7460         2.04         53.63         6400         2.10         6.5         0.66         53.67         7460         2.0         6.41         0.44         2.0         0.64         2.3         0.65         441.06         5000         1.12         45.21         74.60         3.0         44.43         0.37         2.4         0.47         0.44         0.33         3.0         0.41.44         2.4         0.44.40         7460         3.0         74.64         0.47         0.44         0.33         3.0         1.0         1.44.40         2.46         7460         3.0         74.64         0.03         3.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0 </td <td></td> <td>190.84</td>																					190.84
																					225.87
Internal         28         28         23         27         26         7         51250         99000         511         51361         74950         426         55331         54900         210         1224         0.44         285         0.44         285         0.45         255         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         111         1111         1111         1111		-	-		-		-													-	233.92
Internal         19         28         24         19         6         593.21         74600         2.86         533.31         54000         2.10         8.50         4.46         9.500         2.44         9.50         2.44.30         74600         2.44         444.48         9.400         2.44         0.33         2.44.30         74600         3.67         455.45         5400         6.47         2.64.4         0.33         2.64           1/21/14         69         2.8         3.3         69         2.3         4.4         69         6.5         455.65         495.00         6.47         2.64.4         0.38         301           1/21/14         2.2         8         4.2         19         2.3         3.2         30         6.5         451.50         7.4800         3.04         7.480         3.08         7.480         3.08         7.480         3.08         7.480         3.08         7.481         3.00         2.41         7.480         3.08         7.481         3.00         3.03         3.01         3.02         3.02         3.02         7.7         4.219         9.900         3.04         7.481         3.00         2.41         3.03         3.03         3.03																					246.16
1/17/14         25         28         34         26         23         44         25         6         44106         9800         32         420.97         74950         3.07         44.49         54000         2.48         9.48         0.37         264           172014         29         28         46         29         23         53         29         5.5         428.66         95000         4.44         460.09         74850         3.75         468.58         54000         1.67         10.96         0.38         303           1/22/14         20         28         40         30         23         32         0.6.5         418.76         95000         4.46         430.77         74800         36.6         471.91         54000         2.91         11.07         0.37         323           1/27/14         66         28         411         66         2.3         31         66         6.5         431.90         7100         8.24         471.91         54000         47.91         54000         1.62         18.49         0.86         473.91         54000         1.02         19.49         0.86         45.9         210000         1.84         0.86																				-	254.75
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$								-	-												264.23
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1/20/14								6.5												290.67
12:2:1:4       30       28       40       32       32       30       6.5       41:2:4       95:000       3.4       46       439:3.7       749:50       36.9       471:91       549:00       2.47       9.4       0.30       379:91       549:00       2.47       9.4       0.38       379:91       549:00       3.68       377:91       549:00       3.68       477:91       549:00       3.68       477:91       549:00       3.68       477:91       549:00       3.68       477:91       549:00       3.68       477:91       549:00       3.68       477:91       549:00       3.68       477:91       549:00       3.68       477:91       549:00       3.68       477:91       549:00       3.68       477:91       549:00       3.68       475:41       281:00       3.61       444:02       300:00       6.33       44:10       270:00       1.62       221:34       3.65       422:31       77100       2.29       460:78       171:00       2.63       3.31       170:00       3.63       44:10       270:00       1.63       44:14:02       270:00       1.63       24:14:10       28:10       1.22       24:14       28:10       28:10       1.22       24:14       28:10       28:																					301.63
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		20	28	42	19	23		20	6.5	451.76	95000	3.22	462.40	74950	2.47	500.94	54900	1.96	7.64	0.39	309.27
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$																					320.34
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		-	-			-	-	-													329.73
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$																					387.72
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$				-																	409.91
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$								-													429.39
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			-						-												443.94
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		-						-													446.36
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$				-																	506.75
211/14         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           2/12/14         26         28         47         26         23         51         25         6         438.41         77100         3.29         482.88         179000         5.26         458.18         261000         8.51         16.09         0.857         713           2/13/14         67         28         49         25         23         52         66         7         415.17         77100         8.03         427.60         179000         19.21         449.94         26100         29.47         56.71         0.857         75000         5.26         458.18         26100         7.3         56.71         5300         5.78         497.26         16500         6.76         18.20         0.83         893.1         155000         5.78         497.26         16500         6.61         18.12         0.83         894.1         155000         5.89         41.91.31         15500         57.5         41.23 </td <td></td> <td>588.75</td>																					588.75
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$																					673.02
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$									-												697.03
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$																					713.13
2/19/14         25         28         49         26         7         432,53         158000         6.40         468,57         153000         6.71         487,13         165000         7.53         20,64         0.83         790           2/20/14         122         28         50         22         23         49         21         9         433,97         158000         5.65         458,83         153000         5.78         497,26         165000         6.67         18.20         0.83         808           2/25/14         22         28         48         122         23         46         122         10         438.82         158000         5.62         395.49         153000         5.89         411.09         165000         6.61         18.12         0.70         930           2/26/14         26         28         49         26         23         23         63         23         9         359.08         158000         5.62         395.49         153000         5.15         419.2         18.10         16000         7.437         16000         2.31         6.42.8         0.66         1011           3/5/14         38         28         50			-	-	-	-	-	-	-												769.84
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$																					790.48
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2/20/14		28	50			49	21	9	433.97	158000	5.65			5.78	497.26		6.76	18.20	0.83	808.68
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	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
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2/26/14									365.19	158000		395.49	153000	5.89		165000			0.70	930.62
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$									-												946.61
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         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         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       1233         3/18/14       99       28       71       44       23       74       45       12.3       416.64       181000       12.71       438.17       219000       36.31       462.90       209000       37.24       10.08       1.00       1373         3/20/14       45       28       73       194       23       74       455       12.3       416.64       181000       12.71       438.																					1010.90
3/10/14       74       28       65       74       23       71       74       11.8       376.48       18100       18.89       415.20       219000       25.20       430.89       209000       24.96       69.05       0.93       1142         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       123         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       133         3/20/14       45       28       71       44       23       74       45       12.3       416.64       181000       12.71       438.17       219000       37.31       495.55       209000       37.4       10.1       133         3/20/14       95       28       73       194       23       74       194       15.1       399.25       181000       52.51       428.93       21900																					1035.39
3/14/14       91       28       70       90       23       73       91       13.4       400.74       18100       24.72       428.35       21900       31.62       463.82       20900       32.68       89.03       0.99       1232         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         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       36.24       100.08       1.00       1333         3/20/14       95       28       75       96       23       77       95       13.4       423.51       181000       27.88       473.84       219000       37.31       495.55       209000       37.24       101.83       1.06       147         4/11/14       194       28       73       194       23       74       194       15.1       399.25       181000       25.51       42																					1074.91
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         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       36.24       100.08       1.00       1333         3/20/14       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       147.93         4/1/14       194       28       73       194       23       74       194       15.1       399.25       181000       25.51       428.93       219000       68.26       468.17       209000       71.10       191.87       0.99       167         4/11/14       71       28       71       70       23       73       71       15.4       434.40       181000       20.91       <																					1143.96
3/20/14         45         28         71         44         23         74         45         12.3         416.64         18100         12.71         438.17         21900         15.81         468.67         20900         16.14         44.67         1.01         137           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         147.9           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         167           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         174.74           4/16/14         118         2.7         72				-			-	-													1232.99
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           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         167           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         174           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         1844           4/23/14         168         27         62																					1333.07 1377.74
4/1/14         194         28         73         194         23         74         194         15.1         399.25         18100         52.51         428.93         21900         68.26         468.17         20900         71.10         191.87         0.99         167           4/11/14         71         28         71         70         23         73         71         15.4         434.40         181000         20.91         478.15         219000         27.46         503.76         20900         27.61         75.97         1.08         174           4/16/14         118         27         72         119         21         74         118         12.5         406.84         156000         28.05         496.74         162000         35.87         501.69         16700         37.34         101.27         0.85         1840           4/23/14         168         27         62         168         21         74         168         12.6         406.20         156000         39.88         464.92         16200         47.39         482.21         16700         50.67         137.95         0.82         1980           4/30/14         146         27         73																					1377.74
4/11/14       71       28       71       70       23       73       71       15.4       434.40       18100       20.91       478.15       21900       27.46       503.76       20900       27.61       75.97       1.08       174.74         4/16/14       118       27       72       119       21       74       118       12.5       406.84       156000       28.05       496.74       16200       35.87       501.69       16700       37.34       101.27       0.85       1844         4/23/14       168       27       62       168       21       74       168       12.6       406.20       156000       39.88       464.92       16200       47.39       482.21       16700       50.67       137.95       0.82       1986         4/30/14       146       27       73       169       21       73       170       12.6       336.33       10700       45.29       351.75       10300       48.72       363.86       13400       65.56       159.58       0.45       21.46         5/8/14       190       27       73       190       13       319.88       10700       13.08       334.30       10300       48.72																					1671.45
4/16/14       118       27       72       119       21       74       118       12.5       406.84       156000       28.05       496.74       16200       35.87       501.69       16700       37.34       101.27       0.85       1844         4/23/14       168       27       62       168       21       74       168       12.6       406.20       156000       39.88       464.92       16200       47.39       482.21       16700       50.67       137.95       0.82       1986         4/30/14       146       27       73       169       21       73       170       12.6       336.33       10700       45.29       351.75       10300       48.72       363.86       13400       65.56       159.58       0.45       2146         5/8/14       190       27       73       190       21       75       190       13       319.88       107000       13.08       334.30       10300       13.16       345.68       134000       17.70       43.93       0.43       2196         5/8/14       102       27       73       102       21       74       102       13.4       318.18       107000       29.97 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1747.42</td></td<>																					1747.42
4/23/14       168       27       62       168       21       74       168       12.6       406.20       156000       39.88       464.92       16200       47.39       482.21       16700       50.67       137.95       0.82       1986         4/30/14       146       27       73       169       21       73       170       12.6       336.33       10700       45.29       351.75       10300       48.72       363.86       13400       65.56       159.58       0.45       2146         5/8/14       190       27       73       190       21       75       190       13       319.88       107000       13.08       334.30       10300       13.16       345.68       134000       17.70       43.93       0.43       2190         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         5/12/14       102       21       74       102       13.4       318.18       107000       29.97       333.56       103000       30.11 </td <td></td> <td>1848.69</td>																					1848.69
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           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           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		-			-			-													1986.63
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           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																					2146.21
5/12/14 102 27 73 102 21 74 102 13.4 318.18 10700 29.97 333.56 10300 30.11 343.06 13400 40.29 100.37 0.43 2290		-						-													2190.14
		102		73	102			102													2290.51
5/22/14 235 27 74 234 21 74 234 12.5 325.05 10700 13.03 336.54 103000 13.11 358.27 134000 18.16 44.30 0.44 2334	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 SummaryPHILLIPS 66 FACILITY #255353 (AOC 1396)

			SVE S	System					1			Off-gas	Treatment	System						
	Merc	cer-Westlake	e Wells	Va	lley-Terry We	ells	AS Sy	stem		VPC-1		, i i i i i i i i i i i i i i i i i i i	VPC-2			VPC-3		5	System Tota	als
																			Estimated	
											Estimated			Estimated			Estimated	Estimated	TPHg	Cumulative
	Period	Wells On-	Applied	Period	Wells On-	Applied	Period	Applied		Influent	TPHg	Flow	Influent	TPHg	Flow	Influent	TPHg	TPHg	Removal	TPHg
	Operating	line	Vaccum	Operating	line	Vaccum	Operating	Pressure	Flow Rate	Conc.	Removed	Rate	Conc.	Removed	Rate	Conc.	Removed	Removed	Rate	Removed
Date	Hours	(count)	(in. H ₂ O)	Hours	(count)	(in. H ₂ O)	Hours	(psi)	(scfm)	(µg/m³)	(lbs.)	(scfm)	(µg/m³)	(lbs.)	(scfm)	(µg/m ³ )	(lbs.)	(lbs.)	(lbs./hr)	(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	126 223	18 18	80 80	126 223	22 22	76 77	126 223	11.5 14	328.56 323.83	20500 16500	5.63 6.16	452.80 416.06	19500 67800	7.38 32.54	424.43 395.12	4850 15200	1.72 6.93	14.72 45.64	0.07	2900.99 2946.63
10/3/14	308	18	80	308	22	82	308	14	323.83	16500	6.94	416.06	67800	32.54	413.66	15200	7.91	45.64 51.21	0.15	2946.63
10/16/14	308	18	79	308	22	82	308	12.4	333.97	820	0.94	426.08	820	0.21	365.29	875	0.22	0.60	0.15	2997.84
11/11/14	181	18	79	181	22	75	181	12.4	319.37	820	0.18	401.50	820	0.21	305.29	875	0.22	1.23	0.00	2998.44
11/26/14	358	15	79	358	19	73	358	9.1	285.03	6930	1.37	337.16	6210	1.45	333.38	6140	1.42	4.24	0.00	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 ₂ O	=	inches of water	psi	=	pounds per square inch	scfm	=	standard cubic feet per minute
ppm	=	parts per million	(µg/m ³ )	=	micrograms per cubic me	TPHg	=	Total Petroleum Hydrocarbons (Gasoline)



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

Date			We	stlake SVE	Wells - PID	Readings (p	pm)		
	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	ÖL	OL	OL	OL	OL	OL
3/18/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL

V9	V7	V1	V6	PID Readin 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								M	ercer SVE V	Vells - PID F	eadings (pp	om)							
	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							erry SVE W	ells - PID R	eadings (pp						
		TEFR1	TMW65		TSVE11-	TSVE10 -				TSVE12-			TEFR2		TMW48
	TSVE3	AIR	AIR	TSVE4	MW67	MW66	TSVE2	TSVE1	TSVE7	MW68	TSVE5	TSVE6	AIR	TSVE8	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									Westla	ke AS Well	s - Flow Ra	te Readings	s (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					
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						
Dete												Maraa		Flaur Date	Deedinge	(0.0600)											
Date	мо	M 20	Mac	MO	M 07	M 46	Ma	мо	M 47	ME	M 40		er AS Wells				MG	M 42	MA	M 00	M 40	M 4	M 00	M 44	MOE	MOA	M 04
	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	e Readings M-14	(scfm) 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	M-15 0	M-7 6		M-14 0	M-18 1	0	0	5	0	0	0	0	0	0	M-24 0	0
1/23/2014 1/31/2014	9 9	0 3.5	0 <2	0 <2	0 <2	0 4.5		0 5	7.5 7.5	M-5 0 7.5 7	-	M-15	M-7 6 5	M-10	M-14 0 >25		0 <2	0 <2	5 5.5	0 5	0 <2	0 11.5	0 <2	0 <2	0 7.5	0 4	
1/23/2014 1/31/2014 2/4/2014	9 9 10	0	0 <2 <2	0 <2 <2	0 <2 <2	0	0 3 4	0 5 5	7.5	0 7.5 7	0	M-15 0 6 6	M-7 6	M-10	M-14 0 >25 >25	M-18 1 <2	0 <2 <2	0 <2 <2	5	0	0 <2 <2	0 11.5 11.5	0 <2 <2	0 <2 <2	0 7.5 5.5	0 4 >25	0 <2
1/23/2014 1/31/2014 2/4/2014 2/12/2014	9 9 10 10	0 3.5 <2 6	0 <2	0 <2 <2 <2	0 <2 <2 <2	0 4.5	0 3 4 3.5	0 5	7.5 7.5	0 7.5 7 9	0	M-15 0	M-7 6 5	M-10	M-14 0 >25	M-18 1 <2 2 3	0 <2 <2 <2	0 <2	5 5.5	0 5	0 <2 <2 <2 <2	0 11.5 11.5 13	0 <2	0 <2 <2 <2 <2	0 7.5 5.5 8.5	0 4	0 <2 7 7
1/23/2014 1/31/2014 2/4/2014 2/12/2014 2/17/2014	9 9 10 10 11	0 3.5 <2 6 12	0 <2 <2 3 2	0 <2 <2 <2 <2 <2	0 <2 <2 <2 <2 <2 <2	0 4.5	0 3 4	0 5 5 5 6	7.5 7.5 7.5 7 8	0 7.5 7 9 10	0	M-15 0 6 5.5 7	M-7 6 5 6 7 5	M-10 0 6 7 8 9	M-14 0 >25 >25	M-18 1 <2	0 <2 <2	0 <2 <2 <2 <2 2	5 5.5	0 5 5 6	0 <2 <2	0 11.5 11.5 13 14	0 <2 <2 <2 <2 2	0 <2 <2 <2 <2 <2	0 7.5 5.5	0 4 >25	0 <2 7 7 <2
1/23/2014 1/31/2014 2/4/2014 2/12/2014 2/17/2014 2/26/2014	9 9 10 10 11 12	0 3.5 <2 6 12 12	0 <2 <2 3 2 <2	0 <2 <2 <2 <2 <2 <2 <2	0 <2 <2 <2 <2 <2 <2 <2	0 4.5	0 3 4 3.5 3.5 4	0 5 5 5	7.5 7.5	0 7.5 7 9 10 11	0	M-15 0 6 5.5 7 6.5	M-7 6 5 6 7	M-10 0 6 7 8	M-14 0 >25 >25 >25 8	M-18 1 <2 2 3 <2	0 <2 <2 <2 <2 <2	0 <2 <2 <2	5 5.5	0 5 5 6 8	0 <2 <2 <2 <2	0 11.5 11.5 13 14 12	0 <2 <2 <2 <2 2 2	0 <2 <2 <2 <2 <2 <2 <2	0 7.5 5.5 8.5 5.5	0 4 >25	0 <2 7 7
1/23/2014 1/31/2014 2/4/2014 2/12/2014 2/17/2014 2/26/2014 3/3/2014	9 9 10 10 11 12 13	0 3.5 <2 6 12 12 10	0 <2 <2 3 2 <2 <2 <2	0 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 4.5 3.5 4 6 5	0 3 4 3.5	0 5 5 5 6	7.5 7.5 7.5 7 8 8.5 9	0 7.5 7 9 10 11 12	0 3.5 3 4 5 6	M-15 0 6 5.5 7	M-7 6 5 6 7 5 6 7 7	M-10 0 6 7 8 9 10	M-14 0 >25 >25 >25 8 9 10	M-18 1 <2 2 3 <2	0 <2 <2 <2 <2 <2 <2 2 2	0 <2 <2 <2 2 3	5 5.5 6.5 8 7 8 11	0 5 6 8 9 9	0 <2 <2 <2 <2	0 11.5 13 14 12 13	0 <2 <2 <2 2 2 2 <2	0 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 7.5 5.5 8.5 5.5 9 8	0 4 >25	0 <2 7 7 <2 <2 2
1/23/2014 1/31/2014 2/4/2014 2/12/2014 2/17/2014 2/26/2014 3/3/2014 3/18/2014	9 9 10 10 11 12	0 3.5 <2 6 12 12 10 11	0 <2 <2 3 2 <2	0 <2 <2 <2 <2 <2 <2 <2	0 <2 <2 <2 <2 <2 <2 <2	0 4.5 3.5 4 6 5 5 7	0 3 4 3.5 3.5 4	0 5 5 6 8 7	7.5 7.5 7.5 7 8 8.5	0 7.5 7 9 10 11 12 13	0 3.5 3 4 5 6 5 8	M-15 0 6 5.5 7 6.5 6.5	M-7 6 5 6 7 5	M-10 0 6 7 8 9 10 11 11	M-14 0 >25 >25 >25 8 9	M-18 1 <2 2 3 <2	0 <2 <2 <2 <2 2 2 2 <2	0 <2 <2 2 2 3 3	5 5.5 6.5 8 7 8	0 5 6 8 9 9 12	0 <2 <2 <2 <2	0 11.5 11.5 13 14 12	0 <2 <2 <2 <2 2 2	0 <2 <2 <2 <2 <2 <2 <2	0 7.5 5.5 8.5 5.5 9	0 4 >25	0 <2 7 7 <2 <2 <2
1/23/2014 1/31/2014 2/4/2014 2/12/2014 2/12/2014 2/26/2014 3/3/2014 3/18/2014 5/27/2014	9 9 10 10 11 12 13 13 13 14	0 3.5 <2 6 12 12 12 10 11 25	0 <2 3 2 <2 <2 <2 <2 <2 <2 <2	0 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 4.5 3.5 4 6 5	0 3 4 3.5 3.5 4	0 5 5 6 8 7	7.5 7.5 7 8 8.5 9 10	0 7.5 7 9 10 11 12 13 15	0 3.5 3 4 5 6	M-15 0 6 5.5 7 6.5 6.5 9	M-7 6 5 6 7 5 6 7 7	M-10 0 7 8 9 10 11 11 25	M-14 0 >25 >25 >25 8 9 10 11 25	M-18 1 <2 2 3 <2 3 4 7	0 <2 <2 <2 2 2 2 2 2 2 2 16	0 <2 <2 2 3 3 8	5 5.5 6.5 8 7 8 11 10 11	0 5 6 8 9 9 12 11.5	0 <2 <2 <2 <2 3 3 4	0 11.5 13 14 12 13 16 16	0 <2 <2 <2 2 2 2 <2	0 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 7.5 5.5 8.5 5.5 9 8 11 25	0 4 >25 >25 4 4 4 6	0 <2 7 7 <2 <2 2 8
1/23/2014 1/31/2014 2/4/2014 2/12/2014 2/17/2014 2/26/2014 3/3/2014 3/18/2014 5/27/2014 7/9/2014	9 9 10 10 11 12 13 13	0 3.5 <2 6 12 12 10 11 25 25	0 <2 3 2 <2 <2 <2 <2 <2 <2 <2 0	0 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 4.5 3.5 4 6 5 5 7	0 3 4 3.5 3.5 4 4.5 5 7	0 5 5 6 8 7	7.5 7.5 7 8 8.5 9 10 10	0 7.5 7 9 10 11 12 13	0 3.5 3 4 5 6 5 8	M-15 0 6 5.5 7 6.5 6.5 9 8	M-7 6 5 6 7 5 6 7 7	M-10 0 6 7 8 9 10 11 11	M-14 0 >25 >25 >25 8 9 10 11	M-18 1 2 2 3 <2 3 4 7 0	0 <2 <2 <2 2 2 2 2 4 2 5 2 16 13	0 <2 <2 2 3 3 8 5	5 5.5 6.5 8 7 8 11 10	0 5 6 8 9 9 12	0 <2 <2 <2 <2 3 3 4	0 11.5 13 14 12 13 13 16	0 <2 <2 <2 2 2 2 <2	0 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 7.5 5.5 8.5 5.5 9 8 8 11	0 4 >25 >25 4 4 4 6	0 <2 7 7 <2 <2 2 8 0
1/23/2014 1/31/2014 2/4/2014 2/12/2014 2/12/2014 2/26/2014 3/3/2014 3/18/2014 5/27/2014	9 9 10 11 12 13 13 14 12	0 3.5 <2 6 12 12 12 10 11 25	0 <2 3 2 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <0 0	0 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2	0 4.5 3.5 4 6 5 5 7 6.5 5 5	0 3 4 3.5 3.5 4 4.5 5 7 6	0 5 5 6 8 7 9 7 7 7	7.5 7.5 7 8 8.5 9 10 10 9	0 7.5 7 9 10 11 12 13 15 12	0 3.5 3 4 5 6 5 8	M-15 0 6 5.5 7 6.5 6.5 9 8 6	M-7 6 5 7 5 6 7 8 7 7 7	M-10 0 7 8 9 10 11 11 25 20	M-14 0 >25 >25 >25 8 9 10 11 25 25	M-18 1 2 2 3 <2 3 4 7 0	0 <2 <2 <2 2 2 2 2 2 2 2 16	0 <2 <2 2 3 3 8 5 5 5	5 5.5 6.5 8 7 8 11 10 11 12	0 5 6 8 9 9 12 11.5 10	0 <2 <2 <2 <2 <2 3 3 4 6 6 4	0 11.5 11.5 13 14 12 13 16 16 16 16	0 <2 <2 2 2 2 2 2 3 1 1	0 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <2 <1 1	0 7.5 5.5 8.5 5.5 9 8 11 25 25	0 4 >25 >25 4 4 4 6 9 7	0 <2 7 7 <2 <2 2 8 0

Date															
	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

= SCFM

Air Sparge Standard Cubic Feet per Minute Not Measured =

= = Offline

OL

## 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	МĴМ	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.



 DATE:
 01/05/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

 ARRIVAL TIME:
 12:15

 DEPARTURE TIME:
 14:15

 LUNCH:
 N/A

 MTRL ACQUISITION:
 N/A

 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 Hou											ur 7	Но	ur 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/3 rd 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.



 DATE:
 01/06/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

 ARRIVAL TIME:
 11:10

 DEPARTURE TIME:
 14:00

 LUNCH:
 N/A

 MTRL ACQUISITION:
 N/A

 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 Hou													ur 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/3 rd 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	
Ν	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



 DATE:
 01/20/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

ARRIVAL TIME:	08:00
DEPARTURE TIME:	16:00
LUNCH:	N/A
MTRL ACQUISITION:	N/A
TRAVEL >100 MILES:	N/A

#### **PERSONNEL: Edward Burnacci**

#### SUBCONTRACTORS: N/A

	Heat Stress Management and Fluid Replacement Chart															
	Но	ur 1	Но	Hour 2		ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	ur 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: O&M System Restart

Y/N/NA	NOTES	COMMENTS
Y	Equipment	Hand tools, PID, anemometer
N/A	Property Owner/Operator/3 rd 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



 DATE:
 02/03/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

 ARRIVAL TIME:
 11:45

 DEPARTURE TIME:
 16:45

 LUNCH:
 N/A

 MTRL ACQUISITION:
 N/A

 TRAVEL >100 MILES:
 N/A

#### **PERSONNEL: Edward Burnacci**

#### SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart																
	Но	ur 1	Но	ur 2	Но	ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	our 8
Name	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/3 rd 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	
Ν	Work Permit(s)	
N	Samples Collected	
Ν	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



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																
	Но	ur 1	Но	ur 2	Но	ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	ur 8
Name	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/3 rd 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	
Ν	Work Permit(s)	
N	Samples Collected	
Ν	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, TSVE6



 DATE:
 02/10/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

ARRIVAL TIME:	14:15
DEPARTURE TIME:	17:00
LUNCH:	N/A
MTRL ACQUISITION:	N/A
<b>FRAVEL &gt;100 MILES</b> :	N/A

#### **PERSONNEL: Edward Burnacci**

#### SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart																
	Но	ur 1	Но	ur 2	Но	ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	ur 8
Name	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/3 rd 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	
Ν	Work Permit(s)	
N	Samples Collected	
Ν	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.

realigate baroty mooting and bite wait were benaded

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



 DATE:
 02/13/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

ARRIVAL TIME:	10:45
DEPARTURE TIME:	13:45
LUNCH:	N/A
MTRL ACQUISITION:	N/A
TRAVEL >100 MILES:	N/A

#### **PERSONNEL: Edward Burnacci**

#### SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart																
	Но	ur 1	Но	ur 2	Но	ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	ur 8
Name	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/3 rd 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	
Ν	Work Permit(s)	
N	Samples Collected	
Ν	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



 DATE:
 02/16/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

 ARRIVAL TIME:
 11:45

 DEPARTURE TIME:
 14:50

 LUNCH:
 N/A

 MTRL ACQUISITION:
 N/A

 TRAVEL >100 MILES:
 N/A

#### **PERSONNEL: Edward Burnacci**

#### SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart																
	Но	ur 1	Но	ur 2	Но	ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	ur 8
Name	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/3 rd 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	
Ν	Work Permit(s)	
N	Samples Collected	
Ν	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



DATE: 02/25/15 SITE ID: AOC 1396 P66 PM: Ed Ralston CARDNO ERI #: 031326 CARDNO PM: Kyle Sattler 
 ARRIVAL TIME:
 09:00

 DEPARTURE TIME:
 12:30

 LUNCH:
 N/A

 MTRL ACQUISITION:
 N/A

 TRAVEL >100 MILES:
 N/A

**PERSONNEL: Michael Miller** 

#### SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart																
	Но	ur 1	Но	ur 2	Но	ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	ur 8
Name	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/3 rd 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	
Ν	Out of Scope Activities	
Ν	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



 DATE:
 03/04/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

ARRIVAL TIME:	11:00
DEPARTURE TIME:	13:00
LUNCH:	N/A
MTRL ACQUISITION:	N/A
<b>FRAVEL &gt;100 MILES</b> :	N/A

#### **PERSONNEL: Edward Burnacci**

#### SUBCONTRACTORS: N/A

	Heat Stress Management and Fluid Replacement Chart															
	Но	ur 1	Но	ur 2	Но	ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	our 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/3 rd 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	
Ν	Out of Scope Activities	
Ν	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



 DATE:
 03/12/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

ARRIVAL TIME:	15:00
DEPARTURE TIME:	17:30
LUNCH:	N/A
MTRL ACQUISITION:	N/A
TRAVEL >100 MILES:	N/A

#### **PERSONNEL: Edward Burnacci**

#### SUBCONTRACTORS: N/A

	Heat Stress Management and Fluid Replacement Chart															
	Но	ur 1	Но	ur 2	Но	ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	our 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/3 rd 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	
Ν	Work Permit(s)	
N	Samples Collected	
Ν	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



 DATE:
 03/18/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

 ARRIVAL TIME:
 11:30

 DEPARTURE TIME:
 15:00

 LUNCH:
 N/A

 MTRL ACQUISITION:
 N/A

 TRAVEL >100 MILES:
 N/A

#### **PERSONNEL: Edward Burnacci**

#### SUBCONTRACTORS: N/A

Heat Stress Management and Fluid Replacement Chart																
	Но	ur 1	Но	ur 2	Но	ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	our 8
Name	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/3 rd 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	
Ν	Out of Scope Activities	
Ν	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



 DATE:
 03/24/15

 SITE ID:
 AOC 1396

 P66 PM:
 Ed Ralston

 CARDNO ERI #:
 031326

 CARDNO PM:
 Kyle Sattler

ARRIVAL TIME:	14:00
DEPARTURE TIME:	16:00
LUNCH:	N/A
MTRL ACQUISITION:	N/A
TRAVEL >100 MILES:	N/A

#### **PERSONNEL: Edward Burnacci**

#### SUBCONTRACTORS: N/A

ŀ	Heat Stress Management and Fluid Replacement Chart															
	Но	ur 1	Но	ur 2	Но	ur 3	Но	ur 4	Но	ur 5	Но	ur 6	Но	ur 7	Но	ur 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/3 rd 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	
Ν	Work Permit(s)	
Y	Samples Collected	
Ν	Out of Scope Activities	
Ν	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
11		023	0/ 1-21			
CI	Temp	95.7	Shid 701	5 -	0.17	B-701 8111
	Vel	3660	Sec. 1	Vac VLS	40	B-801 8212
CZ	Fanp	94.0		Vac bour	90	C-2201 8247
1.0	vel	3870		temp Dochg	108	P-401 Z
<u>C</u> 3	tang	93.5		Press Dschy	22	P-501 69
	vel	4075	1-17-1-1-1	HC blow out	3.2	7-5501 97.
$\overline{\mathbf{C}}$						toplicer 7347
Carbon 1	2.0		Shid 801	mas" the	0.2	transpump 4.3
Curlow 2				Vac ULS	76	
out	0.4			Vac blow		* B-FOI was loto
			-	tamp dochy	97	upon around
Carbon 1				Prari decig	22	* But on 701
Com 2	1.0	6		It's blovent	0.6	were replaced
out	0.5					* everything reitit
<u> </u>			AS Shul	tery with	185	,
Combon 1	1.6			press in the	14	· I III
Carton	2 0.8			tenp of HX	58	-
out	0.4			pres out that	-	American de
-	×			mas +H20	6.0	
10 m a	PID ru	lys	· · · · · ·		&	
	Vac				Vac	ppnu
Mb	62	Ppru 1.9		TSUE 3	58	1.9
M7	60	1.0		TEFRIAN	64	1.4
Mg	63	0.7		Trubs Bar	57	1.9
MB	63	9.0		TSUEY	54	0.3
MI	39	0.8		TSUE 11	52	1.0
M3	42	0.7		T30C 10	49	0.5
MY	40	1.0		TSUE 2	48	0.0
MIY	44	11.0		TSUEL	43	0.5
MIJ	46	HO SOLA		TSUE7	45	0.4
MIS	45	0.6		TSUE 12	44	),4
mu	45	7.4		Vg	35	6,2
M16	5	4.6		VZ	38	0.4
MIZ	47	9.6		VG	39	0.2
MIS	57	4.5		VS.	41	0.2
	1. 1.1			V4	47	0.6
	6 L.			TSUES	47	0.3
				53066	51	0.4
				TSUE 8	56	01/
				TMW48Ar	57	0.1

1/20/15 P-66 west/merc * System apration upon armer * met var - twich aporto ansile System Shit daw, & vac truth corrector to Fol main Shoul on M12 12ts the @ 905 mostly at 900 mound to MIS lots HEO for 3mm & 913 mostly and 907 shad MS mosty H20 for Imm @ 921 air 914 0525 M2 Hzo couldn't be pulled up M19 lots of HED For Zom (SAltz HED actor Clewde 936 mond to M8 notigo 945 M9 no hzo MIU no hzo mare N M7 I more lots of h2 o the are Mb I man lots of her the ave C MIG pulled up theo but still when remany MISMZ bubbly her ~ 5mm each byo stra the @ 1235 mould to trong/volleg mini 1043 TSUE 3, Stugar = 5 min lats has derie 1049 TETRI are lots has store - 6mon 10.55 The 65 mer lots have 2 10 mm still bubling the 1104 TSUE 4 Solid hoo for Imm, Some splowing the offer VI, 1sts Hzo Bar 2mm. Ut marsty dur 145 1122 V2, 10tr of 120 continuous hão Plous - could not clea - Hão Plum Mão well V4TSUE 12 Still some Hy U couldn't clar * Restrict System 1240 stude emptying Vac truck = 1400 gol remove * An simple college Shal Zof may "Hio CI temp D-701 89.4 8445 0.23 VU 3780 71 Var VIS 8546 15-801 CZ tup 88.9 Vcc blow 71 C-2201 8580 4620 vel 2 166 temp discl P-401 C3 tup 88.4 69 pril Isch 25 P-501 UN 4550 At blue out 5.6 102 P-5801 75698 orthe an 6.3 trus prof

Rite in the Rain.

