Cardno ATC
Shaping the Future

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

REMEDIATION PROGRESS REPORT
Third Quarter 2014

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. 76.75118.1396

January 23, 2015

Keith Fox
Senior Project Engineer

Kyle Sattler
Senior Project Manager

Cardno ATC
Shaping the Future

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

SITE INFORMATION

Cardno ATC Contact Person:	Kyle Sattler, Senior Project Manager
Department of Ecology Facility ID:	46445373
LUST Facility No.:	8463
Voluntary Cleanup Program No.	NW1714
Current Remediation Techniques:	Soil vapor extraction (SVE) and air sparging (AS)
Reporting Period:	July 1 through September 30, 2014

REMEDIATION SYSTEM, UTILITIES, & PERMITS

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

SVE SYSTEM OPERATIONAL DATA

Mercer-Westlake (Blower #B-701)		**Terry-Valley (Blower #B-801)**	
Hours Operated This Period:	1,949.0	Hours Operated This Period:	2013.0
Percent Runtime This Period:	88.3%	Percent Runtime This Period:	91.2%
Cumulative Operating Hours:	6099.5	Cumulative Operating Hours:	6149.5
Cumulative Percent Runtime:	91.6%	Cumulative Percent Runtime:	92.3%

AS SYSTEM OPERATIONAL DATA

Hours Operated This Period:	2013.0
Percent Runtime This Period:	91.2%
Cumulative Operating Hours:	6184.5
Cumulative Percent Runtime:	92.9%

ESTIMATED REMOVAL RATES

TPHg Removed This Period:	320 pounds
TPHg Removal Rate This Period:	0.17 pounds per hour, average for the period
TPHg Removal Rate Previous Period:	0.57 pounds per hour, average for the period
Cumulative TPHg Removed:	2,975.79 pounds

Benzene Removed This Period:	0.11 pounds	Ethylbenzene Removed This Period:	0.64 pounds
Cumulative Benzene Removed:	1.73 pounds	Cumulative Ethylbenzene Removed:	22.18 pounds
Toluene Removed This Period:	0.75 pounds	Xylenes Removed Rate This Period:	29.00 pounds
Cumulative Toluene Removed:	16.99 pounds	Cumulative Xylenes Removed:	229.37 pounds

Comments:

The (SVE) system consists of two blowers that extract soil vapors from a total of 36 vertical wells (19 in Mercer Street, 17 in Terry Avenue) and 16 horizontal wells (7 in Valley Street, 9 in Westlake Avenue). The AS system supplies compressed air to a total of 62 air sparge wells (27 in Mercer Street, 14 in Valley Street, 21 in Westlake Avenue). The locations of the SVE and AS wells are shown on Figure 1. The SVE blowers discharge vapors to an off-gas treatment system that uses GAC to reduce air emissions to permitted levels. Water from SVE moisture separators is also treated with GAC before discharging to the King County sewer system. The system layout is shown on Figure 2. System start-up was completed on December 27, 2013.

The Mercer-Westlake SVE blower was offline between July 12 and July 15 due to high blower outlet temperature. The alarm set point was adjusted to compensate, but remains below the temperature limit of the PVC pipe. The Mercer-Westlake SVE blower was brought back on line on July 15. The entire system was down between July 26 and July 28 due to a motor overload fault on blower B-801. The system was reset and the blower VFD was adjusted to reduce the motor load. Planned downtime for groundwater sampling occurred on July 29 and July 30. The entire system was down once on August 13 due to a false high water level alarm. Upon arrival on August 13, it was noted that minimal water that had accumulated within the sump of the secondary containment triggered the shutdown due to an out-of-adjustment float on the sump pump. The system was brought back online on August 13 by temporarily adjusting the sump float, and the issue was resolved on September 4 by permanently adjusting the sump float.

Cardno ATC
Shaping the Future

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

Compliance samples per a PSCAA permit (Registration #29548) were collected on July 9, August 5, and September 4. 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). Carbon in the three primary off-gas treatment vessels was replaced on July 1. Documentation for the 3,000 pounds of spent GAC removed during the July change out is included in Appendix B. Prior to the carbon change, the primary vessels showed breakthrough exceeding 10% of the influent concentration, but less than 10 ppmv, the higher limit set by the PSCAA permit. Cardno requested 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. The modification was requested on July 15 and approved by PSCAA on September 2. A copy of the approved PSCAA permit is provided in Appendix C.

Compliance samples per the KCIW permit (Authorization #4262-01, Expiration: 6/30/2018) were collected on July 9, August 13, and September 4. 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. A total of 2,545 gallons of treated water were discharged to the King County sewer system during the period. The analytical laboratory inadvertently neglected to analyze the September samples for THCg. The lab report notes that BTEX was below reporting limits, so it is probable that THCg were also below reporting limits. With the exception of the January 27, 2014 event, THCg has never been detected above the laboratory's method reporting limits.

Steps taken to optimize the system during the second quarter did not produce measurable effects, i.e. vapor concentrations did not change significantly, and during the third quarter the system was operated in a basic configuration with maximum vacuum applied at the SVE blowers (80" water +/- 5") and sparge intervals of 15 minutes at all AS wells. Select low-concentration SVE wells remain closed to maintain the vacuum on wells with higher vapor concentrations. Removal rates have plateaued, as shown on the Cumulative TPHg and BTEX Removal Graph. The average calculated removal rate for the period was 0.17 pounds TPHg per hour, a 70% decrease compared to the rate from the previous period; total estimated TPHg removal was 320 pounds.

Recommendations:
Cardno recommends:

- Continued operation at optimum SVE and AS rates to maximize removal rates in anticipation of system shutdown due to development of the property:
- Check for rebound on the "rested" Westlake SVE wells.
- Obtain approval from PSCAA to discontinue use of the vapor control system when two sample data show TPHg and benzene are below discharge thresholds for two consecutive months.

Table 1. Vapor Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353

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

Table 1. Vapor Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353

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

Table 1. Vapor Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353

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

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

NC = Not Calculated due to concentration below laboratory MDL.

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

Table 2. Liquid Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353

Sample Location	Sample Date	Analytical Water Results (NWTPH-Gx/8021 for THCg and EPA Method 8260 for VOCs) (μg/L)				
		THCg	Benzene	Toluene	Ethylbenzene	Total Xylenes
W-DSCHG	01/27/14	2,250	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	01/27/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	01/27/14	ND (<100)	ND (<1.0)	1.5	ND (<1.0)	8.6
W-DSCHG	02/20/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	02/20/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	02/20/14	ND (<100)	ND (<1.0)	ND (<1.0)	1.3	11.4
W-DSCHG	03/10/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	03/10/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	03/10/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	04/16/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	04/16/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	04/16/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	5.5
W-DSCHG	05/08/14	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	05/08/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	06/25/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	06/25/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	06/25/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	07/09/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	07/09/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	07/09/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	08/13/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	08/13/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	08/13/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	09/04/14	*	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1	09/04/14	*	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1	09/04/14	*	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)

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

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.

Cardno ATC
Shaping the Future

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

ATTACHMENTS

Cardno ATC
Shaping the Future

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

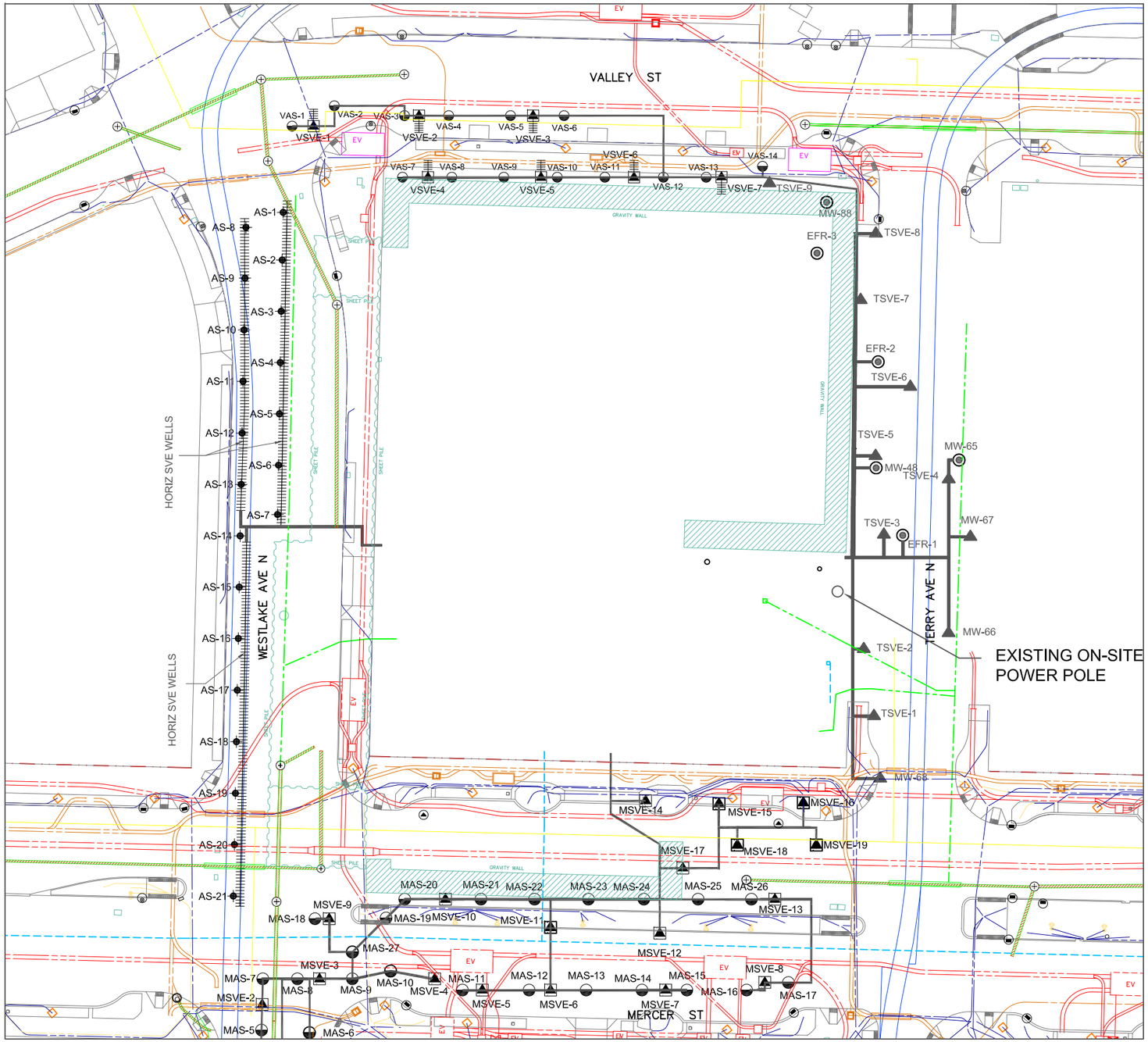
Acronym List

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

NOTES:

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

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



LEGEND:

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

APPROXIMATE SCALE

0 60 120 Feet

Cardno ERI
Shaping the Future

SITE LAYOUT DIAGRAM

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

EXPLANATION:

- SHEET PILE LOCATION
- GRAVITY WALL LOCATION

PROJECT NO.
03132603

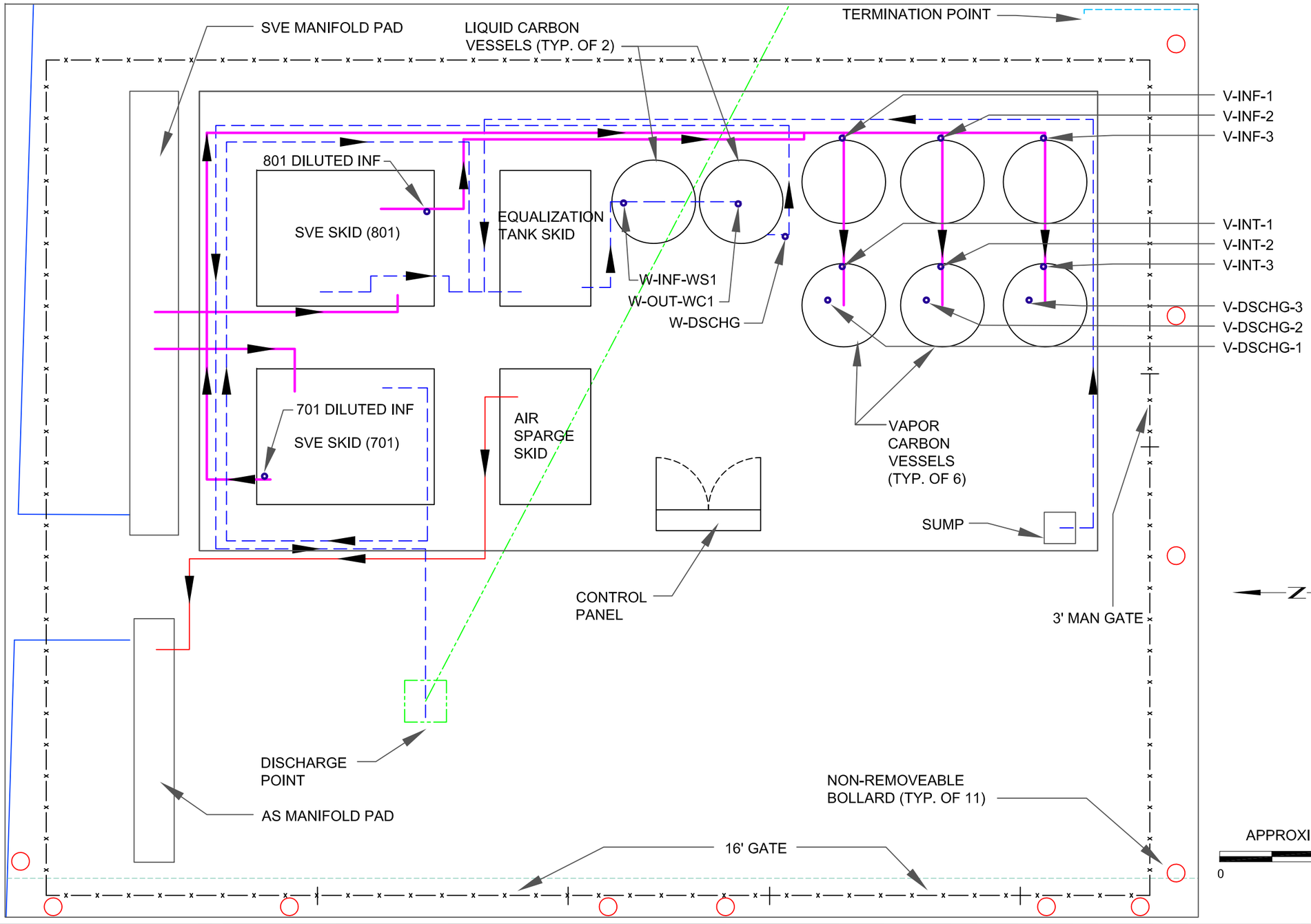
PLATE
1

EJB: 04/29/14

NOTES:

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

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



Cardno ERI
Shaping the Future

REMEDIATION SYSTEM LAYOUT

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

EXPLANATION:

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

PROJECT NO.
03132603

FIGURE
2
EJB: 07/11/14

Table 3. Remediation System Operational Data Summary
PHILLIPS 66 FACILITY #255353

	SVE System						AS System		Off-gas Treatment System									System Totals		
	Mercer-Westlake Wells			Valley-Terry Wells					VPC-1			VPC-2			VPC-3					
Date	Period Operating Hours	Wells On-line (count)	Applied Vaccum (in. H_2O)	Period Operating Hours	Wells On-line (count)	Applied Vaccum (in. H_2O)	Period Operating Hours	Applied Pressure (psi)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Estimated TPHg Removed (lbs.)	Estimated TPHg Removal Rate (lbs./hr)	Cumulative TPHg Removed (lbs.)
1/3/14	114	28	26	114	23	26	114	6.5	NM	95000	20.41	NM	74950	15.53	NM	54900	10.89	46.84	0.41	154.94
1/6/14	3	28	28	3	23	26	3	6	NM	95000	0.54	NM	74950	0.41	NM	54900	0.29	1.23	0.41	156.17
1/7/14	19	28	18	19	23	25	19	6	503.07	95000	3.40	485.37	74950	2.59	464.73	54900	1.82	7.81	0.41	163.98
1/8/14	28	28	18	28	23	26	28	5	NM	95000	0.00	NM	74950	0.00	NM	54900	0.00	0.00	0.00	163.98
1/9/14	24	28	22	24	23	26	24	8	515.92	95000	9.55	496.37	74950	9.18	496.38	54900	2.45	21.18	0.46	185.16
1/10/14	17	28	22	18	23	27	17	7.5	517.42	95000	3.13	502.21	74950	3.22	528.50	54900	1.96	8.30	0.47	193.46
1/13/14	79	28	22	79	23	26	80	6.5	508.97	95000	14.31	532.16	74950	14.96	548.73	54900	8.91	38.18	0.48	231.64
1/14/14	19	28	22	18	23	27	18	6.5	497.43	95000	3.36	523.97	74950	3.36	553.03	54900	2.05	8.77	0.48	240.41
1/15/14	28	28	23	28	23	27	26	7	512.50	95000	5.11	513.61	74950	5.12	537.68	54900	3.10	13.32	0.48	253.73
1/16/14	19	28	24	19	23	28	19	6	538.21	95000	3.64	533.57	74950	3.61	538.31	54900	2.10	9.35	0.49	263.08
1/17/14	25	28	34	26	23	44	25	6	441.06	95000	3.92	420.97	74950	3.89	464.49	54900	2.48	10.30	0.40	273.38
1/20/14	69	28	33	69	23	44	69	6.5	456.66	95000	11.21	452.21	74950	11.10	455.74	54900	6.47	28.78	0.42	302.16
1/21/14	29	28	46	29	23	53	29	5.5	429.86	95000	4.44	460.09	74950	4.75	466.58	54900	2.78	11.97	0.41	314.13
1/22/14	20	28	42	19	23	33	20	6.5	451.76	95000	3.22	462.40	74950	3.13	500.94	54900	1.96	8.30	0.43	322.43
1/23/14	30	28	40	30	23	32	30	8.5	418.24	95000	4.46	438.07	74950	4.68	471.91	54900	2.91	12.05	0.40	334.48
1/24/14	25	28	41	25	23	32	25	7	432.19	95000	3.84	439.34	74950	3.91	479.91	54900	2.47	10.22	0.41	344.70
1/27/14	66	28	41	66	23	31	66	6.5	431.90	77100	8.23	431.15	179000	19.08	475.41	261000	30.68	57.99	0.88	402.68
1/28/14	25	28	40	25	23	31	25	8	439.45	77100	3.17	441.02	179000	7.39	475.41	261000	11.62	22.18	0.89	424.87
1/29/14	23	28	44	23	23	59	23	8.5	450.89	77100	2.99	406.78	179000	6.27	454.55	261000	10.22	19.49	0.85	444.36
1/30/14	17	28	44	17	23	56	17	7	452.30	77100	2.22	433.34	179000	4.94	444.43	261000	7.39	14.55	0.86	458.90
1/31/14	3	28	46	3	23	47	3	8.5	429.59	77100	0.37	433.34	179000	0.83	414.10	261000	1.21	2.42	0.81	461.32
2/3/14	69	28	40	69	23	46	69	8.7	464.08	77100	9.25	413.24	179000	19.90	463.12	261000	31.24	60.39	0.88	521.71
2/4/14	28	28	46	28	23	48	28	8	399.93	77100	3.23	430.25	179000	7.91	448.73	261000	12.28	23.43	0.84	545.14
2/7/14	69	28	48	69	23	47	69	8	409.47	77100	8.16	421.40	179000	19.63	456.33	261000	30.78	58.57	0.85	603.71
2/11/14	97	28	50	97	23	51	98	6	449.75	77100	12.60	424.23	179000	28.90	451.16	261000	42.78	84.28	0.87	687.99
2/12/14	26	28	47	26	23	51	25	6	438.41	77100	3.29	444.32	179000	8.42	483.94	261000	12.30	24.01	0.92	712.00
2/13/14	19	28	48	19	23	51	20	6	422.95	77100	2.32	482.88	179000	5.26	458.18	261000	8.51	16.09	0.85	728.09
2/17/14	67	28	51	67	23	52	66	7	415.17	77100	8.03	412.96	179000	19.21	449.94	261000	29.47	56.71	0.85	784.80
2/19/14	25	28	49	25	23	49	26	7	432.53	158000	6.40	427.60	153000	6.71	487.13	165000	7.53	20.64	0.83	805.44
2/20/14	22	28	50	22	23	49	21	9	433.97	158000	5.65	468.57	153000	5.78	497.26	165000	6.76	18.20	0.83	823.64
2/25/14	122	28	48	122	23	46	122	10	438.82	158000	31.68	458.83	153000	34.93	493.41	165000	37.20	103.82	0.85	927.46
2/26/14	26	28	49	26	23	53	26	8.5	365.19	158000	5.62	499.65	153000	5.89	411.09	165000	6.61	18.12	0.70	945.58
2/27/14	23	28	50	23	23	63	23	9	359.08	158000	4.89	395.49	153000	5.15	419.23	165000	5.96	16.00	0.70	961.58
3/3/14	97	28	50	97	23	62	97	8	343.96	158000	19.75	390.85	153000	21.23	388.82	165000	23.31	64.28	0.66	1025.86
3/5/14	38	28	50	38	23	67	38	12.2	339.24	158000	7.63	381.85	153000	8.07	374.87	165000	8.80	24.50	0.64	1050.36
3/7/14	48	28	52	48	23	67	48	11.9	417.00	158000	11.85	370.37	153000	13.03	493.58	165000	14.64	39.52	0.82	1089.87
3/10/14	74	28	65	74	23	71	74	11.8	376.48	181000	18.89	473.58	219000	25.20	430.89	209000	24.96	69.05	0.93	1158.93
3/14/14	91	28	70	90	23	73	91	13.4	400.74	181000	24.72	415.20	219000	31.62	463.82	209000	32.68	89.03	0.99	1247.95
3/18/14	99	28	74	100	23	75	99	12.6	410.20	181000	27.53	428.35	219000	36.31	462.90	209000	36.24	100.08	1.00	1348.04
3/20/14	45	28	71	44	23	74	45	12.3	416.64	181000	12.71	442.68	219000	15.81	468.67	209000	16.14	44.67	1.01	1392.71
3/24/14	95	19	75	96	23	77	95	13.4	423.51	181000	27.28	438.17	219000	37.31	495.55	209000	37.24	101.83	1.06	1494.54
4/1/14	194	19	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	1686.41
4/11/14	71	19	71	70	23	73	71	15.4	434.40	181000	20.91	478.15	219000	35.87	503.76	209000	27.61	101.27	0.85	1863.65
4/16/14	118	19	72	119	23	74	118	12.5	406.84	156000	28.05	496.74	162000	47.39	501.69	167000	37.34	137.95	0.82	2001.59
4/23/14	168	19	62	168	23	74	168	12.6	406.20	156000	39.88	464.92	162000	47.68	482.21	167000	50.67	133.31	0.82	2134.90
4/30/14	146	19	73	169	23	73	170	12.6	406.20	156000	34.65	464.92	162000	25.78	482.21	167000	50.98	86.10	0.45	2221.00
5/8/14	190	19	73	190	23	75	190	13	336.33	107000	25.61	351.75	103000	13.16	363.86	134000	34.70	43.93	0.43	2264.93
5/12/14	102	19	73	102	23	74	102	13.4	319.88	107000	13.08	334.30	103000	30.11	345.68	134000	17.70	100.37	0.43	2365.30
5/22/14	235	19	74	234	23	74	234	12.5	318.18	107000	29.97	333.56	103000	13.11	343.06	134000	40.29	44.30	0.44	2409.60

Table 3. Remediation System Operational Data Summary
PHILLIPS 66 FACILITY #255353