P-66

1/20/15

			4-66			110115
0						
CI	3.8	Shal 801	my the	6.24	AS Shul	Trupatto 175
C2	0.7		Vac VIS	70		Press in the 14
ort	0.4		VAC 6600	70		tup of the 55
F			tap dsch	94		prisont the 12.7
CI	2.6		press dich	25		may" his 7.0
02	0.6		AC blow of	1.2	1	
008	0.6					
F						
CI	2.6					
50 02	0.6					4 · · · · · · · · · · · · · · · · · · ·
our	0.6					
L						A DECEMBER OF
m	200	2	$\sim$			
1			P-66	wait /men		1/28/15
* only pl	D rules	port L	rue truch	/		
/ 1.	Vac	PID			Vuc	PID
Mb	46	2.9		tue3	63	1.0
MZ	48	11,4		TEPRIA	58	0.9
MID	46	-1,5		The bs	55	1.9 closed
Mĝ	62	2.5		TSUZ4	56	1.8
MS	-51	8.9		TSUEll	50	D.6 Labre
MI	42	2.5		TSUEIO	55	O. 6 "redent
MZ	46	O. I closed		TSUEZ	41	0.7
M3	40	1.3		TSUE	34	0.7
M4	. 33	0.2 "12 Jus		TSUE7	38	0.7
MS	20	0.2 years		TSUE 12	45	1,0
M14	38	0.4		V9	20	O.S Widney
MIS	32	0.8		V7	15	0.6
MIS	36	0.2		VI	29	1,0
MIZ	61	20.5		V6-	25	0.2
MH	32	9.5		VZ	15	0.6
M16	35	2,6		V5	17	0.5
MIZ	80	12.0		V3	35	0,6
M18	44	3.0		14	48	0,6
MIG	42	0,8		BUES	50	0,5
/*///	1	0		TSUE6	55	0.8
		Λ		TOFTR	50	0.7
		1.		TSUBR	419	0,7
	· · · · · · · · · · · · · · · · · · ·			THW48	54	0.3 Chur

2/3-15 P-66 map/mere 87.0 Shad 701 mg, " Hzo CI tenp 0.22 B-701 8778 4010 vel VacULS 13-801 8879 76 C7 75 tomp 85.9 Unc blower C-2201 8914 3420 vel P-401 temp dschg 2 100 C3 69 85.6 Press dischig P- 501 treng 26 P-5501 104 vel 4080 1.7 HC blos at 75992 toblics Carbon 1 1.3 Shul 801 mg " H20 6.24 truns pup nn 1 Cuba 2 0.0 68 Vac ULS out 0.0 Ube blow 66 * Sys operation upon temp dechy 91 arround Cubul 1.1 24 press dody * no the for trans 2 Cutic 2 0.1 Itc blowou pump pairs randys 0.1 out 0.0 * rendry 1 taken befor AS Shid tempor Hx 180 wells closed Cuta 1 1.5 preis he HK 12 B-701 518 0,1 3 Com 2 tenpour HX 54 8-801 422 out O.D 11.5 Prea out HK * Alw ad, 8.5 mag "HEO B-70 1/5 89" B801 Uls 74" Vac PID Vac PID 2.5 "Edical 48 MG 60 Tefr 0.1 O.7 Will dosd 48 56 MZ TSUE4 0.2 O. 4 will dosed 46 MID 6.8 TSVELL 51 0.4 well 62 55 tsuelo Mg 2.1 9.5 52 43 TSUE Z ME 0.3 43 35 MI 2.3 TSVEL 0.5 O. 5 closed 38 M3 42 TSUET 0.3 6.3 Viderd 0.7 well M4 34 Vq 21 0.8 well closed MJ VZ 21 18 0.2 0.6 well MIY 38 30 VI 0.6 MIJ 32 VZ 1.2 16 0,1 1.0 closed MIS 37 15 17 0.2 O. I will 36 MIZ 61 14.9 V3 MI 34 V4 11.5 48 0.4 4.8 MIG 39 50 U.Z TSVES MIZ 51 TSUE 6 55 10.7 0.4 46 3.8 M18 TSUE 8 50 0.7

Rite in the Rain.

	1.000	а —		P-66		2-0	6-15
<u> </u>	tenp	92.3	51 1 701	74	03-	B-701	8854
CI			Shul 701		0.20		
0.0	vel	3570		Vac ULS	82	B-801	8955
C2	temp	92.0	-	Vac blow	8)	C-2201	89.89
10	vel	3880		trup dody	105	P-401	2
C3	tamp	91.5		Prais diang	22	P-501	69
	vel	4120		HC blow out	4.7	P. 5501	106
Г						totalico	76910
Cubel			Shul 801		0.22	trans pup	4.1
Carlanz			-	Vac ULS	73	1. D. I.	
1 or	1.2		_	Vac blow	72	* Syst op	
-			_	ting desily	98	· astruct	
Caronl	1.6		-	press duchs	22	* 545 1800	lys the
Curaz		1	1	HC Nolow of	6.Z	before we	lls shitda
ot	1.5						
4			ASBLID	Tenpon HK	190	8-701 @	55
Content	1.9			presi on the	12	B-801@	13
Cabuz	1,4			top of the	60	* 575 open	- 000-
out		eftir.		preci atthe	11.7	deput	
				mys " 1+5 2	6.0		
	Vac	PID			vac	PID	
MG	56	1.9		Tefr	62	0.4	
MID	54	2.5		TSUE 4	60	0.3	778
Mg	62	2.7	34	TSUE 2	45	0.Z	
MS	60	4,8		TSUEI	41	0.3	
ML	53	3.0	1	TSUE7	45	0.4	V
MIJ	55	4.5		V9	15	O. O closed	
MIZ	62	19,3		V7	22	0.0	
MI	82	3,5	4	VI	36	0.4	
MIG	58	2.3		VZ	21	0.0	
MIT	62	5.2		V5	27	0.2	
MIS	60	2.0		v4	35	0.1	19 X
1 110	00	-14		TSUL 5	56	0.0	
				TSUE 6	60	0.1	
				TSUE 8	61	0.1	
				1200 0	61	··· /	
				-	4	_	
		· 、			- X-		

		-	P-6	6	2-1	0-15	
CI	temp	99,1	Shul 701	Mas "Hao	55.0	B-701	8949
	vel	3740		Vac VLS	84	13-801	9050
CZ	temp	98.D		Vac How	83	C-2.201	9085
	ver	4000	5 403 <b>2</b> 6 - 3000 - 0	tomp dochy	111	P-401	2
C3	temp	97.4	and wear	press docus	23	P- 501	69
	UCY	4150	· · · · · · · · · · · · · · · · · · ·	4C blow out		P-5501	108
$\sim$					v. (	total	77556
Carb 1	0.4		Shul 801	mag" Heb	0.22	true pup	4.2
1 Cub Z	0.0	1	and an and	Vac ULS	74	* Sys ape	
or	0.0	8 24		Vacblow	73	arrowil	
-				temp dschy	102	* Sys read	
Culb	0.5		A	press dechy	23	before u	
2 Cubz	0.1	9	6	HC blow out	0.1	apen	
out	0,0					D-7016	
-			AS Shul	temp in Hx	197	13-801 C	
Curbi	0.4	55 - 130-	kin.	press in HX	15		
3 Curbz	0.1	N . N	Set in a	temp out HX	62	AFL 201 B-701	
out	0.0	1		press out the	14,2	13801 VI	-
L		· ~ .		mas "Hed	6.0	13 801 01	
	vac	PID		intras Files			
WBI	18	0,0	-		Vac	PID	i.
WAJ	25	4.0	20	TEFPI		0.0 chre	1
WAZ	62	0.3	-3 ×	TSUE4	62	6.1 will	
WRI	41	0,1		TSUEZ	47	0.1	
MG	28	2.0	14.	TSUEL	44	O. O Vadrid	
MIO	28	0.1	3.16	TSUE7	46	0.1	
Mg	51	0.1	P.	V7	23	0.1	
MB	39	2.1		VI	38	0.0 well	
MI		0.0 bell 0.0 choice		VZ	23	O.	2
MIJ	46	0.1		VS-	28	0.0	
MIZ	62	1).(		V4	37	0.0	s.
MI	42	4.6	,	TSUES	58	0,1	
MIG	47	0.1		TSUE6	62	0.1	
MIZ	53	6.8		TSUE 8	61	0,(	
MIS	46	0,1			w	·'l	
		-					3

Rite in the Rain.

			R-61	0 4	-13-1		
CI	temp	95.3	Short 701	mm + HDD	0.24	B-701	9017
	vel	3950		Vac ULS	75	B-801	9118
CZ	timp	95.2		vac blow	73	C-2201	9183
66	vel	4060		tenp dischy	105	P-401	Z
C3	the	94.4		per ilsung	24	P-501	69
0	vel	4200		HC blow out	0,2	P-5501	108
	UA	1200		AL DLOD VA		totalizers	7-7556
[Carbon]	0.2		Shal SU	muy "Heo	0.23	trus pup	n
C2	0.0		070000000	Values	78		
	0.0			Vac blow		* Sys operat	w upan
Lout	0.0			temp dichy	102	arried	
CI	OrZ			presi dechy		1000	
	010	1		He blow out	0.1	* sys rendy	shint/open
- CZ		•		MC OUS OF	Q+1		
Love	0.0		AS Shid	+ 1 + +++	185	Closed : WI WA	1, 0043,004
CI	$\bigcirc$ 1	•	NO ON W	tenp m Hk	12.5		
4	0,1			pres in the		open ! We	
1 CZ	0,1	i.		Tup out the	58	wes, we	s, we c
1 UUA	0,0			pres out the	11.9	B-701@ 5	<u>97.</u>
1 1 12				may " had	6.5	B-801 e 4	A MARK AND A
	Vec	PID	1 + 2 - 1	Vac	PID	After adj	
WCI	23	0.0	TSUE4		0.0 well	B-701 VLS	e 88"
WCZ	27	0.1	TSUEZ	51	0.0 men	B-801015	e 84"
WC3	45	6.2	tsue!	40	Ve Clot	a	Press Q
WB3	28	0.0	TSVE7	50	0.1	V-3 V-13	9 7
WBZ	38	4.0	V7	28	0.1	V-2	8/4
WBI		0.0 well		28	0.0	V-14 V-1	8 5
WA3		0.0 dusid		31	010	M-8	1 11
WAZ		0.0 with		40	0.1	M-20 M-26	5 20
WAI	2	0.0 well	TSUES	61	0.0	M-2	5 10
MG		Oil closed	tsue 6	62	0,1	M-27 M-16	5 0
MIO	32	0.1	TSUE 8	62	0.0	1 M-3	3 9
Mg	55	0.1	1	AS		M-9 M-17	
M8	46	1.0		Press	Q	M-5	3 3
MIS		0.0 child	V-1	67	3	M-19 M-15	56
MIZ	70	10,6	1 V-		7	M - 7	5 7
MI	50	3.8	V		5	M-10	208
MIZ	62	4.0	V-		0	m-14 m-18	
M18	55	O. O Kohu	V- V-			M-6	10 14
1 110		- IV ICOHL		-11 3	0	M-13 M-4	5 6

P-66 0 2-13-15 PC P M-22 5 M-11 6 25 M-12 6 Z 5 M-25 3 7 M-1 4 5 M-24 0 M-23 10  $\bigcirc$ 10 M-21 11 P-66 2-16-15 * System down upon any Alarmy & VFDA - 8201 PNL, VFDA-8202 PNL, PWRA-8201 PNL @ 06:13 2/14/15 and FSPF ALM @ 2017 2/14/15 Bys went down 2/14/15 Syden was restator * * PID rendys of apr wells were taken + Sys range the better wells were apaul or shot CI Shid 701 mi, "Hio 102.1. tup 6.24 B-701 9037 vel 84 3900 9138 Unclus B-801 C2 83 timp 102.2 C-2201 9173 Vac blow 3800 511 P-401 VU 2 temp dschy (3 101.7 23 69 temp P-501 Press Suchy 108 vel 4120 0. HC 660 out P-5501 totalizer 77556 Shul 801 Carm 1 0.2 0.24 may"Hid trans purp 2 Camil O.V 87 Ungells * Not employed who aut 87 0.0 Une blow temp dolly 110 to marken preserve Calal 0.1 22.5 Pres decey Come 0.0 B-701 @ 57% He blou out 0.1 - OUY 0.0B-801 @ 441. Culan 1 6.1 ASSLA 185 tup mitto 3/ CuronZ 0.0 B-701 unclus 88" press in HK 13 DUY 0.0 66 B-801 vac VLS 82" terp of HK Prell out AND (2.) 7.0 my the

Rite in the Rain.

				P=66		2/16/15
wer	Vac	PID			PID	
Wei	23	0.0	7	MI	0,0	
UCZ	27	0.0		MZ	0.0	
WC3	45	0.0	- closed	M3	0.0	
WB3	28	0.0	after fully	MS	0.0	
WBZ	38	0.0		M14	0.0	and the second
MID	57	0.1		MIZ	0.0	
M9	70	0.0		MIS	0.0	pall wells
Mg	62	0.1		M16	0.0	ArthClosed
M4	62	1.0		M18	0.0	1000
MIZ	70	7.5		TSUE 3	0.0	
MI	56	6.1		TMUK5	0.0	
MIT	70	0.1		TEFRI	0.0	
M19	70	13.2		TSUE 4	0.0	
TSUEZ	55	0.0	postroly	TSUE 11	0.0	
TSUEI	25	0.6	losel	TSUE 10	0.0	
TSUE7	53	0.1		V6	0.0	
U7	22	0.0		V3	0.0	
UI	35	0.2		TEFR2	0.0	
V2	23	0.1	2 O	TMW48	0.0	
V5	28	0.0		17 10 10	-	-
V4	39	0.0	7	20		
TSUES	60	0.1				
	62	0.0	24			
TSUE 6	62	0.0				56-0
100.03	* •					
		-				
				-	1	
-						
		11 				
		1 8 64 1				

* 575	opum		wingel	6 west	7		4-15
~ 373	Grand	John	annta				
CL	tere	94.7	Shud 701	may"/20	0.24	8-701	9420
	vil	1600		Vac VLS	83	B-801	9353
C2	ting	947		Vac blow	82	C-2201	9556
	vei	1870		tong dich	104	P-401	Z
C3	temp	94,1		bloodsun	15	P-501	69
	uci	1980		He blue our	1,4	P-5501	108
~						total	7792
Curbl	1.2		AS Shal	tenp m Hk	165	ton pup	$\sim\sim$
Carb2	0.1		12124 I I I I I I I I I I I I I I I I I I I	Press mttx	10	* not c	NUL
L OUT	0.0			temp out the	58	autor to	man
Carbl	1.1			Pers of HX	10	press	
Curst	0.0	/		mag " (ted	3.0		
OUT	0.0		X			4	
Curbl	1.5						
Curbz	0.1						
Lout	0.1	P			2 m		
well	Val	13.0		with	Press	Q	
MO	54	0.3		M-2	5	10	
Mag	70	0.2		M-16	5	0	
M8	58	1.8		m-9	25 A.	10	
MY	50	0.0		M-17	7	18	
MIZ	70.	8.4		M-5	3	3.	
MIL	47	3.3		M-10	2	1	
ACTO	4	Marie		M-14	1	9	
MIT	60	21		M-22	6	0	
MIG	70	3.7		M-1	3	12	
				M-11	3	D	
		· · · · · · · · · · · · · · · · · · ·					
4							
2.72							

Rite in the Rain.

			P-66	P		3.12	2.15	•
								C
<u>C1</u>	temp	102.4	Shel 70	mag "ko	0.25	B-701	9616	C
	vel	1725		Var VLS	85	B-801	9353	C
CZ	temp	102.0		Vac bho	80	C-2201	9752	-
	UC	1940		temp decky	111	P-401	2	C
C3	tomp	101.3		pris daus		P- 501	69	C
	vel	1965		He blow at	1 2	7-5501	108	C
						total	77927	-
Curbi	1.4		AS Shel	temp on the	180	trus presp	.~~~	C
CNDZ	0.0			press m HK		* not en		G
out	0.0			temp out the	71	toreal		6
Carp	1.5			press out HX				_
Curbz	6,0			may "40				G
OUT	0.1	1			,			6
Carb 1	1.3	ary	Vice	717	w e 11	-		
Carb2	0.0	M6		6.0				(
		10917		0.3				. (
out	6.0	MIO		0.0	Perturis closed	ł		
			70	0.1	elon.			
		19	70	1.6				•
		M8-	56	10.1	opened			C
		AN 7	-	0.0				
		M2						
		M3	38	0.0	Pertury			•
		MY	06		closen			
				0.0				
		M14						
		M13		0.0				
	1	MIS		0.1				-
		MIZ	70	8.2				
		MM	52	1.8				_
		MIL	58	1.2	Openal			- (
		MIZ	64	1.\				-
		M18		1.0			and the second s	
		M19	70	2.4				
								-
								_
								-
•								

Be.