5/27/14	100	19	76	101	23	75	100	12.7	325.05	107000	13.03	336.54	103000	24.42	358.27	134000	18.16	78.63	0.47	2488.24
6/3/14	168	19	77	168	23	68	169	13.3	333.45	107000	22.45	376.74	103000	23.82	376.67	134000	31.76	76.13	0.46	2564.37
6/10/14	166	19	79	166	23	82	165	13.8	321.35	107000	21.38	371.88	103000	18.71	371.30	134000	30.94	62.56	0.44	2626.93
6/16/14	144	19	80	143	23	85	144	12.7	323.85	107000	18.69	339.19	103000	6.48	350.53	134000	25.16	28.57	0.13	2655.50
6/25/14	213	19	78	214	23	85	214	10.7	316.85	55200	13.95	348.40	23200	0.06	357.32	28400	8.13	0.27	0.13	2655.77
7/1/14	2	19	75	2	23	78	2	15.2	320.62	55200	0.13	337.27	23200	11.53	354.99	28400	0.08	63.20	0.32	2718.96
7/9/14	195	19	78	195	23	79	195	10.1	315.28	131000	30.17	343.08	46000	8.95	352.97	83400	21.50	36.76	0.34	2755.72
7/15/14	73	19	71	138	23	75	137	13.2	323.83	131000	11.60	376.45	46000	8.64	375.90	83400	16.21	47.24	0.32	2802.95
7/21/14	147	19	73	146	23	76	147	12	308.90	131000	22.28	343.61	46000	5.04	357.62	83400	16.31	27.13	0.32	2830.08
7/30/14	85	19	71	85	23	70	85	12.2	306.32	131000	12.78	343.95	46000	6.88	350.79	83400	9.31	18.88	0.14	2848.97
8/5/14	138	19	73	138	23	74	138	11.8	314.00	33900	5.50	338.85	39300	8.91	352.17	35700	6.50	24.81	0.13	2873.77
8/13/14	184	19	73	184	23	64	184	12.3	312.81	33900	7.31	328.88	39300	9.29	349.19	35700	8.59	25.86	0.14	2899.63
8/21/14	184	19	73	184	23	64	184	12	327.24	33900	7.65	343.02	39300	6.98	362.57	35700	8.92	18.03	0.15	2917.66
8/26/14	122	19	71	122	23	62	122	14.9	311.21	33900	4.82	388.48	39300	6.77	381.94	35700	6.23	13.84	0.07	2931.50
9/4/14	211	19	82	211	23	73	211	13	339.72	20500	5.50	439.51	19500	5.05	408.65	4850	1.57	10.00	0.07	2941.50
9/10/14	146	19	82	146	23	74	146	12.2	338.28	20500	3.79	473.59	19500	5.60	436.07	4850	1.16	11.13	0.07	2952.63
9/17/14	166	19	81	166	23	77	166	12.9	334.25	20500	4.26	462.21	19500	4.19	419.59	4850	1.27	8.43	0.07	2961.06
9/22/14	126	19	80	126	23	76	126	11.5	341.08	20500	3.30	454.77	19500	7.38	413.23	4850	0.95	14.72	0.07	2975.79

Notes:

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

Remediation System Removal Data
PHILLIPS 66 FACILITY #255353

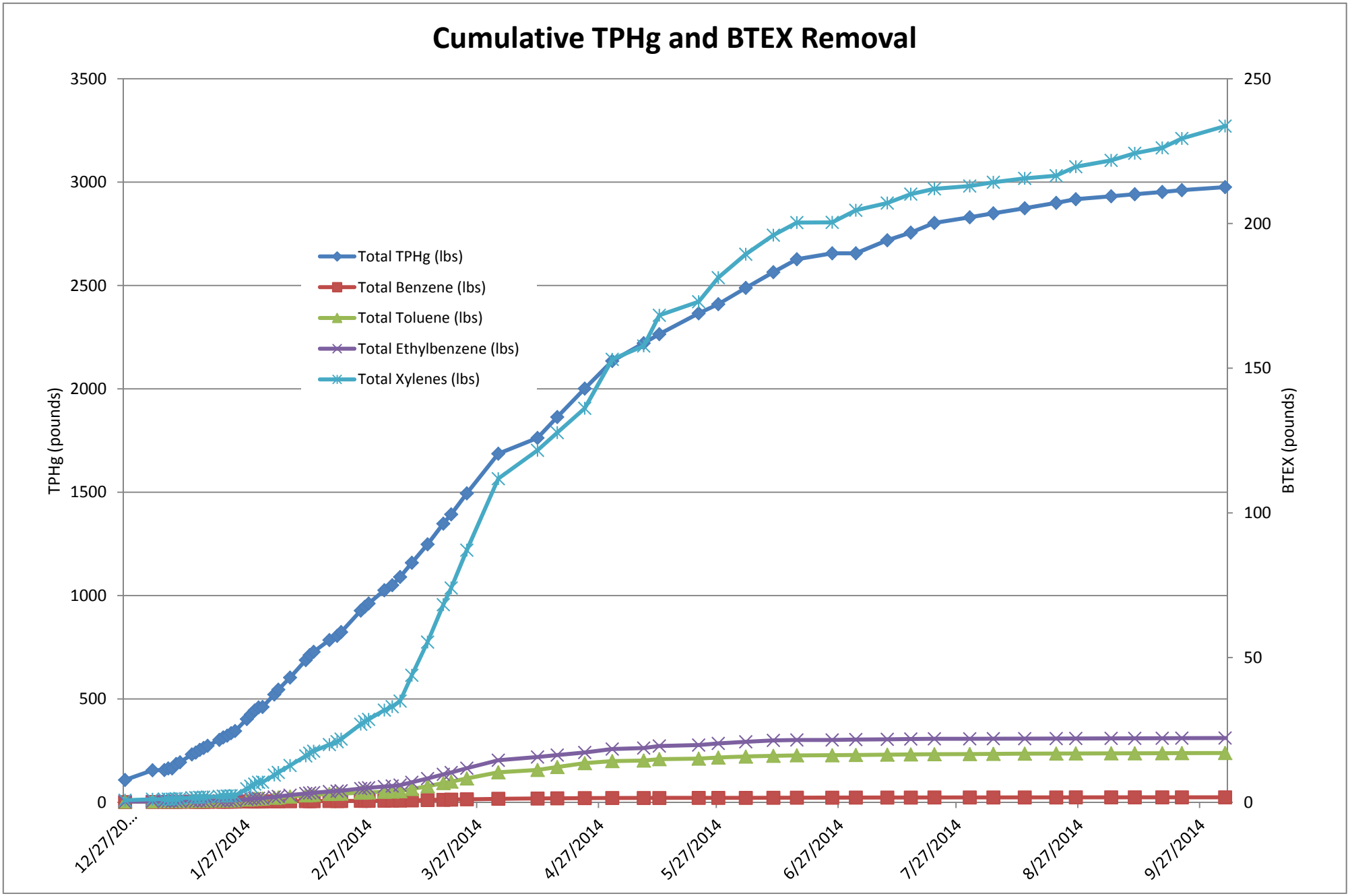


Table 4. SVE PID Data Summary
PHILLIPS 66 FACILITY #255353

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

Date	Mercer SVE Wells - PID Readings (ppm)																		
	M6	M7	M10	M9	M8	M1	M2	M3	M4	M5	M14	M13	M15	M12	M11	M16	M17	M18	M19
1/17/2014	0.1	0.4	0.3	1.2	184	3.5	22.3	0	9.9	10.5	13	13.5	13.7	430	260	31	107	220	200
1/20/2014	5.6	7.2	10.1	16.8	171	2.2	3.5	3.7	1.1	1.2	3.2	3.3	4.3	281	235	29.7	150	184	222
1/21/2014	3.2	3	2.2	1.7	145	6.5	4.1	3.4	2.4	2	2.6	3.1	4.6	184	267	46.2	153	161	226
1/27/2014	3.5	4.8	7.5	16	236	0.9	1.2	1.1	0.7	0.5	1.5	0.6	2.9	100	355	33.8	216	183	240
1/29/2014	2.8	3.7	7.6	13.9	191	0.6	0.9	1.1	0.7	0.7	1.9	0.7	4	40	302	23	193	156	160
2/3/2014	2.8	3.7	7.6	13.9	191	0.6	0.9	1.1	0.7	0.7	1.9	0.7	4	40	302	23	193	156	160
2/12/2014	0	0.1	0	0	98.9	2	2.3	2.5	2.6	3.1	6.1	4.3	8.9	15.5	237	16.9	159	97.5	36.1
2/19/2014	0.4	0.7	0.3	0.3	78.1	1.9	2.1	2.4	2.2	2.6	4	4	7.8	18.1	192	13.5	121	65	25.9
2/27/2014	2.3	2.7	3.8	6	63.9	0.5	0.4	0.3	0.1	0.2	1.6	0.4	1.6	0.2	179	8	139	70	21.5
3/7/2014	0.1	0.3	0.1	0.1	60.5	1.8	1.4	1.1	0.8	0.8	2	0.7	1.4	0.6	178	9.5	134	71.2	21.5
3/20/2014	0.3	0.7	0.2	0.2	58	3.1	1.8	1.4	0.8	0.8	1.6	0.7	1.3	0.6	156	16.1	146	101	14.2
4/16/2014	W	0.4	0.1	2.6	49.3	1.6	0.3	0.2	0.1	0.1	1.1	0.1	0.1	0.1	183	8.3	154	118	8.5
6/3/2014	0.1	0	0.2	0.8	8	0	OL	0.1	0.1	W	1.1	0	OL	0.1	124	12.5	74.5	31	0.8
8/5/2014	--	--	--	--	7.3	--	--	--	--	W	--	--	--	--	74.1	5.1	63.7	13.1	--

Date	Terry SVE Wells - PID Readings (ppm)														
	TSVE3	TEFR1 AIR	TMW65 AIR	TSVE4	TSVE11-MW67	TSVE10 - MW66	TSVE2	TSVE1	TSVE7	TSVE12-MW68	TSVE5	TSVE6	TEFR2 AIR	TSVE8	TMW48 AIR
1/17/2014	19.2	9.5	11.8	2.6	4.6	107	4.1	1.7	1.5	1.3	20.1	6.4	0.4	0.3	131
1/20/2014	26.6	10.3	8.5	8.4	11.1	125	10	5.5	3.5	4.7	6.3	5.4	4.5	2	115
1/21/2014	17.1	3.1	4.1	3.4	5.8	115	1.7	1	1.2	1.4	6.5	4.9	3.8	4.5	100
1/27/2014	15.5	5.1	3.1	1.9	3.5	116	4.2	2.2	1.1	1.2	4.7	3.7	1.3	1	113
1/29/2014	14.3	1.1	1.7	2.3	7.2	138	0.5	0.5	0.6	0.7	7.3	3.6	2.9	5.7	97.1
2/3/2014	14.3	1.1	1.7	2.3	7.2	138	0.5	0.5	0.6	0.7	2.4	2.9	2.9	6.2	69.7
2/12/2014	3.6	1	1.1	1.9	7.2	120	0.4	0.5	0.6	0.4	3.4	3.2	2.5	6.2	77.3
2/19/2014	5.6	1	1.2	1.6	3.5	71.3	0.6	0.6	0.6	0.6	2.9	2.2	2.1	2.4	47
2/27/2014	3.4	1	0.9	1.2	4.1	58.7	0.3	0.3	0.3	0.4	0.7	1.2	0.9	1.6	29.8
3/7/2014	3.5	0.9	1	1	4	52.7	0.1	0.1	0.1	0.3	0.6	1.1	0.9	1.7	26.3
3/20/2014	2.8	2.2	1.5	0.9	2.6	44.9	0.9	4.4	0.7	0.7	0.3	0.4	0.2	0.5	18.4
4/16/2014	3.2	1.5	0.8	0.2	2.5	45	1.8	1	0.2	0.3	0.2	0.1	0	0.1	16.1
6/3/2014	0.8	0.5	0.3	0.2	0.6	30.7	1.3	0.4	0.1	0.1	0	0	0.1	0	0.3
8/5/2014	--	--	--	--	--	16.3	--	--	--	--	--	--	--	--	--

Date	Valley SVE Wells - PID Readings (ppm)							
	V9	V7	V1	V6	V2	V5	V3	V4
1/17/2014	7.8	3.3	2.4	4.3	15.1	38.8	3.3	69.4
1/20/2014	4	1.8	2.3	1.6	2.3	35.8	3	2.8
1/21/2014	5.3	1.4	2.6	2.3	9	32	2.3	2.9
1/27/2014	4.6	1	1.1	0.8	3	42.5	2.4	5.3
1/29/2014	3.2	1.2	1.4	2	4.8	35.2	1.4	2.1
2/3/2014	1.4	1.2	1.7	1.4	3.3	26.9	1	1.1
2/12/2014	0.9	0.8	1.2	1.2	2.2	27.5	1.1	2
2/19/2014	0.8	1	0.9	1	1.5	17.3	1.3	1.1
2/27/2014	0.7	0.6	0.7	1	1.8	31.3	0.6	0.8
3/7/2014	0.7	0.6	0.6	0.9	1.9	31	0.4	0.8
3/20/2014	0.6	0.7	0.4	1.5	1.5	51.1	0.5	0.3
4/16/2014	0.1	0.1	0.1	0.1	W	81.1	W	0.1
6/3/2014	0	0	0.1	0	0	22.8	W	0.1
8/5/2014	--	--	--	--	--	22	W	--