P-66 3-18-12 CI 109.0 Shod 701 teme ma, "120 0.22 B-701 9756 ver 1640 9353 Van ULS B-801 100 CZ tenp 109.0 Val blow 99 9891 C-2201 2040 P-401 117 Z vel temp dschi 03 1083 69 13 P-501 press duchy temp ver 2060 1.2 P-5501 112 HC blow out 79648 totaleur Curol 0.6 AS Shoul trans pup 4.1 temp m 4K Zoo Carb 2 6.0 17 Press m HD * monthy samply N 0.0 58 temp nut the Carp 1 1.2 16.6 un collected PLAS OUT HIS 0.0 Carb 2 2.5 mag Heo * STS openhal upon 008 0.0 armel Catol 1.0 * B-701 VFD mul Curb2 6.0 to 57% out 0,0 PID Welli ULC PID Wills VLL 6.0 70 49 M9 70 M12 0.3 70 0.9 M8 57 MI 59 0.1 MI 64 M16 0,1 40 MY 0.5 70 0.0 M17 MIG 70 0.8 P-66 CI temp 100.2 3-24-15 vel nus "Huo 780 Shal Fol 0.20 CZ 99.8 99 9872 B-70) timp Vac ULS 1850 98 VCC blow 9353 vel 3-801 C3 temp 98.5 C-220) 115 temp dochy 10008 1900 P-401 13 vel 2 press duchy 69 P-50) He bliw out 0.) Carbl 0.1 P-5501 511 CW62 ASShul 6.0 165 79912 temp in HX totalizer out 0.0 8.7 9 trans punp Press MHX Carb O.I temp out HK 60 * Sys shot down Carb7 8.5 0.0 3/23-3/24 Gor GWS priss at the as 0.0 3.5 mug" HO * sys durin upon armin Cub 1 OIL * Sight change chernel Carb2 0.0 * AS Rubys 0.0 OUT

Rite in the Rain.

	3-24		R-66		4	A
					when is	AS Rec
				Q	PV	AS Ru A1-8 M-20
				11	2	A1-8
				17	5	M-20
				0	5	M-26
				4	4	M-3
				oL	01	
				5	5	M-15
				6	5	M-7
				13	7	M-6
				7	5	M-13
				10	6	M-4
				Z		M-12
				0	585	
				25	5	M-23
					5	M-25
				Ŧ		M-24
	· · · · ·	3		0	8	M-21
					4	
<u></u>						
24.5				1		
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-						
1.4						



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,

ENNI GROSS

Jennifer Gross jennifer.gross@pacelabs.com Project Manager

Enclosures

cc: Keith Fox, Cardno ATC





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



# 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



# SAMPLE ANALYTE COUNT

Project:AOC 1396-P66 Westlake/MercerPace 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



# Project: AOC 1396-P66 Westlake/Mercer

# Pace Project No.: 10294735

Sample: V-DSCHG-1	Lab ID: 10	294735001	Collected: 01/20/	15 14:45	Received: 0	01/22/15 09:35 N	latrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
TO15 MSV AIR	Analytical Me	thod: TO-15						
Benzene	ND u	ıg/m3	12.6	38.9		01/30/15 20:19	71-43-2	A4
Ethylbenzene	ND u	ig/m3	34.2	38.9		01/30/15 20:19	100-41-4	
THC as Gas	<b>2660</b> ເ	ig/m3	2370	38.9		01/30/15 20:19		
Toluene	ND u	ig/m3	149	38.9		01/30/15 20:19	108-88-3	
n&p-Xylene	ND u	ig/m3	68.5	38.9		01/30/15 20:19	179601-23-1	
o-Xylene	ND u	ıg/m3	34.2	38.9		01/30/15 20:19	95-47-6	
Sample: V-DSCHG-2	Lab ID: 10	294735002	Collected: 01/20/2	15 14:50	Received: 0	)1/22/15 09:35 N	fatrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
O15 MSV AIR	Analytical Me	thod: TO-15						
Benzene	ND u	ıg/m3	12.2	37.4		01/30/15 20:42	71-43-2	A4
Ethylbenzene	ND u	0	32.9	37.4		01/30/15 20:42		
THC as Gas	<b>2360</b> U		2270	37.4		01/30/15 20:42		
Foluene	ND u	-	143	37.4		01/30/15 20:42	108-88-3	
n&p-Xylene	ND u	-	65.8	37.4		01/30/15 20:42	179601-23-1	
p-Xylene	ND u	0	32.9	37.4		01/30/15 20:42	95-47-6	
		5		-				
Sample: V-DSCHG-3	Lab ID: 10	294735003	Collected: 01/20/*	15 14:55	Received: 0	01/22/15 09:35 N	latrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
O15 MSV AIR	Analytical Me	thod: TO-15						
Benzene	ND u	ıg/m3	13.6	42		01/30/15 21:28	71-43-2	A4
Ethylbenzene	ND u	•	37.0	42		01/30/15 21:28	100-41-4	
THC as Gas	ND u	-	2550	42		01/30/15 21:28		
Toluene	ND u	-	161	42		01/30/15 21:28	108-88-3	
n&p-Xylene	ND u	-	73.9	42		01/30/15 21:28	179601-23-1	
p-Xylene	ND u	-	37.0	42		01/30/15 21:28	95-47-6	
Sample: V-INT-1	Lab ID: 10	294735004	Collected: 01/20/*	15 15:10	Received: 0	)1/22/15 09:35 N	fatrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
O15 MSV AIR	Analytical Me	thod: TO-15						
_	ND u	ıg/m3	10.9	33.6		01/30/15 21:05	71-43-2	A4
Benzene		0	29.6	33.6		01/30/15 21:05		
	ND L	ND ug/m3						
Ethylbenzene		-	2040	33.6		01/30/15 21:05		
Ethylbenzene THC as Gas	<b>2100</b> ເ	ig/m3	2040 129	33.6 33.6		01/30/15 21:05	108-88-3	
Benzene Ethylbenzene THC as Gas Toluene m&p-Xylene		ig/m3 ig/m3	2040 129 59.1	33.6 33.6 33.6		01/30/15 21:05 01/30/15 21:05 01/30/15 21:05		

# **REPORT OF LABORATORY ANALYSIS**



# Project: AOC 1396-P66 Westlake/Mercer

# Pace Project No.: 10294735

Sample: V-INT-2	Lab ID: 10	0294735005	Collected: 01/20/	15 15:05	Received:	01/22/15 09:35	Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
TO15 MSV AIR	Analytical M	ethod: 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: 10	0294735006	Collected: 01/20/	15 15:00	Received:	01/22/15 09:35	Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
TO15 MSV AIR	Analytical M	ethod: TO-15						
Benzene	ND	ug/m3	12.2	37.4		01/27/15 00:46	71-43-2	A4
Ethylbenzene		ug/m3	32.9	37.4		01/27/15 00:46	100-41-4	
THC as Gas		ug/m3	2270	37.4		01/27/15 00:46	i	
Foluene		ug/m3	28.8	37.4		01/27/15 00:46	108-88-3	
n&p-Xylene		ug/m3	65.8	37.4		01/27/15 00:46	179601-23-1	
p-Xylene	ND	ug/m3	32.9	37.4		01/27/15 00:46	95-47-6	
Sample: V-INF-1	Lab ID: 10	0294735007	Collected: 01/20/	15 15:15	Received:	01/22/15 09:35	Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
TO15 MSV AIR	Analytical M	ethod: TO-15						
Benzene	ND	ug/m3	11.3	34.8		01/27/15 01:08	71-43-2	A4
Ethylbenzene		ug/m3	30.6	34.8		01/27/15 01:08	100-41-4	
THC as Gas		ug/m3	2120	34.8		01/27/15 01:08	1	
Foluene		ug/m3	26.8	34.8		01/27/15 01:08	108-88-3	
n&p-Xylene		ug/m3	61.2	34.8		01/27/15 01:08	179601-23-1	
p-Xylene		ug/m3	30.6	34.8		01/27/15 01:08	95-47-6	
Sample: V-INF-2	Lab ID: 10	0294735008	Collected: 01/20/	15 15:20	Received:	01/22/15 09:35 N	Matrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
FO15 MSV AIR	Analytical M	ethod: TO-15						
Benzene	ND	ug/m3	11.7	36		01/27/15 01:30	71-43-2	A4
Ethylbenzene		ug/m3	31.7	36		01/27/15 01:30		
THC as Gas		ug/m3	2190	36		01/27/15 01:30		
Toluene		ug/m3	27.7	36		01/27/15 01:30		
m&p-Xylene	ND	ug/m3	63.4	36		01/27/15 01:30	179601-23-1	

# **REPORT OF LABORATORY ANALYSIS**



# Project: AOC 1396-P66 Westlake/Mercer

# Pace Project No.: 10294735

Sample: V-INF-3	Lab ID: 102947350	09 Collected: 01/20/1	15 15:25	Received: 01	1/22/15 09:35 N	latrix: Air	
Parameters	Results Un	its Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TC	0-15					
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	<b>12100</b> 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	



Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10294735

METHOD BLANK: 1888553

QC Batch: AIR/22358

Analysis Method:

QC Batch Method: TO-15 Associated Lab Samples: 10294735

5 Analysis Description: 10294735006, 10294735007, 10294735008, 10294735009

TO-15

TO15 MSV AIR Low Level

Matrix: Air

Associated Lab Samples:	10294735006,	1020/735007	1020/735008	1020/735000
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

		10294733003	Dup		Max	
Parameter	Units	Result	Result	RPD	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	

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**



Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10294735

Associated Lab Samples:

QC Batch:

AIR/22391 QC Batch Method: TO-15

Analysis Description: 10294735001, 10294735002, 10294735003, 10294735004

TO-15

TO15 MSV AIR Low Level

METHOD BLANK: 1891699

Matrix:	Air	

Analysis Method:

Associated Lab Samples:	10294735001, 10294735002, 10294735003, 10294	735004
	Diani, D.	

المائدة				
Units	Result	Limit	Analyzed	Qualifiers
ug/m3	ND	0.32	01/30/15 12:35	
ug/m3	ND	0.88	01/30/15 12:35	
ug/m3	ND	1.8	01/30/15 12:35	
ug/m3	ND	0.88	01/30/15 12:35	
ug/m3	ND	60.8	01/30/15 12:35	
ug/m3	ND	3.8	01/30/15 12:35	
	ug/m3 ug/m3 ug/m3 ug/m3	ug/m3 ND ug/m3 ND ug/m3 ND ug/m3 ND	ug/m3         ND         0.88           ug/m3         ND         1.8           ug/m3         ND         0.88           ug/m3         ND         0.88           ug/m3         ND         60.8	ug/m3ND0.8801/30/1512:35ug/m3ND1.801/30/1512:35ug/m3ND0.8801/30/1512:35ug/m3ND60.801/30/1512:35

### 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

		10295195005	Dup		Max	
Parameter	Units	Result	Result	RPD	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	

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.



Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10294735

ace Flujeci NU	10294755	

QC Batch:	AIR/22399		Analysis Meth	hod: T(	D-15	
QC Batch Method:	TO-15		Analysis Des	cription: TO	D15 MSV AIR Low I	_evel
Associated Lab Sar	mples: 10294735005					
METHOD BLANK:	1892232		Matrix:	Air		
Associated Lab Sar	nples: 10294735005					
			Blank	Reporting		
Parar	neter	Units	Result	Limit	Analyzed	Qualifiers
Benzene	ua/	m3		0.32	01/27/15 20:09	

Falameter	Units	Result	LIIIII	Analyzeu	Quaimers
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	

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.



# 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.



# **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	Analytica Batch
10294735001	V-DSCHG-1		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.

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Required Client Information:	Required Protect Information:	Invoice Information:	
Company: Cardno ATC	Report To: Kyle Sattler	Attention:	
Address: 7070 SW Fir Loop, Suite 100	Capy To: Keith Fox	Company Name:	
Tigard, OR 97223		Addreas:	。     一是他的现在分词是这些人的。其实是,Regulatory Agency 的复数分子生活的。我的问题:     同
Email Tec lyle.sattler@cardro.com	Pundrase Order No. 03132603B	Pace Quote Reference:	PSCAA
Phone: 503 430 6696 Fax	Chant Project ID: AOC 1396 - P66 Westlake/Mercer	Pace Project Manager: Jenni Gross	
Requested Due Date/TAT: 10 Day (Standard)	Container Order Number:	Pace Profile #	WA
		States Requested	TANANSIS FUSING (YAN) 11 PARTING REPORT OF A PARTING PARTIN

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			-	Ma															AATRIX CODE (see valid codes to lot) BAMPLE TYPE (G=GRAB C=COMP)	Cliant Project ID: AOC 1396 - P66 Westlake/Mercer	Punchase Order No.	Copy To:	Report To: Kyle Sattler
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Custody Seal on Cooler/E	Box Present? Ves	No	Seals Inta	nct? [		Optional: Proj. Due Date	e: Proj. Name:	
Packing Material:	_		1	<u> </u>	]Other:	Te	mp Blank rec: 🗍 Ye	
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Samples Received:								
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Sample Number	Can ID	Sample Nu	mber		Can ID	Sample Number	Can ID	
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CLIENT NOTIFICATION/RI Person Conta	ESOLUTION acted:			-	Date/Time:	Field Data Require		
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Project Manager Reviews Note: Whenever there is a dis	EUN		samples, a	conv of t	Date:	UI 122/16	INR Certification Office	fie out



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

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,

JENNI GROSS

Jennifer Gross jennifer.gross@pacelabs.com Project Manager

Enclosures

cc: Keith Fox, Cardno ATC





Pace Analytical Services, Inc. 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



# SAMPLE SUMMARY

Project: AOC 1396-P-66 Westlake/Mercer

Pace Project No.: 10298020 Lab ID **Date Collected Date Received** Sample ID Matrix V-DSCHG-1 10298020001 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 02/25/15 09:50 Air 02/27/15 09:55 10298020006 V-INT-3 Air 02/25/15 09:55 02/27/15 09:55 10298020007 V-INF-1 02/25/15 10:00 02/27/15 09:55 Air 02/27/15 09:55 10298020008 V-INF-2 Air 02/25/15 10:05 10298020009 V-INF-3 Air 02/25/15 10:10 02/27/15 09:55



# SAMPLE ANALYTE COUNT

Project:AOC 1396-P-66 Westlake/MercerPace 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



# Project: AOC 1396-P-66 Westlake/Mercer

# Pace Project No.: 10298020

Sample: V-DSCHG-1	Lab ID: 1029	98020001	Collected: 02/25/	15 09:30	Received: (	02/27/15 09:55 N	latrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
O15 MSV AIR	Analytical Meth	od: 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		
Foluene	ND	ug/m3	26.0	33.8		03/01/15 23:54	108-88-3	
n&p-Xylene	ND	ug/m3	59.5	33.8		03/01/15 23:54	179601-23-1	
p-Xylene	ND	ug/m3	29.7	33.8		03/01/15 23:54	95-47-6	
Sample: V-DSCHG-2	Lab ID: 1029	98020002	Collected: 02/25/	15 09:35	Received: (	02/27/15 09:55 N	latrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
O15 MSV AIR	Analytical Meth	od: 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		
oluene	ND	ug/m3	26.0	33.8		03/01/15 21:58	108-88-3	
n&p-Xylene	ND	ug/m3	59.5	33.8		03/01/15 21:58		
-Xylene	ND	ug/m3	29.7	33.8		03/01/15 21:58		
Sample: V-DSCHG-3	Lab ID: 1029	98020003	Collected: 02/25/	15 09:40	Received: (	02/27/15 09:55 N	latrix: Air	
Sample: V-DSCHG-3 Parameters	Lab ID: 1029	98020003 Units	Collected: 02/25/	15 09:40 DF	Received: ( Prepared	02/27/15 09:55 N	latrix: Air CAS No.	Qua
Parameters		Units						Qua
Parameters O15 MSV AIR	Results	Units	Report Limit				CAS No.	Qua
Parameters O15 MSV AIR Benzene	Analytical Meth	Units od: TO-15	Report Limit	DF 32.56		Analyzed	CAS No. 71-43-2	
Parameters CO15 MSV AIR Benzene Ethylbenzene	Results Analytical Meth ND	Units lod: TO-15 ug/m3	Report Limit 10.6	DF 32.56		Analyzed 03/01/15 23:10	CAS No. 71-43-2	
Parameters TO15 MSV AIR Benzene Ethylbenzene "HC as Gas	Results Analytical Meth ND ND	Units lod: TO-15 ug/m3 ug/m3	Report Limit 10.6 28.7	DF 32.56 32.56		Analyzed 03/01/15 23:10 03/01/15 23:10	CAS No. 71-43-2 100-41-4	
Parameters CO15 MSV AIR Benzene Ethylbenzene HC as Gas Foluene	Results Analytical Meth ND ND ND	Units nod: TO-15 ug/m3 ug/m3 ug/m3	Report Limit 10.6 28.7 1980	DF 32.56 32.56 32.56		Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10	CAS No. 71-43-2 100-41-4 108-88-3	
Parameters <b>CO15 MSV AIR</b> Benzene Ethylbenzene HC as Gas Toluene n&p-Xylene	Results Analytical Meth ND ND ND ND	Units nod: TO-15 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 10.6 28.7 1980 25.1 57.3	DF 32.56 32.56 32.56 32.56		Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1	
Sample: V-DSCHG-3 Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Foluene n&p-Xylene p-Xylene Sample: V-INT-1	Results Analytical Meth ND ND ND ND ND	Units ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 10.6 28.7 1980 25.1 57.3	DF 32.56 32.56 32.56 32.56 32.56 32.56	Prepared	Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1	
Parameters <b>CO15 MSV AIR</b> Benzene Ethylbenzene HC as Gas Toluene n&p-Xylene Xylene	Results Analytical Meth ND ND ND ND ND ND	Units ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 10.6 28.7 1980 25.1 57.3 28.7	DF 32.56 32.56 32.56 32.56 32.56 32.56	Prepared	Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6	
Parameters <b>CO15 MSV AIR</b> Benzene Ethylbenzene HC as Gas Toluene n&p-Xylene -Xylene <b>Sample: V-INT-1</b> Parameters	Results Analytical Meth ND ND ND ND ND ND ND	Units ud: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 10.6 28.7 1980 25.1 57.3 28.7 Collected: 02/25/	DF 32.56 32.56 32.56 32.56 32.56 32.56 32.56	Prepared Received: (	Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6	A4
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene D-Xylene D-Xylene TO15 MSV AIR TO15 MSV AIR	Results         Analytical Meth         ND         ND <td< td=""><td>Units ud: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3</td><td>Report Limit           10.6           28.7           1980           25.1           57.3           28.7           Collected:         02/25/*           Report Limit</td><td>DF 32.56 32.56 32.56 32.56 32.56 32.56 15 09:45 DF</td><td>Prepared Received: (</td><td>Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 02/27/15 09:55 M Analyzed</td><td>CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 fatrix: Air CAS No.</td><td>A4 Qua</td></td<>	Units ud: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit           10.6           28.7           1980           25.1           57.3           28.7           Collected:         02/25/*           Report Limit	DF 32.56 32.56 32.56 32.56 32.56 32.56 15 09:45 DF	Prepared Received: (	Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 02/27/15 09:55 M Analyzed	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 fatrix: Air CAS No.	A4 Qua
Parameters CO15 MSV AIR Benzene Ethylbenzene HC as Gas foluene h&p-Xylene -Xylene Cample: V-INT-1 Parameters CO15 MSV AIR Benzene	Results         Analytical Meth         ND         Analytical Meth         ND	Units ud: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 10.6 28.7 1980 25.1 57.3 28.7 Collected: 02/25/ Report Limit 11.0	DF 32.56 32.56 32.56 32.56 32.56 32.56 15 09:45 DF 33.8	Prepared Received: (	Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 02/27/15 09:55 M Analyzed 03/01/15 22:26	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 Matrix: Air CAS No. 71-43-2	A4
Parameters CO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene Comple: V-INT-1 Parameters CO15 MSV AIR Benzene Ethylbenzene	Results         Analytical Meth         ND         Analytical Meth         ND	Units ud: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 10.6 28.7 1980 25.1 57.3 28.7 Collected: 02/25/ Report Limit 11.0 29.7	DF 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56	Prepared Received: (	Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 02/27/15 09:55 M Analyzed 03/01/15 22:26 03/01/15 22:26	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 Matrix: Air CAS No. 71-43-2	A4 Qua
Parameters CO15 MSV AIR Benzene Ethylbenzene HC as Gas foluene n&p-Xylene -Xylene Comple: V-INT-1 Parameters CO15 MSV AIR Benzene Ethylbenzene HC as Gas	Results         Analytical Meth         ND         Analytical Meth         ND	Units ud: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 10.6 28.7 1980 25.1 57.3 28.7 Collected: 02/25/ Report Limit 11.0 29.7 2060	DF 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56	Prepared Received: (	Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 02/27/15 09:55 M Analyzed 03/01/15 22:26 03/01/15 22:26	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 Matrix: Air CAS No. 71-43-2 100-41-4	A4 Qua
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Foluene n&p-Xylene b-Xylene Bample: V-INT-1	Results         Analytical Meth         ND         Analytical Meth         ND	Units ud: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 10.6 28.7 1980 25.1 57.3 28.7 Collected: 02/25/ Report Limit 11.0 29.7	DF 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56 32.56	Prepared Received: (	Analyzed 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 03/01/15 23:10 02/27/15 09:55 M Analyzed 03/01/15 22:26 03/01/15 22:26	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 Matrix: Air CAS No. 71-43-2 100-41-4 108-88-3	A4 Qua

# **REPORT OF LABORATORY ANALYSIS**



# Project: AOC 1396-P-66 Westlake/Mercer

# Pace Project No.: 10298020

Lab ID: 1029	8020005	Collected: 02/25/	15 09:50	Received: (	02/27/15 09:55 N	/latrix: Air	
Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
Analytical Metho	od: TO-15						
ND	ug/m3	10.6	32.56		03/01/15 22:48	71-43-2	A4
ND	ug/m3	28.7	32.56		03/01/15 22:48	100-41-4	
ND	ug/m3	1980	32.56		03/01/15 22:48		
ND	ug/m3	25.1	32.56		03/01/15 22:48	108-88-3	
115	-	57.3	32.56		03/01/15 22:48	179601-23-1	
46.7	ug/m3	28.7	32.56		03/01/15 22:48	95-47-6	
Lab ID: 1029	8020006	Collected: 02/25/	15 09:55	Received: (	)2/27/15 09:55 N	Aatrix: Air	
Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
Analytical Metho	od: TO-15						
ND	ug/m3	10.6	32,56		03/01/15 23:32	71-43-2	A4
	0					-	
	0					100 41 4	
	-					108-88-3	
	-						
	-						
	ug/mo	20.7	52.50		00/01/10 20.02	55 1 0	
Lab ID: 1029	8020007	Collected: 02/25/7	15 10:00	Received: (	)2/27/15 09:55 N	Atrix: Air	
Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
Analytical Metho	od: TO-15						
ND	ug/m3	9.4	28.8		03/02/15 00:16	71-43-2	A4
ND	ug/m3	25.3	28.8		03/02/15 00:16	100-41-4	
ND	ug/m3	1750	28.8		03/02/15 00:16		
ND	ug/m3	22.2	28.8		03/02/15 00:16	108-88-3	
ND	ug/m3	50.7	28.8		03/02/15 00:16	179601-23-1	
ND	ug/m3	25.3	28.8		03/02/15 00:16	95-47-6	
Lab ID: 1029	8020008	Collected: 02/25/	15 10:05	Received: (	)2/27/15 09:55 N	Atrix: Air	
Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
Analytical Metho	od: TO-15	·					
-		7 /	22 0		03/01/15 21.36	71-43-2	A4
	0						~+
	-						
	-						
	-						
	110/~~2		<u> </u>		02/01/15 01:00	170604 00 4	
ND <b>32.3</b>	ug/m3 ug/m3	40.3 20.2	22.9 22.9		03/01/15 21:36 03/01/15 21:36		
	Results         Analytical Method         ND         ND         ND         ND         ND         ND         ND         Itab ID:         115         46.7         Lab ID:         ND         ND	Analytical Method: TO-15 ND ug/m3 ND ug/m3 ND ug/m3 ND ug/m3 115 ug/m3 46.7 ug/m3 46.7 ug/m3 46.7 ug/m3 Analytical Method: TO-15 ND ug/m3 ND ug/m	Results         Units         Report Limit           Analytical Method: TO-15         ND         ug/m3         10.6           ND         ug/m3         28.7           ND         ug/m3         1980           ND         ug/m3         25.1           115         ug/m3         25.7           ND         ug/m3         25.1           115         ug/m3         57.3           46.7         ug/m3         28.7           Results         Units         Report Limit           Analytical Method: TO-15         Report Limit           Analytical Method: TO-15         ND         ug/m3           ND         ug/m3         28.7           ND         ug/m3         26.1           ND         ug/m3         26.1           ND         ug/m3         26.7           ND         ug/m3         26.7           ND         ug/m3         26.7           ND         ug/m3         27.3	Results         Units         Report Limit         DF           Analytical Method: TO-15         ND         ug/m3         10.6         32.56           ND         ug/m3         1980         32.56           ND         ug/m3         25.1         32.56           ND         ug/m3         25.1         32.56           ND         ug/m3         25.1         32.56           115         ug/m3         57.3         32.56           46.7         ug/m3         57.3         32.56           Ade.7         ug/m3         57.3         32.56           Results         Units         Report Limit         DF           Analytical Method: TO-15         ND         ug/m3         28.7         32.56           ND         ug/m3         10.6         32.56         ND         ug/m3         28.7         32.56           ND         ug/m3         28.7         32.56         ND         ug/m3         28.7         32.56           ND         ug/m3         28.7         32.56         ND         ug/m3         25.1         32.56           ND         ug/m3         25.1         32.56         ND         ug/m3         25.3 <t< td=""><td>Results         Units         Report Limit         DF         Prepared           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         32.56           ND         ug/m3         1980         32.56         32.56         32.56           ND         ug/m3         1980         32.56         32.56         32.56           ND         ug/m3         28.7         32.56         Results         97.7         32.56           46.7         ug/m3         28.7         32.56         Received: 0         97.7           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7</td><td>Results         Units         Report Limit         DF         Prepared         Analyzed           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         03/01/15 22:48           ND         ug/m3         1980         32.56         03/01/15 22:48           ND         ug/m3         1980         32.56         03/01/15 22:48           ND         ug/m3         25.1         32.56         03/01/15 22:48           ND         ug/m3         57.3         32.56         03/01/15 22:48           46.7         ug/m3         28.7         32.56         03/01/15 22:48           Add.7         ug/m3         28.7         32.56         03/01/15 22:48           Add.7         ug/m3         28.7         32.56         03/01/15 22:49           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         03/01/15 23:32           ND         ug/m3         25.1         32.56         03/01/15 23:32         ND         03/01/15 23:32           ND         ug/m3         25.1         32.56         03/01/15 23:32         ND         03/01/15 23:32           ND         ug/m3         25.3         28.8         03/02/15 00:16         ND</td><td>Results         Units         Report Limit         DF         Prepared         Analyzed         CAS No.           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         03/01/15 22:48         71-43-2           ND         ug/m3         28.7         32.56         03/01/15 22:48         100-41-4           ND         ug/m3         25.6         03/01/15 22:48         108-88-3           115         ug/m3         25.7         32.56         03/01/15 22:48         178-88-3           46.7         ug/m3         28.7         32.56         03/01/15 22:48         95-47-6           Lab ID:         10298020006         Collected:         02/25/15 09:55         Matrix: Air           Results         Units         Report Limit         DF         Prepared         Analyzed         CAS No.           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         03/01/15 23:32         10-41-4           ND         ug/m3         28.7         32.56         03/01/15 23:32         10-46-4           ND         ug/m3         25.6         03/01/15 23:32         108-88-3           ND         ug/m3         25.3         28.6         03/02/15 00:16         &lt;</td></t<>	Results         Units         Report Limit         DF         Prepared           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         32.56           ND         ug/m3         1980         32.56         32.56         32.56           ND         ug/m3         1980         32.56         32.56         32.56           ND         ug/m3         28.7         32.56         Results         97.7         32.56           46.7         ug/m3         28.7         32.56         Received: 0         97.7           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7         97.7	Results         Units         Report Limit         DF         Prepared         Analyzed           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         03/01/15 22:48           ND         ug/m3         1980         32.56         03/01/15 22:48           ND         ug/m3         1980         32.56         03/01/15 22:48           ND         ug/m3         25.1         32.56         03/01/15 22:48           ND         ug/m3         57.3         32.56         03/01/15 22:48           46.7         ug/m3         28.7         32.56         03/01/15 22:48           Add.7         ug/m3         28.7         32.56         03/01/15 22:48           Add.7         ug/m3         28.7         32.56         03/01/15 22:49           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         03/01/15 23:32           ND         ug/m3         25.1         32.56         03/01/15 23:32         ND         03/01/15 23:32           ND         ug/m3         25.1         32.56         03/01/15 23:32         ND         03/01/15 23:32           ND         ug/m3         25.3         28.8         03/02/15 00:16         ND	Results         Units         Report Limit         DF         Prepared         Analyzed         CAS No.           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         03/01/15 22:48         71-43-2           ND         ug/m3         28.7         32.56         03/01/15 22:48         100-41-4           ND         ug/m3         25.6         03/01/15 22:48         108-88-3           115         ug/m3         25.7         32.56         03/01/15 22:48         178-88-3           46.7         ug/m3         28.7         32.56         03/01/15 22:48         95-47-6           Lab ID:         10298020006         Collected:         02/25/15 09:55         Matrix: Air           Results         Units         Report Limit         DF         Prepared         Analyzed         CAS No.           Analytical Method: TO-15         ND         ug/m3         10.6         32.56         03/01/15 23:32         10-41-4           ND         ug/m3         28.7         32.56         03/01/15 23:32         10-46-4           ND         ug/m3         25.6         03/01/15 23:32         108-88-3           ND         ug/m3         25.3         28.6         03/02/15 00:16         <

# **REPORT OF LABORATORY ANALYSIS**



# Project: AOC 1396-P-66 Westlake/Mercer

# Pace Project No.: 10298020

Sample: V-INF-3	Lab ID: 102	98020009	Collected: 02/25/1	5 10:10	Received: 02	2/27/15 09:55 N	latrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Met	hod: 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	



C Batch: AIR/22	2619	Analysis Me	ethod: T	O-15		
C Batch Method: TO-15	5	Analysis De	scription: T	O15 MSV AIR	Low Level	
ssociated Lab Samples:	10298020001, 10298020002 10298020008, 10298020009		10298020004, 1	0298020005,	10298020006,	10298020007,
ETHOD BLANK: 190917	4	Matrix	: Air			
ssociated Lab Samples:	10298020001, 10298020002 10298020008, 10298020009		10298020004, 1	0298020005,	10298020006,	10298020007,
		Blank	Reporting			
Parameter	Units	Result	Limit	Analyze	d Quali	fiers
enzene	ug/m3	ND	0.32	03/01/15 13	3:57	
thylbenzene	ug/m3	ND		03/01/15 13		
i&p-Xylene	ug/m3	ND		03/01/15 13		
-Xylene	ug/m3	ND				
HC as Gas oluene	ug/m3 ug/m3	ND ND				
	ug, mo		0.17		5.01	
ABORATORY CONTROL S	SAMPLE: 1909175					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
enzene	ug/m3	32.5	37.3	115	64-139	
nylbenzene	ug/m3	44.2	51.9	118	71-136	
&p-Xylene	ug/m3	88.3	103	117	71-134	
Kylene	ug/m3	44.2	51.7	117	75-134	
HC as Gas	ug/m3	3520	3670	104	66-135	
bluene	ug/m3	38.3	43.5	114	70-129	
AMPLE DUPLICATE: 190	09440	40007070004				
Parameter	Units	10297676001 Result	Dup Result	RPD	Max RPD	Qualifiers
enzene	ug/m3	0.86	0.1.0		14	25
nylbenzene	ug/m3	ND				25
p-Xylene	ug/m3	ND				25
ylene	ug/m3	ND			_	25
C as Gas	ug/m3	484			5	25
luene	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.

# **REPORT OF LABORATORY ANALYSIS**



# 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.



# 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			

PaceAralytica	
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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.

0248020

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							A State of the substant of the				V-INF-3	V-INF-2	V-INF-1	V-INT-3	V-INT-2	V-INT-1	V-DSCHG-3	V-DSCHG-2	V-DSCHG-1	Tigard, OR 97/223 kyle.sattler@cardno.com 503 430 6696 Fax 10 Day (Standard) Che Date/TAT: 10 Day (Standard) Che Character per box. (A-Z, 0-9 1, -) Sample ids must to unique	Cardno ATC 7070 SW Fir Loon, Suite 100	ទ
				1											~	4		>		ATRIX CODE (see valid codes to isft)  ATRIX CODE (see valid codes to i	Report To: Kyle Sattler Copy To: Keith Fox	Section B Required Proje
				¢	Ľ		IKOU			$\vdash$	AR G	AR G	AR G	AR G	AR G	AR G	AR G	ARG	AR G	ATRIX CODE (see valid codes to left)	N S S	ct Info
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$\square$	Document Nam Air Sampia Condition U		Document Revised: 26Dec2013 Page 1 of 1						
Pace Analytical*	Document No F-MN-A-105-res	.:	Issuing Authority: Pace Minnesota Quality Office						
Air Sample Condition Upon Receipt Courier: KFed Ex UPS Commercial Pace Tracking Number: 6779 5333	Proj		1029802 	0					
Custody Seal on Cooler/Box Present?	No Seals intact	?	Optional: Proj. Due Date:	Proj. Name:					
Packing Material:  Bubble Wrap	Bags Foam None	Other:	Temp	Blank rec: 🔲 Yes 🛱 No					
Temp. (TO17 and TO13 samples only) ('C): Temp should be above freezing to 6'C Correction Fa Type of ice Received Blue Wet Wallone	Corrected Temp (*C):	Thermom. Used: Date & Initials of Po	B888A912167504 B888A9132521491 erson Examining Contents:	72337080 180512447 15 2/27/15					
			Comments:						
Chain of Custody Present?		N/A 1		<u></u>					
Chain of Custody Filled Out?		N/A 2.	·						
Chain of Custody Relinquished?		N/A 3.							
Sampler Name and/or Signature on COC?		N/A 4.							
Samples Arrived within Hold Time?		N/A 5.	hr - TBug						
Short Hold Time Analysis (<72 hr)?			<u>rii - 104.9</u>						
Rush Turn Around Time Requested?		N/A 7.	·····	<u></u> <u></u> _					
Sufficient Volume?		<u>]N/A 8.</u>							
Correct Containers Used?		]N/A 9.							
-Pace Containers Used?		N/A		<u></u>					
Containers Intact?	Yes No	N/A 10.							
Media: Tedlar	<u> </u>	11,		<u></u>					
Sample Labels Match COC?		N/A   12.		······································					
Samples Received:									
Canisters	Flow Can	trollers	Stand	Alone G					
Sample Number Can ID	Sample Number	Can ID	Sample Number	Can ID					
				ļ					
		<u> </u>							
CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No Person Contacted: Date/Time:									
Comments/Resolution:									
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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)