Notes:
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

Date	Westlake AS Wells - Flow Rate Readings (scfm)																				
	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W-10	W-11	W-12	W-13	W-14	W-15	W-16	W-17	W-21	W-20	W-19	W-18
1/23/2014	0	3	0	0	3	0	0	0	0	0	0	0	0	5	0	0	0	0	0	3	0
1/31/2014	2	4	>25	2	3.5	5	<2	<2	4.5	<2	<2	3.5	14.5	6	4	3	7	7.5	7	3	8.5
2/4/2014	2	3	>25	3	3	7	<2	5	4	2	<2	4	11	7	3	3	7	7	7	4	8.5
2/12/2014	<2	5	>25	4	<2	11	6	9	7	<2	2	6	12	7	8	4	7.5	7	8	4	9
2/17/2014	2	6	9	3	2	9	4	8	5	3	3	6	16	8	6	4	8	10	13	4	10
2/26/2014	2	10	9	6	<2	12	7	9.5	9	3	3	6	13	9	6	3	11	14	7.5	4	11
3/3/2014	2	10	10	5	3	12	8	9	4	5	4	7	13.5	10	6	6	10	8	9.5	5	11
3/18/2014	2	11	<2	6	2	16	11	14	9	4	4	<2	15	11	17	8	9	15	10	5	11
5/27/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
7/9/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL

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

Date	Valley AS Wells - Flow Rate Readings (scfm)													
	V-6	V-7	V-8	V-9	V-10	V-5	V-11	V-4	V-12	V-3	V-13	V-2	V-14	V-1
1/23/2014	0	6	0	0	0	0	0	0	0	0	6	0	0	0
1/31/2014	4	8	6	<2	3	5	7.5	3	4	3.5	7.5	10	8.5	2
2/4/2014	3.5	8	5	<2	4	4	7.5	4	4	4	7	9.5	5	5
2/12/2014	4	8	8	<2	5	6	11	4	5	6	8	10	7	7
2/17/2014	4	6	7	2	6	5	9	5	5	6	8	12	2	4
2/26/2014	8	9	7	3	8	8	13.5	3.5	4	6	9	11	8	10
3/3/2014	10	10	8	2	10	<2	16.5	5	5	9	8	12	9	9
3/18/2014	4	12	7	4	7	<2	21	4	4	12	14	13	<2	7
5/27/2014	1	18	5	3	8	0	17	2	3	8	8	12	0	6
7/9/2014	1	13	4	5	6	0	16	2	2	2	6	12	0	5

Notes:

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

Operation and Maintenance Log Field Notes
PHILLIPS 66 FACILITY #255353

Date	Time	Name	Comments
7/1/14	12:30 PM	EJB	System LOTO upon arrival. Carbon in the primary vapor carbons was replaced and removed from site. Sight glasses on the VLS tanks were cleaned. Air sparge time was decreased to 40min on zones D and E. System operational upon departure.
7/9/14	3:30 PM	EJB	System operational upon arrival. Air sparge time was changed to 15min for all zones. Wells M13 and M5 were closed to try and drain water from wells after clearing water was unsucessful. Monthly vapor samples and water samples were collected. Sparge readings were taken. System operational upon departure.
7/15/14	9:00 AM	nag	701 blower down upon arrival for high blower outlet temp. It was restarted and a sun shade was constructed over the plumbing containing the temperature sensor. Select extraction manifold sight glasses were scrubbed. 701 blower was also reduced from 52% to 47% to aid in system cooling. System operational upon departure.
7/21/14	11:30 AM	nag	System operational upon arrival/departure. Oil added to 701 & 801 blowers. Additional sight glasses were scrubbed. Water filters were inspected and they were satisfactory.
7/30/14	4:45 PM	ejb	System down upon arrival. Water filters were inspected and they were satisfactory. B-801 was moved to 48% to aid in system cooling. System operational upon departure.
8/5/14	11:15 AM	ejb	System operational upon arrival/departure. Monthly vapor samples were taken, insufficient water in the system to sample water phase. Vacuum was measured at select monitoring wells. PID readings were taken at historically hot SVE wells.
8/13/14	6:30 PM	ejb	System down upon arrival. Alarm present upon arrival: LAHH-7901 BLD. Water was pumped out of secondary containment and the system was restarted. Monthly water samples were collected. System operational upon departure.
8/21/14	10:30 AM	ejb	System operational upon arrival/departure. First water filter was replaced. Intake air filter on AS compressor was inspected and needs to be cleaned.
8/26/14	1:45 PM	nag	System operational upon arrival/departure. There were no issues. Mark Newman was onsite from Cardno ATC and a monitoring well was surveyed.
9/4/14	8:45 AM	nag	System operational upon arrival/departure. The pillow float for the sump pump was readjusted. 701 increased from 49% to 61%. 801 increased from 49% to 65%. Both were at 11.5 Amps. Samples taken.
9/10/14	10:30 AM	nag	System operational upon arrival/departure.
9/17/14	8:00 AM	nag	System operational upon arrival/departure. There were no issues.
9/22/14	2:00 PM	nag	System operational upon arrival/departure. There were on issues.

Westlake Mercer 1315- 8/26

met Mark Newman onsite to survey monitoring wells

701	801	1315				11-18	
.16-.47	.05-.25	2/40/18	9.5 ppm / 0 / 0	3800/126.1	14.9 psi	98°
71"/71"	62"/62"	5291	6.1 / 0 / 0	4750/126.9	25	228
23"/129°	24"/129°	5341	6.1 / 0 / 0	4670/126.9		
20566 gal		5376 sp				

9/4 0800-1045 (0845)

sump pump reset
increase power to blowers
701 (49-67) 801 (49-65) 16.5A
PAH-2501 XCH present (outlet P 26")
sample V 0900-0940
U 0945-0955

2/40/18
5502
5552
5587
20776 gal

	701	801	SP
	84" 82"	75" 73"	185°/14psi
	0.34-0.72	0.34-0.70	64°/13psi
	26"/125°	27.5"/121°	9-16"
	14.4 ppm	1.0 ppm	
①	1.9/0.1/11.1		4065/118.7
②	4.0/0.1/7.5		5270/119.9
③	0.4/0.0/7.3		4900/119.9

9/10 1000- (1030)

20776 gal
2/40/18
5648
5698
5733

	701	801	SP
	82/82"	75-/74"	14.5/160
	26"/125°	28"/116°	12.2/67
	0.34-0.69	0.34-0.68	9-16"
	15.0	1.0 ppm	

1.2/1.0/10.0 102/4000
2.1/0.9/6.0 122/5600
0.9/0.0/6.9 1165/5150

9/17 0800

(0815)
2/40/19
5614
5864
5899

	701	801	SP		
	81/81	77/76	15/191	20952 gal	① 4000/119.1/11.2 ppm/0.1/1.7
	0.36-0.72	0.33-0.69	12.9/69		② 5546/120.0/7.5 ppm/0.1/1.9
	26"/121°	118°/28"	10-16"		③ 5030/120.1/7.4 ppm/0.0/0.7

9/22 1330

(1400)
2/40/19
5940
5990
6025

	701	801	SP		
	80/80	76/76	13/203	21392 gal	① 4056/114.6/8.4 ppm/5.4/3.1
	0.25-0.61	0.34-0.62	11.5/78		② 5400/114.6/7.9 ppm/7.9/5.6
	125°/26"	120°/28"	9-14		③ 4900/113.8/6.6/5.4/5.3
	10.6	1.0			

10/3 1415-

2/42/23
6143
6163
6213
6238
6248

(1530)

701	801			
80/80	77/77	OFF / INF	24,684 gal	down due to 801 over current
0.36-0.69	0.21-0.48	1.8/9.3/5.0		
121° 25"	115° 26"	2.1/9.1/3.4		801 - 65 → 58
6.8	0.1	3.9/7.5/3.5		701 - 61 → 58
		① 3700/112.4	SP 186/16	
		② 5370/111.9	71/14	
		③ 5030/111.5	12	

Westlake-Mercer

4/30/14 VAC1 13.5/39.4 ppm/0/0 | @1230 | 701 | 801 | sp
onsite @ 1100-1315 | 14.2/32.3 ppm/0/0 | 14,967 gal | 2/30/12 | 8 lout | 16.3 out
14.0/32.7 ppm/0/0 | 2843 | 75"/73" | 75"/73" | 12.6/88°
701 down upon arrival, high blower outlet T. | 2829 | 0.45-0.72 | 0.06-0.39 | 12-19"
saw that is was set @ 120° (801 was running @ 118°) | 2864 | | | 13 /208°
sched 80 upper T limit is 140°, the blower limit is 250°+
701 + 801 limits set @ 140°, 701 restarted.

6/25/14 VLS onsite @ 0715 19.1

0800 → 2/32/16 HT ← 3 | 57.5

					701	801	SP
sample	4161	0/4.0/23.1	3815/116.6°		78"/78"	85"/82"	73°/10.7
pull weeds	4147	0/3.9/17.3	4200/117.3°		0.32-0.58	0.14-0.38	13-21"
replaced 2 filters	4182-sp	0/6.3/17.1	4300/116.3		125°/23"	125°/22"	184°/11
	18824 gal				29.5 ppm	6.5 ppm	

x+y=1

$x(.455)(29.5) + y(0.26)(6.5) = \quad 29.5x + 6.5(1-x) = 19.0 \quad 23x = 12.5$

7/15/14
701 down - hi outlet T - restarted @ 0745
clean site glasses

oil added
filters?
sight glasses

7/21/14

1130

2/33/17	701	801	sp
4578	73"/0.36	76"/0.31	12 psi/70°
4628	73"	75"	12.5/187°
4663	118/22"	118/23"	14"
13 psi		6.0 ppm	17.4 ppm
19680 gal			

#1 0.0/0.1/14.6 3700/
#2 0.0/0.0/11.4 4120/114.2
#3 0.0/0.0/11.6 4285/113.8

2/33/18	~~701~~	801
4624	78 77	80 78
4675	0.48	0.33
4709 12"	sp 16.6/63	
	17/174	

Dayton
3/4 hp
120v 3YU76A

Rite in the Rain

P-66

VPC-1	Temp	124.0
	Vel	3910
VPC-2	Temp	125.0
	Vel	4120
VPC-3	Temp	124.8
	Vel	4335
1 Carbon 1		8.0
1 Carbon 2		8.0
1 out		0.0
2 Carbon 1		8.2
2 Carbon 2		0.0
2 out		0.0
3 Carbon 1		8.1
3 Carbon 2		0.0
3 out		0.0

Shed 701	mag "h2o	0.22
	Vac VLS	75
	Vac Blower	75
	Temp DSCH	129
	Press DSCH	23
	HC blower out	8.4
	Hc blower in	8.6
Shed 801	mag "h2o	0.30
	Vac VLS	78
	Vac Blow	79
	Temp DSCH	129
	Press DSCH	22
	Hc blow out	8.1
	HC blow in	8.0
AS Shed	Temp in HX	220
	Press in HX	12
	Temp out HX	91
	Press out HX	15.2
	mag	8.5

7/1/14

	Hrs
B-701	4163
B-801	4149
C-2201	4184
P-401	2
P-501	32
P-5501	16
Totalizer	18,847
Trans pump psi	5.2

- System Lota upon arrival.
- Changed out primary Carbons
- Cleaned site glasses
- AS fan changed to 40 min on DSE
- Sys operational upon departure

C1	temp	123.6
	Vel	3840
C2	temp	125.2
	vel	4190
C3	temp	125.1
	Vel	4310
1 Carbon 1		16.3
1 Carbon 2		0.0
1 out		0.1
2 Carbon 1		12.3
2 Carbon 2		0.0
2 out		0.0
3 Carbon 1		12.4
3 Carbon 2		0.0
3 out		0.0
AS Shed		
Temp in HX		200
Press in HX		11

Shed 701	mag	0.35
	Vac VLS	78
	Vac blower	74
	Temp Dsch	134
	Press Dsch	23
	Hc blow out	22.4
	Hc blow in	22.3
Shed 801	mag	0.25
	Vac VLS	79
	Vac blower	79
	Temp Dsch	132
	press Dsch	22.5
	Hc blow out	4.3
	HC blow in	4.5
	Temp out HX	92
	press out HX	10.1