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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,

JENNI GROSS

Jennifer Gross jennifer.gross@pacelabs.com Project Manager

Enclosures

cc: Keith Fox, Cardno ATC





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

### 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



# 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



# SAMPLE ANALYTE COUNT

Project:AOC 1396-P66 Westlake/MercerPace 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



#### Project: AOC 1396-P66 Westlake/Mercer

# Pace Project No.: 10300007

Sample: V-DSCHG-1	Lab ID: 103	00007001	Collected: 03/18/	15 12:25	Received: 0	03/19/15 09:30 N	latrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
TO15 MSV AIR	Analytical Meth	nod: 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	
p-Xylene	ND	ug/m3	44.7	10.12		03/23/15 13:04	95-47-6	
Sample: V-DSCHG-2	Lab ID: 103	00007002	Collected: 03/18/	15 12:30	Received: 0	03/19/15 09:30 N	latrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
TO15 MSV AIR	Analytical Meth	nod: 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		
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	
n&p-Xylene	ND	ug/m3	46.8	26.6		03/23/15 13:26		
p-Xylene	ND	ug/m3	117	26.6		03/23/15 13:26		
		ug/mo		20.0		00,20,10 10.20		
Sample: V-DSCHG-3	Lab ID: 103	00007003	Collected: 03/18/	15 12:35	Received: 0	03/19/15 09:30 N	latrix: Air	
Sample: V-DSCHG-3 Parameters	Lab ID: 103 Results	00007003 Units	Collected: 03/18/* Report Limit	15 12:35 DF	Received: 0 Prepared	03/19/15 09:30 N Analyzed	latrix: Air CAS No.	Qua
Parameters		Units						Qua
Parameters	Results	Units					CAS No.	Qua 2M
Parameters TO15 MSV AIR Benzene	Results Analytical Meth	Units nod: TO-15	Report Limit	DF		Analyzed	CAS No. 71-43-2	
Parameters TO15 MSV AIR Benzene Ethylbenzene	Results Analytical Meth ND	Units nod: TO-15 ug/m3	Report Limit	DF 16.8		Analyzed 03/23/15 13:48	CAS No. 71-43-2	
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas	Results Analytical Meth ND ND	Units nod: TO-15 ug/m3 ug/m3	Report Limit 5.5 74.2	DF 16.8 16.8		Analyzed 03/23/15 13:48 03/23/15 13:48	CAS No. 71-43-2 100-41-4	
Parameters <b>CO15 MSV AIR</b> Benzene Ethylbenzene HC as Gas Toluene	Results Analytical Meth ND ND 2240	Units nod: TO-15 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 5.5 74.2 1020	DF 16.8 16.8 16.8		Analyzed 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48	CAS No. 71-43-2 100-41-4 108-88-3	
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene	Results Analytical Meth ND ND 2240 ND	Units nod: TO-15 ug/m3 ug/m3 ug/m3	Report Limit 5.5 74.2 1020 12.9	DF 16.8 16.8 16.8 16.8		Analyzed 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1	
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene b-Xylene	Results Analytical Meth ND ND 2240 ND ND ND	Units ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 5.5 74.2 1020 12.9 29.6	DF 16.8 16.8 16.8 16.8 16.8 16.8	Prepared	Analyzed 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1	
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene b-Xylene	Results Analytical Meth ND ND 2240 ND ND ND ND	Units ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 5.5 74.2 1020 12.9 29.6 74.2	DF 16.8 16.8 16.8 16.8 16.8 16.8	Prepared	Analyzed 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6	
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene Sample: V-INT-1 Parameters	Results Analytical Meth ND 2240 ND ND ND ND ND	Units nod: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 00007004 Units	Report Limit           5.5           74.2           1020           12.9           29.6           74.2           Collected:         03/18/*	DF 16.8 16.8 16.8 16.8 16.8 16.8	Prepared Received: 0	Analyzed 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6	2M
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene D-Xylene D-Xylene TO15 MSV AIR TO15 MSV AIR	Results Analytical Meth ND ND 2240 ND ND ND ND ND ND ND ND	Units nod: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 nod: TO-15	Report Limit           5.5           74.2           1020           12.9           29.6           74.2           Collected:         03/18/*           Report Limit	DF 16.8 16.8 16.8 16.8 16.8 16.8	Prepared Received: 0	Analyzed 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 latrix: Air CAS No.	2M
Parameters CO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene Comple: V-INT-1 Parameters CO15 MSV AIR Benzene	Results Analytical Meth ND ND 2240 ND ND ND ND ND ND ND ND ND ND ND ND ND	Units nod: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 o00007004 Units nod: TO-15 ug/m3	Report Limit           5.5           74.2           1020           12.9           29.6           74.2           Collected:         03/18/*           Report Limit           5.5	DF 16.8 16.8 16.8 16.8 16.8 15 12:50 DF 16.8	Prepared Received: 0	Analyzed 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 latrix: Air CAS No. 71-43-2	2M Qua
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene Bample: V-INT-1 Parameters TO15 MSV AIR Benzene Ethylbenzene	Results Analytical Meth ND ND 2240 ND ND ND ND ND Results Analytical Meth 19.4 ND	Units nod: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit           5.5           74.2           1020           12.9           29.6           74.2           Collected:         03/18/*           Report Limit           5.5           74.2	DF 16.8 16.8 16.8 16.8 16.8 15 12:50 DF 16.8 16.8	Prepared Received: 0	Analyzed 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 14:10 03/23/15 14:10	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 latrix: Air CAS No. 71-43-2	2M Qua
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene Bample: V-INT-1 Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas	Results Analytical Meth ND ND 2240 ND ND ND ND ND Results Analytical Meth 19.4 ND 3310	Units nod: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit           5.5           74.2           1020           12.9           29.6           74.2           Collected:         03/18/*           Report Limit           5.5           74.2	DF 16.8 16.8 16.8 16.8 16.8 15 12:50 DF 16.8 16.8 16.8 16.8 16.8	Prepared Received: 0	Analyzed 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 14:10 03/23/15 14:10 03/23/15 14:10	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 latrix: Air CAS No. 71-43-2 100-41-4	2M
TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene m&p-Xylene p-Xylene Sample: V-INT-1	Results Analytical Meth ND ND 2240 ND ND ND ND ND Results Analytical Meth 19.4 ND	Units nod: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit           5.5           74.2           1020           12.9           29.6           74.2           Collected:         03/18/*           Report Limit           5.5           74.2	DF 16.8 16.8 16.8 16.8 16.8 15 12:50 DF 16.8 16.8	Prepared Received: 0	Analyzed 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 13:48 03/23/15 14:10 03/23/15 14:10	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 latrix: Air CAS No. 71-43-2 100-41-4 108-88-3	2M Qua

# **REPORT OF LABORATORY ANALYSIS**

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#### Project: AOC 1396-P66 Westlake/Mercer

# Pace Project No.: 10300007

Sample: V-INT-2	Lab ID: 1030	00007005	Collected: 03/18/1	5 12:45	Received: 0	03/19/15 09:30 N	latrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
TO15 MSV AIR	Analytical Meth	od: 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		
p-Xylene	ND	ug/m3	74.2	16.8		03/23/15 14:31		
Sample: V-INT-3	Lab ID: 1030	00007006	Collected: 03/18/1	5 12:40	Received: 0	03/19/15 09:30 N	latrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
TO15 MSV AIR	Analytical Meth	od: 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	
		-		21				
n&p-Xylene	ND	ug/m3	37.0			03/23/15 15:04		
o-Xylene	ND	ug/m3	92.7	21		03/23/15 15:04	95-47-6	
Sample: V-INF-1	Lab ID: 1030	0007007	Collected: 03/18/1	5 12:55	Received: 0	)3/19/15 09:30 N	latrix: Air	
	Lab ID. 1030	0007007						
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
Parameters		Units		DF	Prepared			Qua
Parameters	Results Analytical Meth	Units od: TO-15	Report Limit		Prepared	Analyzed	CAS No.	·
Parameters TO15 MSV AIR Benzene	Results Analytical Meth ND	Units lod: TO-15 ug/m3	Report Limit	18.7	Prepared	Analyzed 03/23/15 15:25	CAS No. 71-43-2	Qua
Parameters TO15 MSV AIR Benzene Ethylbenzene	Results Analytical Meth ND ND	Units lod: TO-15 ug/m3 ug/m3	Report Limit 6.1 82.5	18.7 18.7	Prepared	Analyzed 03/23/15 15:25 03/23/15 15:25	CAS No. 71-43-2	·
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas	Results Analytical Meth ND ND 1970	Units nod: TO-15 ug/m3 ug/m3 ug/m3	Report Limit 6.1 82.5 1140	18.7 18.7 18.7	Prepared	Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25	CAS No. 71-43-2 100-41-4	·
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Foluene	Results Analytical Meth ND ND 1970 23.1	Units nod: TO-15 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 6.1 82.5 1140 14.4	18.7 18.7 18.7 18.7 18.7	Prepared	Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25	CAS No. 71-43-2 100-41-4 108-88-3	·
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene	Results Analytical Meth ND ND 1970 23.1 44.4	Units ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit           6.1           82.5           1140           14.4           32.9	18.7 18.7 18.7 18.7 18.7 18.7	Prepared	Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1	·
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene	Results Analytical Meth ND ND 1970 23.1	Units nod: TO-15 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 6.1 82.5 1140 14.4	18.7 18.7 18.7 18.7 18.7	Prepared	Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1	·
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene m&p-Xylene p-Xylene	Results Analytical Meth ND ND 1970 23.1 44.4	Units ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit           6.1           82.5           1140           14.4           32.9	18.7 18.7 18.7 18.7 18.7 18.7 18.7		Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1	·
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene b-Xylene	Results Analytical Meth ND ND 1970 23.1 44.4 ND	Units ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit           6.1           82.5           1140           14.4           32.9           82.5	18.7 18.7 18.7 18.7 18.7 18.7 18.7		Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6	·
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene b-Xylene Bample: V-INF-2 Parameters	Results Analytical Meth ND ND 1970 23.1 44.4 ND Lab ID: 1030	Units ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 Units	Report Limit           6.1           82.5           1140           14.4           32.9           82.5	18.7 18.7 18.7 18.7 18.7 18.7 18.7 5 13:00	Received: 0	Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6	1M
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene D-Xylene D-Xylene TO15 MSV AIR TO15 MSV AIR	Results Analytical Meth ND ND 1970 23.1 44.4 ND Lab ID: 1030 Results Analytical Meth ND	Units ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 Units	Report Limit           6.1           82.5           1140           14.4           32.9           82.5	18.7 18.7 18.7 18.7 18.7 18.7 18.7 5 13:00	Received: 0	Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 latrix: Air CAS No.	1M
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene D-Xylene D-Xylene TO15 MSV AIR Benzene	Results Analytical Meth ND ND 1970 23.1 44.4 ND Lab ID: 1030 Results Analytical Meth	Units ud: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 6.1 82.5 1140 14.4 32.9 82.5 Collected: 03/18/1 Report Limit	18.7 18.7 18.7 18.7 18.7 18.7 5 13:00 DF	Received: 0	Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 09:30 M Analyzed	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 latrix: Air CAS No. 71-43-2	1M Qua
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene D-Xylene D-Xylene TO15 MSV AIR Benzene Ethylbenzene	Results Analytical Meth ND ND 1970 23.1 44.4 ND Lab ID: 1030 Results Analytical Meth ND	Units ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 6.1 82.5 1140 14.4 32.9 82.5 Collected: 03/18/1 Report Limit 5.8	18.7 18.7 18.7 18.7 18.7 18.7 5 13:00 DF	Received: 0	Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/19/15 09:30 M Analyzed 03/23/15 15:47	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 latrix: Air CAS No. 71-43-2	1M Qu
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene n&p-Xylene D-Xylene D-Xylene D-Xylene TO15 MSV AIR Benzene Ethylbenzene THC as Gas	Results Analytical Meth ND ND 1970 23.1 44.4 ND Lab ID: 1030 Results Analytical Meth ND ND ND	Units ud: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit 6.1 82.5 1140 14.4 32.9 82.5 Collected: 03/18/1 Report Limit 5.8 79.5	18.7 18.7 18.7 18.7 18.7 18.7 5 13:00 DF 18 18 18	Received: 0	Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/19/15 09:30 M Analyzed 03/23/15 15:47 03/23/15 15:47	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 latrix: Air CAS No. 71-43-2 100-41-4	1M Qu
Parameters TO15 MSV AIR Benzene Ethylbenzene THC as Gas Toluene m&p-Xylene o-Xylene Sample: V-INF-2	Results Analytical Meth ND ND 1970 23.1 44.4 ND Lab ID: 1030 Results Analytical Meth ND ND 2300	Units ud: TO-15 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3 ug/m3	Report Limit           6.1           82.5           1140           14.4           32.9           82.5           Collected:         03/18/1           Report Limit           5.8           79.5           1090	18.7 18.7 18.7 18.7 18.7 18.7 5 13:00 DF 18 18 18 18 18 18	Received: 0	Analyzed 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:25 03/23/15 15:47 03/23/15 15:47 03/23/15 15:47 03/23/15 15:47	CAS No. 71-43-2 100-41-4 108-88-3 179601-23-1 95-47-6 latrix: Air CAS No. 71-43-2 100-41-4 108-88-3	1M Qua

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#### Project: AOC 1396-P66 Westlake/Mercer

### Pace Project No.: 10300007

Sample: V-INF-3	Lab ID: 103	00007009	Collected: 03/18/1	5 13:05	Received: 03	8/19/15 09:30 N	latrix: Air	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Met	hod: 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	



Project:			estlake/Mercer							
Pace Project No.:	103000	007								
QC Batch:	AIR/2	2808		Analysis I	Method:	тс	D-15			
QC Batch Method:	TO-1	5		Analysis I	Description:	тс	D15 MSV AIR	Low Level		
Associated Lab San	nples:		001, 10300007002, 008, 10300007009	10300007003	3, 103000070	)4, 10	0300007005,	1030000700	06, 10300	007007,
METHOD BLANK:	192355	53		Mat	rix: Air					
Associated Lab San	nples:		001, 10300007002, 008, 10300007009	10300007003	3, 103000070	04, 10	0300007005,	1030000700	06, 10300	007007,
				Blank	Reportir	g				
Paran	neter		Units	Result	Limit		Analyzed	d Qu	alifiers	
Benzene			ug/m3	N	ID	0.32	03/23/15 10	):24		•
Ethylbenzene			ug/m3	Ν	1D	4.4	03/23/15 10	):24		
m&p-Xylene			ug/m3	Ν	1D	1.8	03/23/15 10	):24		
o-Xylene			ug/m3	Ν	1D	4.4	03/23/15 10	):24		
THC as Gas			ug/m3	N	1D	60.8	03/23/15 10	):24		
Toluene			ug/m3	Ν	ID	0.77	03/23/15 10	):24		
		SAMPLE:	1923554							
				Spike	LCS		LCS	% Rec		
Paran	neter		Units	Conc.	Result	ç	% Rec	Limits	Qua	lifiers
Benzene			ug/m3	32.5	37.3		115	64-13		
Ethylbenzene			ug/m3	44.2	54.1		122	71-13	36	
m&p-Xylene			ug/m3	88.3	105		119	71-13	34	
o-Xylene			ug/m3	44.2	54.5		123	75-13	34	
THC as Gas			ug/m3	3520	3640		103	66-13	35	
Toluene			ug/m3	38.3	44.3		116	70-12	29	

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-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.



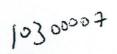
# **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project:AOC 1396-P66 Westlake/MercerPace 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		

Pace Analytical

# CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



Section Require	A d Client Information:	Section Required		ct Info	ormation:						ion C ice In	; iforma	ation:												Γ	Pa	ge :	1	Of	1
Compar	y: Cardno ATC	Report To	_	A DESCRIPTION OF THE OWNER.	attler					Atter	-				-					-					-		1			
Address	7070 SW Fir Loop, Suite 100	Сору То		eith F						Com	pany	Name			-															
	Tigard, OR 97223									Adda	ess:						0.15		1.1.1		35			0.50	R	egula	tory A	gency		
Email To		Purchase	Order	No.	031326	603B				Pace	Quo	te Ref	erence	<del>)</del> :	1999												SCAA			
Phone:	503 430 6696 Fax:	Client Pr	oject ID	: AC	C 1396	- P66 V	Vestlake	Mercer		Pace	Proje	ect Ma	anage	:	Jen	ni Gr	OSS		1	5.00	1	4242	X:13	2.35	12	State	Loca	tion		S./ (7)
Request	ed Due Date/TAT: 10 Day (Standard)	Containe	r Order	Numb	ber,					Pace	Profi	ile #:															WA			
	SAMPLE ID One Character per box. (A-Z, 0-9 /, -) Sample Ids must be unique Ar Other Tissue	ng Wabar DW WT Wabar WW t P	(see valid codes to left)		ST	COLL	ECTED	۹D	SAMPLE TEMP AT COLLECTION	ITAINERS	bev	P	rese				Analyses Test	and the state of t		equest			Eiter		N)		I Chlorine (Y/N)			
ITEM#			MATRIX CODE	-	DATE	TIME	DATE	TIME	SAMPLE T		-	H2SO4	P	NaOH	Na2S203	Methanol	Anal	-									Residual	6	01	
1	V-DSCHG-1		A	_			03/18/15	12:25			x	-	+		•	-	-	x	$\square$	-	-			+	++	+	-	2	- 1	
2	V-DSCHG-2	1000	A	RG			03/18/15	12:30		3	х							X										0	1	
3	V-DSCHG-3		A	RG			03/18/15	12:35		2	x							x										Ö	03	
A	V-INT-1			RG			03/18/15	12:50		2	x							x						T	П		٦	0	54	
A COLUMN AND A			_	-								+	+				-		+		+		ti i	+		-	-		55	
5.	V-INT-2		_	RG			03/18/15	12:45			x	+	-			-	-	×	+	-	-			-	+	+	-			
6	V-INT-3		A	RG			03/18/15	12:40		2	x							X			_			1		_	1		26	_
7	V-INF-1		A	RG			03/18/15	12:55		2	x							X										D	07	
8	V-INF-2		A	-			03/18/15	13:00		2	x							x										0	28	
2			-	-							-	+	+			-	-		+	+	-	+		+-	++	+	-	2	09	
9	V-INF-3		A	RG			D3/18/15	13:05		2	x	-	-			-	-	X		-	-		-	+	+	-+-	-		09	
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						SIC	NATURE	of SAMPL	ER	1	R	1	>						DATE	Signe	ed:			8/201	-		EW	Recei (Y/N)	Cust	am

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Sample Condition Upon Receipt Courier:	mercial Pace 795333(6) Present? Yes Wrap Bubble Ba only) (*C): o 6*C Correction Factor	USPS Other: No ags Foam Corrected Temp or:	Seals In	ient tact?	Thermom. Use	Pace Minn #:103	ij. Due Date: Temp	<b>D7</b> Proj. Name: Blank rec: □Ye	s Zik
Upon Receipt Courier: Fed E: Commarking Number: S7 Ustody Seal on Cooler/Box Packing Material: Bubble mp. (TO17 and TO13 samples of emp should be above freezing to be of ice Received Blue Chain of Custody Present?	ATC - OR ix $\Box UPS$ mercial $\Box Pace$ 79533(6) <b>Present?</b> $\Box Yes$ Wrap $\Box Bubble Bac mly) (*C): \Box506°C Correction Factor$	Other: No ags Foam Corrected Temp or:	Seals In	ient tact?	10300	Detional: Pro	ij. Due Date: Temp	Proj. Name: Blank rec: Ye	s
racking Number:S 7 ustody Seal on Cooler/Box P cking Material:Bubble imp. (TO17 and TO13 samples of emp should be above freezing to pe of ice ReceivedBlue Chain of Custody Present?	$795333(6)$ Present? $Yes$ Wrap $Bubble Bases$ unly) (*C): $$ $o 6^{\circ}C$ Correction Factor	No No ags Foam Corrected Temp or:			Other:		Temp	Blank rec: Ye	s Tak
cking Material: Bubble mp. (TO17 and TO13 samples of emp should be above freezing to pe of ice Received Blue Chain of Custody Present?	Wrap Bubble Ba	ags Foam Corrected Temp or:			Other:		Temp	Blank rec: Ye	s 🕅
mp. (TO17 and TO13 samples of emp should be above freezing to pe of ice Received Blue Chain of Custody Present?	only) (°C):	Corrected Temp or:	(°C):	one		B88091216			s
emp should be above freezing to pe of ice Received Blue Chain of Custody Present?	o 6°C Correction Facto	or:		6	Thermom. Use	B88491216	7504		- 18.1.
					Date & Initials	d: B88A91325 of Person Examining	21491	□72337080 □80512447 R_314	
Chain of Custody Filled Out?		Yes	No	□n/A	1.				
		Yes	No	□N/A	2.				
Chain of Custody Relinquished	1? .	Yes	No	N/A.	3.				
Sampler Name and/or Signatur	re on COC?	Yes	No	□N/A	4.				
Samples Arrived within Hold Ti		Yes	No	N/A	5. 6. T-C	D.C.			
Short Hold Time Analysis (<72		Yes	No		6. 7-12				
Rush Turn Around Time Reque Sufficient Volume?	estear	Yes Yes			8.				
Correct Containers Used?		Yes	No		9.				
-Pace Containers Used?		Yes	No			· .			
Containers Intact?		Yes	No	□n/A	10. V - 1	NT-2	flat		
Media: arbit			•		11.				
Sample Labels Match COC?	<b>)</b>	Yes	No	□N/A	12.				
Samples Received:									
Canisters	S		Flow	Controller	5		Stand A	Alone G	
Sample Number	Can ID	Sample N	umber	· ·	Can ID	Sample	Number	Can ID	
					· · · · · · · · · · · · · · · · · · ·		١		
								·	
LIENT NOTIFICATION/RESOL Person Contacted					Date/Time: _			∐Yes ØNo	
Person Contacted Comments/Resolution	n: Two Tedla	is per se	imple	e, or	e remo	uns for	V-INT	-2	
			4						

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,

JENNI GROSS

Jennifer Gross jennifer.gross@pacelabs.com Project Manager

Enclosures

cc: Keith Fox, Cardno ATC





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

### 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



# 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



# SAMPLE ANALYTE COUNT

Project:AOC 1396-P66 Westlake/MercerPace 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



#### Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10294897

Sample: W-DSCHG	Lab ID: 102948970	01 Collected: 01/21/	15 11:50	Received: 0	1/23/15 09:45 N	Aatrix: Water	
Parameters	Results Un	its Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
NWTPH-Gx GCV	Analytical Method: NV	VTPH-Gx					
TPH as Gas <b>Surrogates</b>	ND ug/L	100	1		01/27/15 02:34		
a,a,a-Trifluorotoluene (S)	87 %.	50-150	1		01/27/15 02:34	98-08-8	
8260 MSV UST	Analytical Method: EF	PA 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		
Toluene-d8 (S)	103 %.	75-125	1		01/25/15 13:55		
4-Bromofluorobenzene (S)	104 %.	75-125	1		01/25/15 13:55	460-00-4	
Sample: W-OUT-WC1	Lab ID: 102948970	02 Collected: 01/21/	15 11:55	Received: 0	1/23/15 09:45 N	Atrix: Water	
Parameters	Results Un	its Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
NWTPH-Gx GCV	Analytical Method: NV	VTPH-Gx					
TPH as Gas <b>Surrogates</b>	ND ug/L	100	1		01/27/15 02:55		
a,a,a-Trifluorotoluene (S)	88 %.	50-150	1		01/27/15 02:55	98-08-8	
8260 MSV UST	Analytical Method: EF	PA 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	
Foluene	ND ug/L	1.0	1		01/25/15 14:12	108-88-3	
Kylene (Total)	ND ug/L	3.0	1		01/25/15 14:12	1330-20-7	
<i>Surrogates</i> 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		
4-Bromofluorobenzene (S)	103 %.	75-125	1		01/25/15 14:12		
			·		0		
Sample: W-INF-WS1	Lab ID: 102948970	03 Collected: 01/21/	15 12:00	Received: 0	1/23/15 09:45 N	Aatrix: Water	
Parameters	Results Un	its Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
NWTPH-Gx GCV	Analytical Method: NV	VTPH-Gx					
TPH as Gas <b>Surrogates</b>	<b>827</b> ug/L	100	1		01/27/15 03:15		
a,a,a-Trifluorotoluene (S)	89 %.	50-150	1		01/27/15 03:15	98-08-8	
3260 MSV UST	Analytical Method: EF	PA 8260					
Benzene	<b>10.2</b> ug/L	1.0	1		01/25/15 14:28	71-43-2	
Ethylbenzene	<b>11.4</b> ug/L	1.0	1		01/25/15 14:28	100 /1 /	

# **REPORT OF LABORATORY ANALYSIS**

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#### Project: AOC 1396-P66 Westlake/Mercer

### Pace Project No.: 10294897

Sample: W-INF-WS1	Lab ID:	10294897003	Collected: 01/21/1	5 12:00	Received: 0'	1/23/15 09:45 N	Aatrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical	Method: EPA 826	60					
Toluene	82.	<b>1</b> ug/L	1.0	1		01/25/15 14:28	108-88-3	
Xylene (Total) <i>Surrogates</i>	86.	<b>2</b> ug/L	3.0	1		01/25/15 14:28	1330-20-7	
1,2-Dichloroethane-d4 (S)	9	9 %.	75-125	1		01/25/15 14:28	17060-07-0	
Toluene-d8 (S)	10	3 %.	75-125	1		01/25/15 14:28	2037-26-5	
4-Bromofluorobenzene (S)	10	6 %.	75-125	1		01/25/15 14:28	460-00-4	



	AOC 1396-P66 \	Westlake/Mercer									
Pace Project No.:	10294897										
QC Batch:	GCV/13263		Analys	s Method	l: N\	WTPH-G	iх				
QC Batch Method:	NWTPH-Gx		Analys	s Descrip	otion: N	WTPH-G	ax Water				
Associated Lab Samp	oles: 1029489	97001, 10294897002,	10294897	003							
METHOD BLANK:	1888116		N	latrix: Wa	ater						
Associated Lab Samp	oles: 1029489	97001, 10294897002,	10294897	003							
			Blank	F	Reporting						
Parame	eter	Units	Result		Limit	Ana	alyzed	Qualif	iers		
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 CON		& LCSD: 1888118 Units	Spike Conc.	LCS Result	1888119 LCSD Result	LCS	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas a,a,a-Trifluorotoluene	(S)	ug/L %.	1000	104	0 1010	104 94	-	65-125 50-150		3 20	
MATRIX SPIKE SAM	PLE:	1889758									
			1029462	28004	Spike	MS		MS	%	Rec	
Parame	eter	Units	Resu	ult	Conc.	Resu	lt	% Rec	Li	mits	Qualifiers
TPH as Gas		ug/L		207	1000		1140	9	3	50-150	
a,a,a-Trifluorotoluene	(S)	%.						8	7	50-150	
SAMPLE DUPLICATE	E: 1889757										
			10294628		Dup			Max			
Parame	eter	Units	Result	:	Result	RF	D	RPD	Q	ualifiers	
TPH as Gas		ug/L	į	5650	5660		0		30		
a,a,a-Trifluorotoluene	(0)	%.		93	99		7				

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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Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10294897

QC Batch: MSV/30216 QC Batch Method: EPA 8260 Analysis Method:

Analysis Description: 8260 MSV UST-WATER

Matrix: Water

EPA 8260

Associated Lab Samples: 10294897001, 10294897002, 10294897003

METHOD BLANK: 1887831

Associated Lab Samples:	10294897001, 10294897002	, 10294897003			
		Blank	Reporting		
Parameter	Units	Result	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

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% 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						
		10294897001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% 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
			ND			
Benzene Ethylbenzene	ug/L ug/L	ND	ND		30 30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	

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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Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10294897

SAMPLE DUPLICATE: 1888144						
		10294897002	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
1,2-Dichloroethane-d4 (S)	%.	101	104	3		
4-Bromofluorobenzene (S)	%.	103	105	1		
Toluene-d8 (S)	%.	104	103	1		

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.



### 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



# **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project:AOC 1396-P66 Westlake/MercerPace 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		

					1.1	12	11-	10		8	1	5. <b>6</b> 35	10	4	- 33	2		ITEM#		Racuest	Phone:		Address	Compan	Section A Required	-
					A SLIBBIO TWOILDER	· · ·											W-DSCHG	SAMPLE ID One Charactor por box. (A-Z, 0-9), -) Sample lds must be unique		ad Due Date/TAT 10 Day (Standam)	503 430 6696 Fax	Ilgard, UK 97223	Address: 7070 SW Fir Loop, Suite 100	v: Cardno ATC	A d Client Information:	
		Æ	c Jenni		Sec.										~	3	4	The supervised of the supervis			Cient Project 10: AOC 1396 - P66 Westlake/Menter		Copy Ta:		Saction B Required Project Information:	
		$ _{c}$	5.		No.	-	╎	┢	╢─	┢		┢		-	MT G	_	мце	MATRIX CODE (see vaEd codes to left) BAMPLE TYPE (G=GRAB C=COMP)			A		Cetth F	vie S	호 돌	
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or SAMPL			1/122/1S		DATE																Mencer					The Chain-of-Custody is a LEGAL DOCUMENT
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Client Name Upon Receipt	A		-	P	roject #	· W	)#:1	1029	4897	
urier: DFed Ex Commercial DPace racking Number: <u>6179</u>	DUPS Speed 5330 9		SPS ther:		ent		94897			
ustody Seal on Cooler/Box Prese	nt? ØYes	No	56	eals Intac	#? 🛛	res 🔲 No	Option	al: Proj. Du	e Date: Pr	oj. Name:
acking Material: Bubble Wra	ap "ØBubbl	e Bags [	None		her:			Temp Bla	ank? 🛛 Yes	
rermom. Used: DB88A913051641 boler Temp Read (°C): <u>2.1</u>	BBBA91 Cooler Te	12167504 132521491 mp Correcte on Factor:	ed (*C):					ue Frozen?.	n ice, cooling pr Yes i ents: <u>1</u> ~2	No 🖂 🕅
			12.1					Comments		3-15
Chain of Custody Present?			Ves	∏No		1.				
Chain of Custody Filled Out?		· · · ·	Ves	No		2.				
Chain of Custody Relinguished?		_	Pres			3.				
Sampler Name and/or Signature o	n COC?		<b>Elves</b>	No	<u>_</u>	4.			<u> </u>	
Samples Arrived within Hold Time	?		Ves			5.				
Short Hold Time Analysis (<72 hr)	1		Yes			6.				
Rush Turn Around Time Requeste	:d?		∏Yes	(2No		7.				
Sufficient Volume?			<b>Aves</b>	<b>□</b> No	_ <u>_</u>	8				
Correct Containers Used?			<b>V</b> ves	No		9.				
-Pace Containers Used?			Pres,	No.	- <u>2</u>					
Containers Intact?			Yes	No		<u>10</u> .				
Filtered Volume Received for Diss	olved Tests?		<b>□</b> Yes	No	<u> </u>	11.				
Sample Labels Match COC?			ØYes	No		12.				
-Includes Date/Time/ID/Analysi All containers needing acid/base p . checked?		e been	□Yes	No		13.		H ₂ SO ₄	ПизОн	нсі
All containers needing preservatio compliance with EPA recommenda (HNO ₃ , H ₂ SO ₄ , <u>H</u> Cl<2; NaOH >9 Sui	ation?		□Yes	⊡No	N/A	Sample #				
Exceptions: OA Coliform, TDC, O DRO/8015 (water) DOC			Ves	<b>∐</b> No		Initial when completed:			t of added ervative:	
Headspace in VOA Viais ( >6mm)?			□Yes			14.			<u> </u>	
Trip Blank Present?			□Yes	<b>N</b> N0	NA	15.				
Trip Blank Custody Seals Present?			□Yes	No	N/A					
Pace Trip Blank Lot # (if purchased	l):									
LIENT NOTIFICATION/RESOLUTIO	N	<u></u>					Fiel	d Data Reguli	red? Yes	No
Person Contacted:					Da	te/Time:				·
Comments/Resolution:								······································		

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

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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,

JENNI GROSS

Jennifer Gross jennifer.gross@pacelabs.com Project Manager

Enclosures

cc: Keith Fox, Cardno ATC





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

### 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



# 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



# SAMPLE ANALYTE COUNT

Project:AOC 1396-P66 Westlake/MercerPace 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



#### Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10298090

Sample: W-DSCHG	Lab ID: 102	98090001	Collected: 02/25/1	5 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 Meth	nod: NWTP	H-Gx					
TPH as Gas <b>Surrogates</b>	ND	ug/L	100	1		03/05/15 20:3	2	
a,a,a-Trifluorotoluene (S)	89	%.	50-150	1		03/05/15 20:3	2 98-08-8	
8260 MSV UST	Analytical Meth	nod: EPA 82	260					
Benzene	ND	ug/L	1.0	1		03/04/15 06:1	6 71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/04/15 06:1	6 100-41-4	
Toluene	ND	ug/L	1.0	1		03/04/15 06:1	6 108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/04/15 06:1	6 1330-20-7	
Surrogates	102	%.	75-125	1		03/04/15 06:1	6 17060-07-0	
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		03/04/15 06:1		
Toluene-d8 (S) 4-Bromofluorobenzene (S)	100	%. %.	75-125	1		03/04/15 06:1		
4-Bromoliuorobenzene (3)	100	70.	75-125	I		03/04/13 00.1	6 460-00-4	
Sample: W-OUT-WC1	Lab ID: 102	98090002	Collected: 02/25/1	5 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 Meth	nod: NWTP	H-Gx					
TPH as Gas <b>Surrogates</b>	ND	ug/L	100	1		03/05/15 20:5	3	
a,a,a-Trifluorotoluene (S)	89	%.	50-150	1		03/05/15 20:5	3 98-08-8	
8260 MSV UST	Analytical Meth	nod: EPA 82	260					
Benzene	ND	ug/L	1.0	1		03/04/15 06:3	1 71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/04/15 06:3	1 100-41-4	
Toluene	ND	ug/L	1.0	1		03/04/15 06:3	1 108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/04/15 06:3	1 1330-20-7	
Surrogates	00	0/	75 405	4		00/04/45 00:0	4 47000 07 0	
1,2-Dichloroethane-d4 (S)	98	%.	75-125	1			1 17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		03/04/15 06:3		
4-Bromofluorobenzene (S)	108	%.	75-125	1		03/04/15 06:3	1 460-00-4	
Sample: W-INF-WS1	Lab ID: 102	98090003	Collected: 02/25/1	5 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 Meth	nod: NWTP	H-Gx					
TPH as Gas <b>Surrogates</b>	ND	ug/L	100	1		03/05/15 21:1	3	
a,a,a-Trifluorotoluene (S)	87	%.	50-150	1		03/05/15 21:1	3 98-08-8	
8260 MSV UST	Analytical Meth	nod: EPA 82	260					
Benzene	ND	ug/L	1.0	1		03/04/15 06:4	6 71-43-2	
						00/04/45 00.4	0 400 44 4	