7/9/14

	Hrs
B-701	4358
B-801	4344
C-2201	4379
P-401	2
P-501	32
P-5501	17
Total hours	19,446
Trans pump psi	5.4

- operational upon arrival
- AS fans 15 min all zones
- wells MB3 & MS were closed to drain H_2O
- + monthly Samples taken
- operational upon departure
- Mag - 9.5 + AS Ready taken

P-66 O&M 7/30/14

VPC-1	Temp	120.0
	Vel	3710
VPC-2	Temp	120.6
	Vel	4170
VPC-3	Temp	120.2
	Vel	4250
1 Carbon 1		5.5
1 Carbon 2		0.0
1 out		0.0
2 Carbon 1		5.5
2 Carbon 2		0.0
2 out		0.1
3 Carbon 1		5.4
3 Carbon 2		0.0
3 out		0.0

Shed 701	mag	0.20
	Vac VCS	71
	Vac Blower	70
	Temp Dschg	128
	Pres Dschg	22
	HC blower out	4.4
	HC blower in	WM
Shed 801	mag	0.25
	Vac VCS	70
	Vac blower	70
	Temp Dschg	128
	Press Dschg	23
	HC blower out	5.4
	HC blower in	WM
AS Shed	Temp in HC	210
	Press in HC	12.5
	Temp out HC	91
	Press out HC	12.2
	mag	9.5

B-701	4663
B-801	4713
C-2201	4748
P-401	2
P-501	39
P-5501	18
Totalizer	20,001

Trans pump psi 5.2

- System down upon arrival
- Water filters were checked
- B801 VFD 48%
- System operated upon departure

8/5/14

VPC-1	Temp	114.2
	Vel	3765
VPC-2	Temp	115.2
	Vel	4070
VPC-3	Temp	115.2
	Vel	4230
1 Carbon 1		11.0
1 Carbon 2		0.0
1 out		0.0
2 Carbon 1		9.4
2 Carbon 2		0.0
2 out		0.3
3 Carbon 1		9.3
3 Carbon 2		0.1
3 out		0.2

Shed 701	mag	0.21
	Vac VCS	73
	Vac blower	72
	Temp Dschg	121
	Press Dschg	22
	HC blower out	14.2
	HC blower in	14.0
Shed 801	mag	0.27
	Vac VCS	74
	Vac blower	73
	temp dschg	120
	press dschg	23
	HC blower out	3.9
	HC blower in	3.5
AS Shed	temp in HC	190
	press in HC	12.5
	temp out HC	72
	press out HC	11.8
	mag	9

B-701	4801
B-801	4881
C-2201	4886
P-401	2
P-801	40
P-5501	18
Totalizer	20,103

Trans pump psi 5.2

- Sys operated upon arrival
- Monthly vapor sampling H_2O, not enough
- Vac measured at select monitoring wells
- PID reading in HC skid was

P-66 O&M

8/13/14

VPC-1	temp	109.4
	vel	3715
VPC-2	temp	110.0
	vel	3710
VPC-3	temp	~~89.8~~
	vel	4150
1 Carbon 1		13.1
1 Carbon 2		0.5
1 out		0.0
2 Carbon 1		11.5
2 Carbon 2		0.4
2 out		0.1
3 Carbon 1		11.0
3 Carbon 2		0.4
3 out		0.1

Shed 701	mag	0.20
	Vac VLS	73
	Vac Blower	71
	Temp disch	121
	press disch	22.5
	HC blower in	NM
	HC blower out	17.6
Shed 801	mag	0.28
	Vac VLS	64
	Vac blower	63
	Temp disch	119
	press disch	23.5
	HC blower in	NM
	HC blower out	7.9
AS Shed	Temp in HX	195
	Press in HX	14.0
	Temp out HX	76
	Press out HX	12.3
	mag	8.5

B-701	4985
B-801	5035
C-2201	5070
P-401	2
P-801	40
P-5501	18
Total hrs	20,554
Trans pump psi	5.2

- System down upon arrival LAHH-7901 BLD
- H_2O pumped from sampling container
- System restarted
- Monthly H_2O samples collected
- System operational upon depart.

8/21/14

VPC-1	temp	108.8
	vel	3880
VPC-2	temp	109.2
	vel	4070
VPC-3	temp	108.8
	vel	4299
1 Carbon 1		7.8
1 Carbon 2		0.0
1 out		0.0
2 Carbon 1		5.8
2 Carbon 2		0.1
2 out		0.1
3 Carbon 1		6.0
3 Carbon 2		0.0
3 out		0.0

Shed 701	mag	0.22
	Vac VLS	73
	Vac Blower	72
	Temp disch	120
	press disch	22.5
	HC blower in	15.4
	HC blower out	15.3
Shed 801	mag	0.29
	Vac VLS	64
	Vac Blower	64
	temp disch	120
	Press disch	24
	HC blower in	1.6
	HC blower out	1.6
AS Shed	Temp in HX	187
	press in HX	12.5
	Temp at HX	71
	Press out HX	12.0
	mag	8.5

B-701	5169
B-801	5219
C-2201	5254
P-401	2
P-501	40
P-5501	18
Total hrs	20,560
trans pump psi	4.8

- System operational
- 1st H_2O filter was replaced
- AS compressor filter needs draining

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

July 21, 2014

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

RE: Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273606

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

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

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: Keith Fox, Cardno ATC

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.: 10273606

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #40770
Alabama Certification #40770
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #: Pace
Georgia Certification #: 959
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
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
Wisconsin Certification #: 999407970
West Virginia Certification #: 382
West Virginia TO-15 Approval
West Virginia DHHR #:9952C

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

SAMPLE SUMMARY

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273606

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10273606001	**V-DSCHG-1**	Air	07/09/14 14:30	07/11/14 09:45
10273606002	**V-DSCHG-2**	Air	07/09/14 14:35	07/11/14 09:45
10273606003	**V-DSCHG-3**	Air	07/09/14 14:40	07/11/14 09:45
10273606004	**V-INT-1**	Air	07/09/14 14:55	07/11/14 09:45
10273606005	**V-INT-2**	Air	07/09/14 14:50	07/11/14 09:45
10273606006	**V-INT-3**	Air	07/09/14 14:45	07/11/14 09:45
10273606007	**V-INF-1**	Air	07/09/14 15:00	07/11/14 09:45
10273606008	**V-INF-2**	Air	07/09/14 15:10	07/11/14 09:45
10273606009	**V-INF-3**	Air	07/09/14 15:20	07/11/14 09:45

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

SAMPLE ANALYTE COUNT

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273606

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10273606001	**V-DSCHG-1**	TO-15	AH2	6	PASI-M
10273606002	**V-DSCHG-2**	TO-15	AH2	6	PASI-M
10273606003	**V-DSCHG-3**	TO-15	AH2	6	PASI-M
10273606004	**V-INT-1**	TO-15	AH2	6	PASI-M
10273606005	**V-INT-2**	TO-15	AH2	6	PASI-M
10273606006	**V-INT-3**	TO-15	AH2	6	PASI-M
10273606007	**V-INF-1**	TO-15	AH2	6	PASI-M
10273606008	**V-INF-2**	TO-15	AH2	6	PASI-M
10273606009	**V-INF-3**	TO-15	AH2	6	PASI-M

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

ANALYTICAL RESULTS

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273606

Sample: V-DSCHG-1 **Lab ID: 10273606001** Collected: 07/09/14 14:30 Received: 07/11/14 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	**17.0**	ug/m3	16.4	25.3		07/19/14 13:00	71-43-2	A4
Ethylbenzene	ND	ug/m3	22.3	25.3		07/19/14 13:00	100-41-4	
THC as Gas	**9860**	ug/m3	1540	25.3		07/19/14 13:00		
Toluene	**29.7**	ug/m3	19.5	25.3		07/19/14 13:00	108-88-3	
m&p-Xylene	ND	ug/m3	44.5	25.3		07/19/14 13:00	179601-23-1	
o-Xylene	ND	ug/m3	22.3	25.3		07/19/14 13:00	95-47-6	

Sample: V-DSCHG-2 **Lab ID: 10273606002** Collected: 07/09/14 14:35 Received: 07/11/14 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	18.8	28.95		07/19/14 13:21	71-43-2	A4
Ethylbenzene	ND	ug/m3	25.5	28.95		07/19/14 13:21	100-41-4	
THC as Gas	**6900**	ug/m3	1760	28.95		07/19/14 13:21		
Toluene	**28.0**	ug/m3	22.3	28.95		07/19/14 13:21	108-88-3	
m&p-Xylene	ND	ug/m3	51.0	28.95		07/19/14 13:21	179601-23-1	
o-Xylene	ND	ug/m3	25.5	28.95		07/19/14 13:21	95-47-6	

Sample: V-DSCHG-3 **Lab ID: 10273606003** Collected: 07/09/14 14:40 Received: 07/11/14 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	18.8	28.95		07/19/14 13:43	71-43-2	A4
Ethylbenzene	ND	ug/m3	25.5	28.95		07/19/14 13:43	100-41-4	
THC as Gas	**3540**	ug/m3	1760	28.95		07/19/14 13:43		
Toluene	**22.7**	ug/m3	22.3	28.95		07/19/14 13:43	108-88-3	
m&p-Xylene	ND	ug/m3	51.0	28.95		07/19/14 13:43	179601-23-1	
o-Xylene	ND	ug/m3	25.5	28.95		07/19/14 13:43	95-47-6	

Sample: V-INT-1 **Lab ID: 10273606004** Collected: 07/09/14 14:55 Received: 07/11/14 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	37.6	57.9		07/19/14 14:04	71-43-2	A4
Ethylbenzene	ND	ug/m3	51.0	57.9		07/19/14 14:04	100-41-4	
THC as Gas	ND	ug/m3	3520	57.9		07/19/14 14:04		
Toluene	ND	ug/m3	44.6	57.9		07/19/14 14:04	108-88-3	
m&p-Xylene	ND	ug/m3	102	57.9		07/19/14 14:04	179601-23-1	
o-Xylene	ND	ug/m3	51.0	57.9		07/19/14 14:04	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273606

Sample: V-INT-2 **Lab ID: 10273606005** Collected: 07/09/14 14:50 Received: 07/11/14 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	37.6	57.9		07/19/14 14:26	71-43-2	A4
Ethylbenzene	ND	ug/m3	51.0	57.9		07/19/14 14:26	100-41-4	
THC as Gas	ND	ug/m3	3520	57.9		07/19/14 14:26		
Toluene	ND	ug/m3	44.6	57.9		07/19/14 14:26	108-88-3	
m&p-Xylene	ND	ug/m3	102	57.9		07/19/14 14:26	179601-23-1	
o-Xylene	ND	ug/m3	51.0	57.9		07/19/14 14:26	95-47-6	

Sample: V-INT-3 **Lab ID: 10273606006** Collected: 07/09/14 14:45 Received: 07/11/14 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	22.6	34.8		07/19/14 14:48	71-43-2	A4
Ethylbenzene	ND	ug/m3	30.6	34.8		07/19/14 14:48	100-41-4	
THC as Gas	ND	ug/m3	2120	34.8		07/19/14 14:48		
Toluene	**27.9**	ug/m3	26.8	34.8		07/19/14 14:48	108-88-3	
m&p-Xylene	ND	ug/m3	61.2	34.8		07/19/14 14:48	179601-23-1	
o-Xylene	ND	ug/m3	30.6	34.8		07/19/14 14:48	95-47-6	

Sample: V-INF-1 **Lab ID: 10273606007** Collected: 07/09/14 15:00 Received: 07/11/14 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	58.4	90		07/19/14 22:17	71-43-2	A4
Ethylbenzene	**253**	ug/m3	79.2	90		07/19/14 22:17	100-41-4	
THC as Gas	**131000**	ug/m3	5470	90		07/19/14 22:17		
Toluene	**235**	ug/m3	69.3	90		07/19/14 22:17	108-88-3	
m&p-Xylene	**5360**	ug/m3	158	90		07/19/14 22:17	179601-23-1	
o-Xylene	**2460**	ug/m3	79.2	90		07/19/14 22:17	95-47-6	

Sample: V-INF-2 **Lab ID: 10273606008** Collected: 07/09/14 15:10 Received: 07/11/14 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	56.5	87		07/19/14 15:09	71-43-2	A4
Ethylbenzene	**146**	ug/m3	76.6	87		07/19/14 15:09	100-41-4	
THC as Gas	**46000**	ug/m3	5290	87		07/19/14 15:09		
Toluene	**154**	ug/m3	67.0	87		07/19/14 15:09	108-88-3	
m&p-Xylene	**3040**	ug/m3	153	87		07/19/14 15:09	179601-23-1	
o-Xylene	**1290**	ug/m3	76.6	87		07/19/14 15:09	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273606