# **REPORT OF LABORATORY ANALYSIS**

1.0 1

ND

ug/L

Ethylbenzene

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03/04/15 06:46 100-41-4



#### Project: AOC 1396-P66 Westlake/Mercer

# Pace Project No.: 10298090

Sample: W-INF-WS1	Lab ID: 1	10298090003	Collected: 02/25/1	5 09:20	Received: 02	2/27/15 09:55 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical M	/lethod: EPA 82	260					
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	



,	1396-P66 West 8090	lake/Mercer									
	:V/13418		-	s Method		VTPH-G	x				
QC Batch Method: NV	/TPH-Gx		Analysis	s Descrip	otion: NV	VTPH-G	x Water				
Associated Lab Samples:	10298090007	1, 10298090002,	102980900	03							
METHOD BLANK: 1910	0690		М	atrix: Wa	ater						
Associated Lab Samples:	10298090007	1, 10298090002,									
Devenueter		Linita	Blank		Reporting	<b>A</b>	ام م س	Qualify			
Parameter		Units	Result		Limit		lyzed	Qualifie	ers		
TPH as Gas		ug/L %.		ND 90	100 50-150		15 11:26 15 11:26				
a,a,a-Trifluorotoluene (S)		70.		90	50-150	03/05/	15 11.20				
METHOD BLANK: 1910	0691		M	atrix: Wa	ater						
Associated Lab Samples:	10298090007	1, 10298090002,	102980900	03							
			Blank	F	Reporting						
Parameter		Units	Result		Limit	Ana	lyzed	Qualifie	ers		
TPH as Gas		ug/L		ND	100		5 15:08		_		
a,a,a-Trifluorotoluene (S)		%.		88	50-150	03/05/^	5 15:08				
LABORATORY CONTRO	L SAMPLE & LC	SD: 1910692			1910693						
			Spike	LCS	LCSD	LCS	LCSD	% Rec		Max	
Parameter		Units	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qualifiers
TPH as Gas		ug/L	1000	107	0 999	107	100	65-125		6 20	
a,a,a-Trifluorotoluene (S)		%.				95	84	50-150			
MATRIX SPIKE SAMPLE	: 19	911697									
			1029777	1002	Spike	MS		MS		% Rec	
Parameter		Units	Resu	lt	Conc.	Resul	t	% Rec		Limits	Qualifiers
TPH as Gas		ug/L		9050	20000	2	9300	101		50-150	
a,a,a-Trifluorotoluene (S)		%.						98	3	50-150	
SAMPLE DUPLICATE:	1911698										
			102977710		Dup			Max			
Parameter		Units	Result		Result	RP	D	RPD		Qualifiers	
TPH as Gas		ug/L	6	780	6670		2		30		
a,a,a-Trifluorotoluene (S)		%.		89	90		1				
SAMPLE DUPLICATE:	1911699										
			10297771	004	Dup			Max			
Parameter		Units	Result		Result	RP	D	RPD		Qualifiers	
TPH as Gas		ug/L	27	300	25000		9		30		
a,a,a-Trifluorotoluene (S)		%.		90	88		2				

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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Matrix: Water

Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10298090

QC Batch:	MSV/30634
QC Batch Method:	EPA 8260

Analysis Method:

EPA 8260 Analysis Description: 8260 MSV UST-WATER

10298090001, 10298090002, 10298090003 Associated Lab Samples:

METHOD BLANK: 1910258

Associated Lab Samples:	10298090001, 10298090002, 2	0298090003			
		Blank	Reporting		
Parameter	Units	Result	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

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% 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

		10297995002	Dup		Max	
Parameter	Units	Result	Result	RPD	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	

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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Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10298090

SAMPLE DUPLICATE: 1911389		10297995002	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
1,2-Dichloroethane-d4 (S)	%.	103	102	1		
4-Bromofluorobenzene (S)	%.	109	109	0		
Toluene-d8 (S)	%.	100	98	2		

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.



### 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



# **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project:AOC 1396-P66 Westlake/MercerPace 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		

PaceAntylica

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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.

Section			Section B								Secti	ion C	:														Г	_				
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Phone:	-	503 430 6696 Fax	Client Proje					estlake/	Aercer	_	_	_	ct Ma	_		Jer	nni G	Gross					Store / Location						and a second second			
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Pace Analytica		Sample Condi		n Receip	t Form	Docu	ment Revised: 28 Page 1 of 1		
	u	-	ocument / N-L-213-r			Pace	Issuing Authority Minnesota Qualit		
Ample Condition       Client Name:         Upon Receipt       (Condition)         purier:       ØFed Ex         ]Commercial       Pace         Tracking Number:       5779 5333	ATT, DUPS DSpeeDee 3 0736	USPS	P.	roject # :nt 	¹ WO	#:1( 	02980	90	
Custody Seal on Cooler/Box Present?	XYes 🗆	]No Se	als Intac	17 M	/es □No	Option	al: Proj. Due D	ate: Pro	j. Name:
acking Material: 🔀 Bubble Wrap	Bubble Ba			har			Temp Blank	7 XYes	
nermom. Used: B88A9130516413	1200001210 1200001210 100001210	7504 Dune	of Ice:	'Sewet	[]Blue	None	Samples on ice		
ocler Temp Read (°C): <u>3.3</u> mp should be above freezing to 6°C	Cooler Temp ( Correction F	Corrected (*C): actor: <u>+0</u> .	3.4	Date	Bi and initials (	ological Tiss of Person Ex	sue Frozen?	Yes []N s: <u>Ang</u>	
Chain of Custody Present?		<b>D</b> eres	<b>N</b> o		1.		wwnith ng hillion		
Chain of Custody Filled Out?		KiYes		Ŭ	2.			· · ·	
Chain of Custody Relinguished?		Yes		<u> </u>	3.				
Sampler Name and/or Signature on Co	502	Yes		Ü	4.				
Samples Arrived within Hold Time?		<b>X</b> Yes			5.				
Short Hold Time Analysis (<72 hr)?		[]Yes	DON0	<u> </u>	6.				
Rush Turn Around Time Requested?		 []Yes	5JK10	Ü	7.				<u> </u>
Sufficient Volume?		XYes		τ <u>ά</u>	8.				
Correct Cantainers Used?		2 Yes		<del>ال</del>	9.				
-Pace Containers Used?				٣ ٣		•			
Containers Intact?				<u> </u>	10.			•	
Filtered Volume Received for Dissolve	d Tests?	 □Yes		X	11.				
Sample Labels Match COC?	· •	XYes			12.				
-Includes Date/Time/ID/Analysis A All containers needing acid/base prese									
checked? All containers needing preservation ar compliance with EPA recommendation	re found to be in n?	∐Yes		N/A N/A	13. Sample #	[]HNO3	<u></u> H₂SO₄ [	]NaOH	Пнсі
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide Exceptions: VOA, Collform, TOC, Oil ar DRO/8015 (water) DOC	, NaOH>12 Cyani nd Grease,	ide) []Yes	ΣΝο	170	Initial when completed:		Lot # of preserva		
Headspace in VOA Vials ( >6mm)?		Yes	No	XX NA	14.				
Trip Blank Present?		□Yes	[]No		15.				
Trip Blank Custody Seals Present? Pace Trip Blank Lot # (if purchased):		∏Yes		Det N/A					
IENT NOTIFICATION/RESOLUTION Person Contacted: Comments/Resolution:				Da	te/Time:		id Data Requiradi		ZN0
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oject Manager Review:	NGUS	8			Date:	3	3 15		



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

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,

JENNI GROSS

Jennifer Gross jennifer.gross@pacelabs.com Project Manager

Enclosures

cc: Keith Fox, Cardno ATC





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



#### 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



#### SAMPLE ANALYTE COUNT

Project:AOC 1396-P66 Westlake/MercerPace 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



#### 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 Analytical Method: NWTPH-Gx **NWTPH-Gx GCV** 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 ND 03/24/15 23:02 71-43-2 Benzene ug/L 1.0 1 Ethylbenzene ND ug/L 1.0 03/24/15 23:02 100-41-4 1 Toluene ND 03/24/15 23:02 108-88-3 ug/L 1.0 1 Xvlene (Total) ND ug/L 3.0 1 03/24/15 23:02 1330-20-7 Surrogates 94 75-125 03/24/15 23:02 17060-07-0 1,2-Dichloroethane-d4 (S) %. 1 Toluene-d8 (S) 101 %. 75-125 1 03/24/15 23:02 2037-26-5 4-Bromofluorobenzene (S) 106 %. 75-125 03/24/15 23:02 460-00-4 1 Sample: W-OUT-WC1 Lab ID: 10300059002 Collected: 03/18/15 13:35 Received: 03/19/15 09:30 Matrix: Water DF Parameters Results Units Report Limit Prepared Analyzed CAS No. Qual **NWTPH-Gx GCV** Analytical Method: NWTPH-Gx TPH as Gas ND 100 03/30/15 14:02 ug/L 1 Surrogates a,a,a-Trifluorotoluene (S) 97 %. 50-150 1 03/30/15 14:02 98-08-8 Analytical Method: EPA 8260 8260 MSV UST 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 03/24/15 23:18 108-88-3 1 Xylene (Total) ND ug/L 3.0 03/24/15 23:18 1330-20-7 1 Surrogates 1,2-Dichloroethane-d4 (S) 95 %. 75-125 03/24/15 23:18 17060-07-0 1 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 Results Report Limit DF CAS No. Qual Parameters Units Prepared Analyzed Analytical Method: NWTPH-Gx **NWTPH-Gx GCV** TPH as Gas ND 100 03/30/15 17:52 ug/L 1 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 ND 03/24/15 23:35 71-43-2 Benzene ug/L 1.0 1

#### **REPORT OF LABORATORY ANALYSIS**

1.0

1

ND

ug/L

Ethylbenzene

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03/24/15 23:35 100-41-4



#### ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer

#### Pace Project No.: 10300059

Sample: W-INF-WS1	Lab ID: 1	10300059003	Collected: 03/18/1	5 13:40	Received: 03	3/19/15 09:30 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical M	Method: EPA 82	260					
Toluene	ND	) ug/L	1.0	1		03/24/15 23:35	108-88-3	
Xylene (Total) <i>Surrogates</i>	ND	) ug/L	3.0	1		03/24/15 23:35	1330-20-7	
1,2-Dichloroethane-d4 (S)	97	<b>%</b> .	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	



Project: AOC 1 Pace Project No.: 10300	396-P66 Westlake/Mercer 059									
QC Batch: GCV	/13536	Analysi	s Method	: N\	NTPH-G	x				
QC Batch Method: NWT	PH-Gx	Analysi	s Descrip	tion: N\	NTPH-G	x Water				
Associated Lab Samples:	10300059001, 10300059002									
METHOD BLANK: 19267	75	М	atrix: Wa	ter						
Associated Lab Samples:	10300059001, 10300059002									
Parameter	Units	Blank Result		eporting Limit	Ana	llyzed	Qualifie	ers		
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: 19267	76	M	atrix: Wa	ter						
Associated Lab Samples:	10300059001, 10300059002									
		Blank	R	eporting						
Parameter	Units	Result		Limit	Ana	lyzed	Qualifie	ers		
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						
		Spike	LCS	LCSD	LCS	LCSD	% Rec		Max	
Parameter	Units	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	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	1030005 Resu		Spike Conc.	MS Resul	t	MS % Rec		Rec nits	Qualifiers
TPH as Gas	ug/L		ND	1000		980	98	3	50-150	
a,a,a-Trifluorotoluene (S)	%.						95	5	50-150	
SAMPLE DUPLICATE: 19	928686									
		10300053		Dup			Max			
Parameter	Units	Result		Result	RF	'D	RPD	Qı	alifiers	
TPH as Gas a,a,a-Trifluorotoluene (S)	ug/L %.		ND 94	ND 96		2		30		

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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- <b>)</b>	: 1396-P66 Westla 00059	ke/Mercer									
	V/13547 /TPH-Gx 10300059003		•	is Method is Descrip		WTPH-G WTPH-G					
METHOD BLANK: 1928			Ν	latrix: Wa	ater						
Associated Lab Samples: Parameter	10300059003	Units	Blank Result		Reporting Limit	Ana	lyzed	Qualifie	ers		
TPH as Gas a,a,a-Trifluorotoluene (S)		ug/L %.		ND 93	100 50-150		15 16:49 15 16:49				
METHOD BLANK: 1928			N	1atrix: Wa	iter						
Associated Lab Samples: Parameter	10300059003	Units	Blank Result		Reporting Limit	Ana	lyzed	Qualifie	ers		
TPH as Gas a,a,a-Trifluorotoluene (S)		ug/L %.		ND 99	100 50-150		15 20:40 15 20:40				
LABORATORY CONTRO	L SAMPLE & LCS	D: 1928195	Spike	LCS	1928196 LCSD	LCS	LCSD	% Rec		Мах	
Parameter		Units	Conc.	Result	Result	% Rec		Limits	RPD	RPD	Qualifiers
TPH as Gas a,a,a-Trifluorotoluene (S)		ug/L %.	1000	1040	939	104 104	94 92	65-125 50-150	1	0 20	
MATRIX SPIKE SAMPLE	: 192	8642	103000	53001	Spike	MS		MS	%	Rec	
Parameter		Units	Resi		Conc.	Resul	t	% Rec		mits	Qualifiers
TPH as Gas a,a,a-Trifluorotoluene (S)		ug/L %.		222000	500000	72	9000	101 111		50-150 50-150	
SAMPLE DUPLICATE:	1928643										
Parameter		Units	10300053 Result		Dup Result	RF	D	Max RPD	Q	ualifiers	
TPH as Gas a,a,a-Trifluorotoluene (S)		ug/L %.	4	7900 106	45900 104		4		30		

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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Matrix: Water

Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10300059

QC Batch:	MSV/30869

Analysis Method:

EPA 8260 Analysis Description: 8260 MSV UST-WATER

QC Batch Method: EPA 8260 10300059001, 10300059002, 10300059003 Associated Lab Samples:

METHOD BLANK: 1924201

Associated Lab Samples:	10300059001, 103000590	002, 10300059003			
		Blank	Reporting		
Parameter	Units	Result	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

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% 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:

MATRIX SPIKE SAMPLE:	1924294						
		10300072001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% 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 Q	ualifiers
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	

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**

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc..



Project: AOC 1396-P66 Westlake/Mercer

Pace Project No.: 10300059

SAMPLE DUPLICATE: 1924295						
		10300072002	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
1,2-Dichloroethane-d4 (S)	%.	99	95	4		
4-Bromofluorobenzene (S)	%.	101	100	1		
Toluene-d8 (S)	%.	102	103	2		

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.



#### 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.



#### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:AOC 1396-P66 Westlake/MercerPace 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		

. PaceAnalytical

# CHAIN-OF-CUSTODY / Analytical Request Document

Section		Section B							Sec	tion C																•			-	_
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Short Hold Time Analysis {<72 hr}?	 [Yes			<u> </u>				
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checked?		□No	N/A	13.		∐H₂SO₄	aOH [	]нсі
All containers needing preservation are found to be compliance with EPA recommendation? (HNO1, H2SO1, HCI<2; NaOH >9 Sulfide, NaOH>12 Cy	🗋 Yes	No	N/A	Sample #		•	-	
Exceptions: OA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	Ves			Initial when completed:		Lot # of add		
Headspace in VOA Vials ( >6mm)?	Yes	12No	N/A	14		•		
Trip Blank Present?	Yes		N/A	15.				
Trip Blank Custody Seals Present?	□Yes	No	N/A					
Pace Trip Blank Lot # (if purchased):		—						
IENT NOTIFICATION/RESOLUTION Person Contacted: Comments/Resolution:			_ Dat	e/Time:	Field	l Data Required? [	Yes IN	0
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oject Manager Review:	<u>8</u>			Date:	3/20	hς		



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

Appendix B PSCAA Permit



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

Construction No. 10816

Registration No. 29548

Date

SEP 2 2 2014

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

OWNER

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

#### 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.

2014

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

Carollen PE

Carole Cenci Senior Engineer

MengChiu Lim Reviewing Engineer ns

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## 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

#### FOR AGENCY USE ONLY

Notice of Construction No.10816Registration No.29548

**Project Description** 

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.

Conditions on Reverse Side

Date

Former Phillips 66 Facility No. 255353 801 2nd Ave, Suite 700 Seattle, WA, 98104 tle, WA, 98107
CL and Inspector chec
(Estimated completion date plus 7)
Inspector

#### CONDITIONS

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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.

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

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a. Hours and time of operation.

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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:

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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.