Sample: V-INF-3 **Lab ID: 10273606009** Collected: 07/09/14 15:20 Received: 07/11/14 09:45 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	56.5	87		07/19/14 22:38	71-43-2	A4
Ethylbenzene	**180**	ug/m3	76.6	87		07/19/14 22:38	100-41-4	
THC as Gas	**83400**	ug/m3	5290	87		07/19/14 22:38		
Toluene	**172**	ug/m3	67.0	87		07/19/14 22:38	108-88-3	
m&p-Xylene	**3440**	ug/m3	153	87		07/19/14 22:38	179601-23-1	
o-Xylene	**1540**	ug/m3	76.6	87		07/19/14 22:38	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273606

QC Batch: AIR/20821 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10273606001, 10273606002, 10273606003, 10273606004, 10273606005, 10273606006, 10273606008

METHOD BLANK: 1736837 Matrix: Air
Associated Lab Samples: 10273606001, 10273606002, 10273606003, 10273606004, 10273606005, 10273606006, 10273606008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.65	07/18/14 20:42	
Ethylbenzene	ug/m3	ND	0.88	07/18/14 20:42	
m&p-Xylene	ug/m3	ND	1.8	07/18/14 20:42	
o-Xylene	ug/m3	ND	0.88	07/18/14 20:42	
THC as Gas	ug/m3	ND	60.8	07/18/14 20:42	
Toluene	ug/m3	ND	0.77	07/18/14 20:42	

LABORATORY CONTROL SAMPLE: 1736838

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	32.6	100	69-134	
Ethylbenzene	ug/m3	44.2	47.2	107	73-139	
m&p-Xylene	ug/m3	44.2	52.1	118	73-139	
o-Xylene	ug/m3	44.2	55.0	125	71-138	
THC as Gas	ug/m3	3520	3360	96	65-136	
Toluene	ug/m3	38.3	35.9	94	67-133	

SAMPLE DUPLICATE: 1737355

Parameter	Units	60173177005 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	ND	19.6J		25	
Ethylbenzene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	ND	ND		25	
THC as Gas	ug/m3	8440	7550	11	25	
Toluene	ug/m3	732	687	6	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

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

QUALITY CONTROL DATA

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273606

QC Batch: AIR/20825 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10273606007, 10273606009

METHOD BLANK: 1737376 Matrix: Air
Associated Lab Samples: 10273606007, 10273606009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.65	07/19/14 17:53	
Ethylbenzene	ug/m3	ND	0.88	07/19/14 17:53	
m&p-Xylene	ug/m3	ND	1.8	07/19/14 17:53	
o-Xylene	ug/m3	ND	0.88	07/19/14 17:53	
THC as Gas	ug/m3	ND	60.8	07/19/14 17:53	
Toluene	ug/m3	ND	0.77	07/19/14 17:53	

LABORATORY CONTROL SAMPLE: 1737377

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	33.8	104	69-134	
Ethylbenzene	ug/m3	44.2	49.2	111	73-139	
m&p-Xylene	ug/m3	44.2	53.7	122	73-139	
o-Xylene	ug/m3	44.2	55.9	126	71-138	
THC as Gas	ug/m3	3520	4080	116	65-136	
Toluene	ug/m3	38.3	37.6	98	67-133	

SAMPLE DUPLICATE: 1737901

Parameter	Units	10273826001 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	ND	1.2J		25	
Ethylbenzene	ug/m3	3.1	3.4	10	25	
m&p-Xylene	ug/m3	14.8	14.8	0	25	
o-Xylene	ug/m3	4.7	4.7	2	25	
THC as Gas	ug/m3	470	329	35	25	R1
Toluene	ug/m3	57.3	59.4	4	25	

SAMPLE DUPLICATE: 1737902

Parameter	Units	10273211001 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	ND	1.6J		25	
Ethylbenzene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	3.5J		25	
o-Xylene	ug/m3	ND	ND		25	
THC as Gas	ug/m3	ND	124J		25	
Toluene	ug/m3	6.9	6.8	0	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

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

QUALIFIERS

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273606

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.
R1	RPD value was outside control limits.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273606

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10273606001	**V-DSCHG-1**	TO-15	AIR/20821		
10273606002	**V-DSCHG-2**	TO-15	AIR/20821		
10273606003	**V-DSCHG-3**	TO-15	AIR/20821		
10273606004	**V-INT-1**	TO-15	AIR/20821		
10273606005	**V-INT-2**	TO-15	AIR/20821		
10273606006	**V-INT-3**	TO-15	AIR/20821		
10273606007	**V-INF-1**	TO-15	AIR/20825		
10273606008	**V-INF-2**	TO-15	AIR/20821		
10273606009	**V-INF-3**	TO-15	AIR/20825		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

1027 36006

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Cardno ATC	Report To:	Kyle Sattler	Attention:	
Address:	7070 SW Fir Loop, Suite 100	Copy To:	Keith Fox	Company Name:	
	Tigard, OR 97223			Address:	
Email To:	kyle.sattler@cardno.com	Purchase Order No.	03132603B	Pace Quote Reference:	
Phone:	503 430 6698 Fax	Client Project ID:	AOC 1396 - P66 Westlake/Mercer	Pace Project Manager:	Jenni Gross
Requested Due Date/TAT:	10 Day (Standard)	Container Order Number:		Pace Profile #:	33332 #2

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

ITEM#	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: TO-15	Residual Chlorine (Y/N)	
1	V-DSCHG-1	AR	G			07/09/14	14:30		2	X								X		-001
2	V-DSCHG-2	AR	G			07/09/14	14:35		2	X								X		-002
3	V-DSCHG-3	AR	G			07/09/14	14:40		2	X								X		-003
4	V-INT-1	AR	G			07/09/14	14:55		2	X								X		-004
5	V-INT-2	AR	G			07/09/14	14:50		2	X								X		-005
6	V-INT-3	AR	G			07/09/14	14:45		2	X								X		-006
7	V-INF-1	AR	G			07/09/14	15:00		2	X								X		-007
8	V-INF-2	AR	G			07/09/14	15:10		2	X								X		-008
9	V-INF-3	AR	G			07/09/14	15:20		2	X								X		-009
10																				
11																				
12																				

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
				PACE	7-10-14	10:15	Air	N	Y	Y
				Pace	7-11-14	945	Amb	N	Y	Y

SAMPLER NAME AND SIGNATURE			TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Edward Burnside					
SIGNATURE of SAMPLER:		DATE Signed: 7/9/14				

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

Air Sample Condition Upon Receipt

Client Name: CardnoATC

Project #: WO# : 10273606

10273606

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

Tracking Number: 5779 5331 0240

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

Optional: Proj. Due Date: Proj. Name:

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

Temp. (TO17 and TO13 samples only) (°C): amb Corrected Temp (°C): amb Thermom. Used: ☐ B88A912167504 ☐ 72337080 ☐ B88A9132521491 ☐ 80512447

Temp should be above freezing to 6°C Correction Factor: ambient Date & Initials of Person Examining Contents: CMB 7.11.14

Type of Ice Received ☐ Blue ☐ Wet ☒ None

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

Samples Received: 2 air bags per sample (18 total)

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

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

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: JENNY GROSS Date: 7/11/14

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

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

August 13, 2014

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

RE: Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10276721

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on August 07, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: Keith Fox, Cardno ATC

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.: 10276721

Minnesota Certification IDs

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

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

SAMPLE SUMMARY

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10276721

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10276721001	**V-DSCHG-1**	Air	08/05/14 11:55	08/07/14 09:25
10276721002	**V-DSCHG-2**	Air	08/05/14 12:00	08/07/14 09:25
10276721003	**V-DSCHG-3**	Air	08/05/14 12:05	08/07/14 09:25
10276721004	**V-INT-1**	Air	08/05/14 12:20	08/07/14 09:25
10276721005	**V-INT-2**	Air	08/05/14 12:25	08/07/14 09:25
10276721006	**V-INT-3**	Air	08/05/14 12:30	08/07/14 09:25
10276721007	**V-INF-1**	Air	08/05/14 12:40	08/07/14 09:25
10276721008	**V-INF-2**	Air	08/05/14 12:45	08/07/14 09:25
10276721009	**V-INF-3**	Air	08/05/14 12:50	08/07/14 09:25

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

SAMPLE ANALYTE COUNT

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10276721

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10276721001	**V-DSCHG-1**	TO-15	AH2	6	PASI-M
10276721002	**V-DSCHG-2**	TO-15	AH2	6	PASI-M
10276721003	**V-DSCHG-3**	TO-15	AH2	6	PASI-M
10276721004	**V-INT-1**	TO-15	AH2	6	PASI-M
10276721005	**V-INT-2**	TO-15	AH2	6	PASI-M
10276721006	**V-INT-3**	TO-15	AH2	6	PASI-M
10276721007	**V-INF-1**	TO-15	AH2	6	PASI-M
10276721008	**V-INF-2**	TO-15	AH2	6	PASI-M
10276721009	**V-INF-3**	TO-15	AH2	6	PASI-M

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

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10276721

Sample: V-DSCHG-1 **Lab ID: 10276721001** Collected: 08/05/14 11:55 Received: 08/07/14 09:25 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.7	36		08/10/14 22:33	71-43-2	A4
Ethylbenzene	ND	ug/m3	31.7	36		08/10/14 22:33	100-41-4	
THC as Gas	ND	ug/m3	2190	36		08/10/14 22:33		
Toluene	**28.6**	ug/m3	27.7	36		08/10/14 22:33	108-88-3	
m&p-Xylene	ND	ug/m3	63.4	36		08/10/14 22:33	179601-23-1	
o-Xylene	ND	ug/m3	79.5	36		08/10/14 22:33	95-47-6	

Sample: V-DSCHG-2 **Lab ID: 10276721002** Collected: 08/05/14 12:00 Received: 08/07/14 09:25 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.7	36		08/10/14 22:54	71-43-2	A4
Ethylbenzene	ND	ug/m3	31.7	36		08/10/14 22:54	100-41-4	
THC as Gas	**10600**	ug/m3	2190	36		08/10/14 22:54		
Toluene	ND	ug/m3	27.7	36		08/10/14 22:54	108-88-3	
m&p-Xylene	ND	ug/m3	63.4	36		08/10/14 22:54	179601-23-1	
o-Xylene	ND	ug/m3	79.5	36		08/10/14 22:54	95-47-6	

Sample: V-DSCHG-3 **Lab ID: 10276721003** Collected: 08/05/14 12:05 Received: 08/07/14 09:25 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.3	34.8		08/10/14 23:16	71-43-2	A4
Ethylbenzene	ND	ug/m3	30.6	34.8		08/10/14 23:16	100-41-4	
THC as Gas	**5840**	ug/m3	2120	34.8		08/10/14 23:16		
Toluene	ND	ug/m3	26.8	34.8		08/10/14 23:16	108-88-3	
m&p-Xylene	ND	ug/m3	61.2	34.8		08/10/14 23:16	179601-23-1	
o-Xylene	ND	ug/m3	76.8	34.8		08/10/14 23:16	95-47-6	

Sample: V-INT-1 **Lab ID: 10276721004** Collected: 08/05/14 12:20 Received: 08/07/14 09:25 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.7	36		08/10/14 23:37	71-43-2	A4
Ethylbenzene	ND	ug/m3	31.7	36		08/10/14 23:37	100-41-4	
THC as Gas	**2630**	ug/m3	2190	36		08/10/14 23:37		
Toluene	ND	ug/m3	27.7	36		08/10/14 23:37	108-88-3	
m&p-Xylene	ND	ug/m3	63.4	36		08/10/14 23:37	179601-23-1	
o-Xylene	ND	ug/m3	79.5	36		08/10/14 23:37	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10276721

Sample: V-INT-2 **Lab ID: 10276721005** Collected: 08/05/14 12:25 Received: 08/07/14 09:25 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	11.3	34.8		08/10/14 23:59	71-43-2	A4
Ethylbenzene	ND	ug/m3	30.6	34.8		08/10/14 23:59	100-41-4	
THC as Gas	ND	ug/m3	2120	34.8		08/10/14 23:59		
Toluene	ND	ug/m3	26.8	34.8		08/10/14 23:59	108-88-3	
m&p-Xylene	ND	ug/m3	61.2	34.8		08/10/14 23:59	179601-23-1	
o-Xylene	ND	ug/m3	76.8	34.8		08/10/14 23:59	95-47-6	

Sample: V-INT-3 **Lab ID: 10276721006** Collected: 08/05/14 12:30 Received: 08/07/14 09:25 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	13.1	40.4		08/11/14 00:21	71-43-2	A4
Ethylbenzene	ND	ug/m3	35.6	40.4		08/11/14 00:21	100-41-4	
THC as Gas	ND	ug/m3	2460	40.4		08/11/14 00:21		
Toluene	ND	ug/m3	31.1	40.4		08/11/14 00:21	108-88-3	
m&p-Xylene	ND	ug/m3	71.1	40.4		08/11/14 00:21	179601-23-1	
o-Xylene	ND	ug/m3	89.2	40.4		08/11/14 00:21	95-47-6	

Sample: V-INF-1 **Lab ID: 10276721007** Collected: 08/05/14 12:40 Received: 08/07/14 09:25 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	37.6	115.8		08/11/14 01:25	71-43-2	A4
Ethylbenzene	ND	ug/m3	102	115.8		08/11/14 01:25	100-41-4	
THC as Gas	**33900**	ug/m3	7040	115.8		08/11/14 01:25		
Toluene	**127**	ug/m3	89.2	115.8		08/11/14 01:25	108-88-3	
m&p-Xylene	**1560**	ug/m3	204	115.8		08/11/14 01:25	179601-23-1	
o-Xylene	**701**	ug/m3	256	115.8		08/11/14 01:25	95-47-6	

Sample: V-INF-2 **Lab ID: 10276721008** Collected: 08/05/14 12:45 Received: 08/07/14 09:25 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	22.0	67.6		08/11/14 10:24	71-43-2	A4
Ethylbenzene	ND	ug/m3	59.5	67.6		08/11/14 10:24	100-41-4	
THC as Gas	**39300**	ug/m3	4110	67.6		08/11/14 10:24		
Toluene	**83.7**	ug/m3	52.1	67.6		08/11/14 10:24	108-88-3	
m&p-Xylene	**1230**	ug/m3	119	67.6		08/11/14 10:24	179601-23-1	
o-Xylene	**571**	ug/m3	149	67.6		08/11/14 10:24	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10276721

Sample: V-INF-3 **Lab ID: 10276721009** Collected: 08/05/14 12:50 Received: 08/07/14 09:25 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	22.0	67.6		08/11/14 10:02	71-43-2	A4
Ethylbenzene	ND	ug/m3	59.5	67.6		08/11/14 10:02	100-41-4	
THC as Gas	**35700**	ug/m3	4110	67.6		08/11/14 10:02		
Toluene	**85.3**	ug/m3	52.1	67.6		08/11/14 10:02	108-88-3	
m&p-Xylene	**1140**	ug/m3	119	67.6		08/11/14 10:02	179601-23-1	
o-Xylene	**519**	ug/m3	149	67.6		08/11/14 10:02	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10276721

QC Batch: AIR/21009 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10276721001, 10276721002, 10276721003, 10276721004, 10276721005, 10276721006, 10276721007, 10276721008, 10276721009

METHOD BLANK: 1756787 Matrix: Air
Associated Lab Samples: 10276721001, 10276721002, 10276721003, 10276721004, 10276721005, 10276721006, 10276721007, 10276721008, 10276721009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	08/10/14 17:16	
Ethylbenzene	ug/m3	ND	0.88	08/10/14 17:16	
m&p-Xylene	ug/m3	ND	1.8	08/10/14 17:16	
o-Xylene	ug/m3	ND	2.2	08/10/14 17:16	
THC as Gas	ug/m3	ND	60.8	08/10/14 17:16	
Toluene	ug/m3	ND	0.77	08/10/14 17:16	

LABORATORY CONTROL SAMPLE: 1756788

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	29.8	92	69-134	
Ethylbenzene	ug/m3	44.2	45.8	104	73-139	
m&p-Xylene	ug/m3	44.2	46.4	105	73-139	
o-Xylene	ug/m3	44.2	40.6	92	71-138	
THC as Gas	ug/m3	3520	2940	83	65-136	
Toluene	ug/m3	38.3	40.1	105	67-133	

SAMPLE DUPLICATE: 1757081

Parameter	Units	10276721007 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	ND	ND		25	A4
Ethylbenzene	ug/m3	ND	75.4J		25	
m&p-Xylene	ug/m3	1560	1650	5	25	
o-Xylene	ug/m3	701	750	7	25	
THC as Gas	ug/m3	33900	36100	6	25	
Toluene	ug/m3	127	142	11	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

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

QUALIFIERS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10276721

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.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10276721

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10276721001	**V-DSCHG-1**	TO-15	AIR/21009		
10276721002	**V-DSCHG-2**	TO-15	AIR/21009		
10276721003	**V-DSCHG-3**	TO-15	AIR/21009		
10276721004	**V-INT-1**	TO-15	AIR/21009		
10276721005	**V-INT-2**	TO-15	AIR/21009		
10276721006	**V-INT-3**	TO-15	AIR/21009		
10276721007	**V-INF-1**	TO-15	AIR/21009		
10276721008	**V-INF-2**	TO-15	AIR/21009		
10276721009	**V-INF-3**	TO-15	AIR/21009		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

10276721

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Cardno ATC	Report To:	Kyle Sattler	Attention:	
Address:	7070 SW Fir Loop, Suite 100	Copy To:	Keith Fox	Company Name:	
	Tigard, OR 97223			Address:	
Email To:	kyle.sattler@cardno.com	Purchase Order No.	031328038	Pace Quote Reference:	
Phone:	503 430 6696 Fax:	Client Project ID:	AOC 1396 - P66 Westlake/Mercer	Pace Project Manager:	Jenni Gross
Requested Due Date/TAT:	10 Day (Standard)	Container Order Number:		Pace Profile #:	33332 #2

PSCAA

WA

ITEM#	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: TO-15	Residual Chlorine (Y/N)	Sample #
1	V-DSCHG-1	AR	G			08/05/14	11:55		2	X								X		001
2	V-DSCHG-2	AR	G			08/05/14	12:00		2	X								X		002
3	V-DSCHG-3	AR	G			08/05/14	12:05		2	X								X		003
4	V-INT-1	AR	G			08/05/14	12:20		2	X								X		004
5	V-INT-2	AR	G			08/05/14	12:25		2	X								X		005
6	V-INT-3	AR	G			08/05/14	12:30		2	X								X		006
7	V-INF-1	AR	G			08/05/14	12:40		2	X								X		007
8	V-INF-2	AR	G			08/05/14	12:45		2	X								X		008
9	V-INF-3	AR	G			08/05/14	12:50		2	X								X		009
10																				
11																				
12																				

ORIGINAL SAMPLED BY AND AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
			Jenni Gross / Pace	8/6/14	9:45	AMB	N	N	
			Pace	8/7/14	0925	AMB	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Edward Burnside

SIGNATURE of SAMPLER: [signature] DATE Signed: 8/5/2014

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

Air Sample Condition Upon Receipt

Client Name: Cardno ATC

Project #: WO#: 10276721

10276721

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

Tracking Number: 5779 5331 9010

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

Optional: Proj. Due Date: Proj. Name:

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

Temp. (TO17 and TO13 samples only) (°C): — Corrected Temp (°C): — Thermom. Used: ☐B8BA912167504 ☐72337080 ☐B8BA9132521491 ☐80512447

Temp should be above freezing to 6°C Correction Factor: — Date & Initials of Person Examining Contents: 8/7/14

Type of Ice Received ☐Blue ☐Wet ☒None

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

Samples Received:

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

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

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 8/7/14

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

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

September 15, 2014

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

RE: Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10280228

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on September 05, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: Keith Fox, Cardno ATC

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.: 10280228

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
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 #: Pace
Georgia Certification #: 959
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
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
Wisconsin Certification #: 999407970
West Virginia Certification #: 382
West Virginia DHHR #:9952C

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

SAMPLE SUMMARY

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10280228

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10280228001	**V-DSCHG-1**	Air	09/04/14 09:00	09/05/14 10:15
10280228002	**V-DSCHG-2**	Air	09/04/14 09:05	09/05/14 10:15
10280228003	**V-DSCHG-3**	Air	09/04/14 09:10	09/05/14 10:15
10280228004	**V-INT-1**	Air	09/04/14 09:15	09/05/14 10:15
10280228005	**V-INT-2**	Air	09/04/14 09:20	09/05/14 10:15
10280228006	**V-INT-3**	Air	09/04/14 09:25	09/05/14 10:15
10280228007	**V-INF-1**	Air	09/04/14 09:30	09/05/14 10:15
10280228008	**V-INF-2**	Air	09/04/14 09:35	09/05/14 10:15
10280228009	**V-INF-3**	Air	09/04/14 09:40	09/05/14 10:15

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10280228

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10280228001	**V-DSCHG-1**	TO-15	DL1	6	PASI-M
10280228002	**V-DSCHG-2**	TO-15	DL1	6	PASI-M
10280228003	**V-DSCHG-3**	TO-15	DL1	6	PASI-M
10280228004	**V-INT-1**	TO-15	DL1	6	PASI-M
10280228005	**V-INT-2**	TO-15	DL1	6	PASI-M
10280228006	**V-INT-3**	TO-15	DL1	6	PASI-M
10280228007	**V-INF-1**	TO-15	DL1	6	PASI-M
10280228008	**V-INF-2**	TO-15	DL1	6	PASI-M
10280228009	**V-INF-3**	TO-15	DL1	6	PASI-M

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

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10280228

Sample: V-DSCHG-1 **Lab ID: 10280228001** Collected: 09/04/14 09:00 Received: 09/05/14 10:15 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		09/13/14 20:14	71-43-2	
Ethylbenzene	ND	ug/m3	78.6	33.6		09/13/14 20:14	100-41-4	
THC as Gas	ND	ug/m3	2040	33.6		09/13/14 20:14		A4
Toluene	ND	ug/m3	25.9	33.6		09/13/14 20:14	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		09/13/14 20:14	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		09/13/14 20:14	95-47-6	

Sample: V-DSCHG-2 **Lab ID: 10280228002** Collected: 09/04/14 09:05 Received: 09/05/14 10:15 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		09/13/14 20:35	71-43-2	
Ethylbenzene	ND	ug/m3	78.6	33.6		09/13/14 20:35	100-41-4	
THC as Gas	ND	ug/m3	2040	33.6		09/13/14 20:35		A4
Toluene	ND	ug/m3	25.9	33.6		09/13/14 20:35	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		09/13/14 20:35	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		09/13/14 20:35	95-47-6	

Sample: V-DSCHG-3 **Lab ID: 10280228003** Collected: 09/04/14 09:10 Received: 09/05/14 10:15 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		09/13/14 20:57	71-43-2	
Ethylbenzene	ND	ug/m3	78.6	33.6		09/13/14 20:57	100-41-4	
THC as Gas	ND	ug/m3	2040	33.6		09/13/14 20:57		A4
Toluene	ND	ug/m3	25.9	33.6		09/13/14 20:57	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		09/13/14 20:57	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		09/13/14 20:57	95-47-6	

Sample: V-INT-1 **Lab ID: 10280228004** Collected: 09/04/14 09:15 Received: 09/05/14 10:15 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		09/13/14 21:18	71-43-2	
Ethylbenzene	ND	ug/m3	78.6	33.6		09/13/14 21:18	100-41-4	
THC as Gas	ND	ug/m3	2040	33.6		09/13/14 21:18		A4
Toluene	**88.1**	ug/m3	25.9	33.6		09/13/14 21:18	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		09/13/14 21:18	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		09/13/14 21:18	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10280228

Sample: V-INT-2 **Lab ID: 10280228005** Collected: 09/04/14 09:20 Received: 09/05/14 10:15 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		09/13/14 21:39	71-43-2	
Ethylbenzene	ND	ug/m3	78.6	33.6		09/13/14 21:39	100-41-4	
THC as Gas	ND	ug/m3	2040	33.6		09/13/14 21:39		A4
Toluene	ND	ug/m3	25.9	33.6		09/13/14 21:39	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		09/13/14 21:39	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		09/13/14 21:39	95-47-6	

Sample: V-INT-3 **Lab ID: 10280228006** Collected: 09/04/14 09:25 Received: 09/05/14 10:15 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		09/13/14 22:00	71-43-2	
Ethylbenzene	ND	ug/m3	78.6	33.6		09/13/14 22:00	100-41-4	
THC as Gas	ND	ug/m3	2040	33.6		09/13/14 22:00		A4
Toluene	ND	ug/m3	25.9	33.6		09/13/14 22:00	108-88-3	
m&p-Xylene	ND	ug/m3	59.1	33.6		09/13/14 22:00	179601-23-1	
o-Xylene	ND	ug/m3	29.6	33.6		09/13/14 22:00	95-47-6	

Sample: V-INF-1 **Lab ID: 10280228007** Collected: 09/04/14 09:30 Received: 09/05/14 10:15 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		09/13/14 22:21	71-43-2	
Ethylbenzene	ND	ug/m3	78.6	33.6		09/13/14 22:21	100-41-4	
THC as Gas	**20500**	ug/m3	2040	33.6		09/13/14 22:21		A4
Toluene	**51.5**	ug/m3	25.9	33.6		09/13/14 22:21	108-88-3	
m&p-Xylene	**3730**	ug/m3	59.1	33.6		09/13/14 22:21	179601-23-1	
o-Xylene	**1720**	ug/m3	29.6	33.6		09/13/14 22:21	95-47-6	

Sample: V-INF-2 **Lab ID: 10280228008** Collected: 09/04/14 09:35 Received: 09/05/14 10:15 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		09/13/14 22:43	71-43-2	
Ethylbenzene	ND	ug/m3	78.6	33.6		09/13/14 22:43	100-41-4	
THC as Gas	**19500**	ug/m3	2040	33.6		09/13/14 22:43		A4
Toluene	**39.3**	ug/m3	25.9	33.6		09/13/14 22:43	108-88-3	
m&p-Xylene	**1780**	ug/m3	59.1	33.6		09/13/14 22:43	179601-23-1	
o-Xylene	**910**	ug/m3	29.6	33.6		09/13/14 22:43	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10280228

Sample: V-INF-3 **Lab ID: 10280228009** Collected: 09/04/14 09:40 Received: 09/05/14 10:15 Matrix: Air

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15							
Benzene	ND	ug/m3	10.9	33.6		09/13/14 23:04	71-43-2	
Ethylbenzene	ND	ug/m3	78.6	33.6		09/13/14 23:04	100-41-4	
THC as Gas	**4850**	ug/m3	2040	33.6		09/13/14 23:04		A4
Toluene	ND	ug/m3	25.9	33.6		09/13/14 23:04	108-88-3	
m&p-Xylene	**1460**	ug/m3	59.1	33.6		09/13/14 23:04	179601-23-1	
o-Xylene	**640**	ug/m3	29.6	33.6		09/13/14 23:04	95-47-6	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10280228

QC Batch: AIR/21302 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10280228001, 10280228002, 10280228003, 10280228004, 10280228005, 10280228006, 10280228007, 10280228008, 10280228009

METHOD BLANK: 1788451 Matrix: Air
Associated Lab Samples: 10280228001, 10280228002, 10280228003, 10280228004, 10280228005, 10280228006, 10280228007, 10280228008, 10280228009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/m3	ND	0.32	09/13/14 15:07	
Ethylbenzene	ug/m3	ND	2.3	09/13/14 15:07	
m&p-Xylene	ug/m3	ND	1.8	09/13/14 15:07	
o-Xylene	ug/m3	ND	0.88	09/13/14 15:07	
THC as Gas	ug/m3	ND	60.8	09/13/14 15:07	
Toluene	ug/m3	ND	0.77	09/13/14 15:07	

LABORATORY CONTROL SAMPLE: 1788452

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	32.5	37.0	114	69-134	
Ethylbenzene	ug/m3	44.2	53.2	120	73-139	
m&p-Xylene	ug/m3	44.2	52.8	120	73-139	
o-Xylene	ug/m3	44.2	52.8	119	71-138	
THC as Gas	ug/m3	3520	3580	102	65-136	
Toluene	ug/m3	38.3	42.8	112	67-133	

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

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

QUALIFIERS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10280228

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

SAMPLE QUALIFIERS

Sample: 10280228004
[1] The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

Sample: 10280228005
[1] The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

Sample: 10280228006
[1] The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

Sample: 10280228007
[1] The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

Sample: 10280228008
[1] The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

Sample: 10280228009
[1] The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

ANALYTE QUALIFIERS

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10280228

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10280228001	**V-DSCHG-1**	TO-15	AIR/21302		
10280228002	**V-DSCHG-2**	TO-15	AIR/21302		
10280228003	**V-DSCHG-3**	TO-15	AIR/21302		
10280228004	**V-INT-1**	TO-15	AIR/21302		
10280228005	**V-INT-2**	TO-15	AIR/21302		
10280228006	**V-INT-3**	TO-15	AIR/21302		
10280228007	**V-INF-1**	TO-15	AIR/21302		
10280228008	**V-INF-2**	TO-15	AIR/21302		
10280228009	**V-INF-3**	TO-15	AIR/21302		

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

10280223

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Cardno ATC	Report To:	Kyle Sattler	Attention:	
Address:	7070 SW Fir Loop, Suite 100	Copy To:	Keith Fox	Company Name:	
	Tigard, OR 97223			Address:	
Email To:	kyle.sattler@cardno.com	Purchase Order No.	03132603B	Pace Quote Reference:	
Phone:	503 430 6696 Fax:	Client Project ID:	AOC 1396 - P66 Westlake/Mercer	Pace Project Manager:	Jenni Gross
Requested Due Date/TAT:	10 Day (Standard)	Container Order Number:		Pace Profile #:	33332 #2

Regulatory Agency
PSCAA
State / Location
WA

ITEM#	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	TO-15	Residual Chlorine (Y/N)	
1	V-DSCHG-1	AR	G			09/04/14	9:00		2	X									X		001
2	V-DSCHG-2	AR	G			09/04/14	9:05		2	X									X		002
3	V-DSCHG-3	AR	G			09/04/14	9:10		2	X									X		003
4	V-INT-1	AR	G			09/04/14	9:15		2	X									X		004
5	V-INT-2	AR	G			09/04/14	9:20		2	X									X		005
6	V-INT-3	AR	G			09/04/14	9:25		2	X									X		006
7	V-INF-1	AR	G			09/04/14	9:30		2	X									X		007
8	V-INF-2	AR	G			09/04/14	9:35		2	X									X		008
9	V-INF-3	AR	G			09/04/14	9:40		2	X									X		009
10																					
11																					
12																					

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Nicholas Gerkin	9/4/14	1100	Jenni Gross / Pace	9/4/14	11:00	14.6	Y	N	Y
				Pace	9/5/14	1015	[illegible]	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Nicholas Gerkin Nicholas Gerkin

SIGNATURE of SAMPLER: [signature] DATE Signed: 9/4/14

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

Pace Analytical®	Document Name: Cooler Transfer Check List	Revised Date: 23Apr2013 Page 1 of 1
	Document Number: F-MN-C-120-rev.01	Issuing Authority: Pace Minnesota Quality Office

Cooler Transfer Check List

Client: Plob- Cardno ATC

Project Manager: Jenni Gross

Profile/Line #: 33332 #2

Received with Custody Seal: Yes (No)

Custody Seal Intact: Yes No (NA)

	Temp Read	Corrected Temp	Correction Factor
Temperature C:	14.6	14.6	Ø

IR Gun # / IR1 (IR2)

☑ Samples on ice, cooling process has begun

Rush/Short Hold: Tedlar 72 hour hold

Containers Intact: (Yes) No

Re-packed and ~~Re-Iced~~: ✓

Temp Blank Included: Yes (No)

Shipped By/Date: MD 9-4-14

Notes: Some tedlars received on ice

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

Air Sample Condition Upon Receipt

Client Name: ATL - OR

Project #: WO# : 10280228

10280228

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

Tracking Number: 5779 5532 1602

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

Optional: Proj. Due Date: Proj. Name:

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

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

Temp should be above freezing to 6°C **Correction Factor:** ~ **Date & Initials of Person Examining Contents:** 9/5/14

Type of ice Received ☐ Blue ☐ Wet ☑ None

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

Samples Received:

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

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

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: DM **Date:** 9/5/14

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

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

July 24, 2014

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

RE: Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

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

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

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: Keith Fox, Cardno ATC

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.: 10273735

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #40770
Alabama Certification #40770
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #: Pace
Georgia Certification #: 959
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
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
Wisconsin Certification #: 999407970
West Virginia Certification #: 382
West Virginia TO-15 Approval
West Virginia DHHR #:9952C

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

SAMPLE SUMMARY

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10273735001	**W-DSCHG**	Water	07/09/14 13:55	07/11/14 09:45
10273735002	**W-OUT-WC1**	Water	07/09/14 14:00	07/11/14 09:45
10273735003	**W-INF-WS1**	Water	07/09/14 14:05	07/11/14 09:45

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10273735001	**W-DSCHG**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10273735002	**W-OUT-WC1**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10273735003	**W-INF-WS1**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	SH2	7	PASI-M

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

ANALYTICAL RESULTS

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

Sample: W-DSCHG **Lab ID: 10273735001** Collected: 07/09/14 13:55 Received: 07/11/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		07/17/14 13:36		
Surrogates								
a,a,a-Trifluorotoluene (S)	97	%.	70-125	1		07/17/14 13:36	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/16/14 05:07	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/16/14 05:07	100-41-4	
Toluene	ND	ug/L	1.0	1		07/16/14 05:07	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/16/14 05:07	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		07/16/14 05:07	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		07/16/14 05:07	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		07/16/14 05:07	460-00-4	

Sample: W-OUT-WC1 **Lab ID: 10273735002** Collected: 07/09/14 14:00 Received: 07/11/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		07/17/14 14:17		
Surrogates								
a,a,a-Trifluorotoluene (S)	96	%.	70-125	1		07/17/14 14:17	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/16/14 05:22	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/16/14 05:22	100-41-4	
Toluene	ND	ug/L	1.0	1		07/16/14 05:22	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/16/14 05:22	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	1		07/16/14 05:22	17060-07-0	
Toluene-d8 (S)	101	%.	75-125	1		07/16/14 05:22	2037-26-5	
4-Bromofluorobenzene (S)	105	%.	75-125	1		07/16/14 05:22	460-00-4	

Sample: W-INF-WS1 **Lab ID: 10273735003** Collected: 07/09/14 14:05 Received: 07/11/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		07/17/14 13:16		
Surrogates								
a,a,a-Trifluorotoluene (S)	96	%.	70-125	1		07/17/14 13:16	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/18/14 07:08	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/18/14 07:08	100-41-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

Sample: W-INF-WS1 **Lab ID: 10273735003** Collected: 07/09/14 14:05 Received: 07/11/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		07/18/14 07:08	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/18/14 07:08	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%.	75-125	1		07/18/14 07:08	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		07/18/14 07:08	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		07/18/14 07:08	460-00-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

QC Batch: GCV/12312 Analysis Method: NWTPH-Gx/8021
QC Batch Method: NWTPH-Gx/8021 Analysis Description: NWTPH-Gx/8021B Water
Associated Lab Samples: 10273735001, 10273735002, 10273735003

METHOD BLANK: 1734588 Matrix: Water
Associated Lab Samples: 10273735001, 10273735002, 10273735003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	07/17/14 12:56	
a,a,a-Trifluorotoluene (S)	%.	96	70-125	07/17/14 12:56	

LABORATORY CONTROL SAMPLE & LCSD: 1734589 1734590

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	901	988	90	99	75-125	9	20	
a,a,a-Trifluorotoluene (S)	%.				103	103	70-125			

MATRIX SPIKE SAMPLE: 1736000

Parameter	Units	10273735002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
TPH as Gas	ug/L	ND	1000	1030	103	52-150	
a,a,a-Trifluorotoluene (S)	%.				104	70-125	

SAMPLE DUPLICATE: 1735999

Parameter	Units	10273735001 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	ND	ND		30	
a,a,a-Trifluorotoluene (S)	%.	97	97	0		

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

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

QUALITY CONTROL DATA

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

QC Batch: MSV/27785 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10273735001, 10273735002

METHOD BLANK: 1733170 Matrix: Water
Associated Lab Samples: 10273735001, 10273735002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	07/16/14 04:09	
Ethylbenzene	ug/L	ND	1.0	07/16/14 04:09	
Toluene	ug/L	ND	1.0	07/16/14 04:09	
Xylene (Total)	ug/L	ND	3.0	07/16/14 04:09	
1,2-Dichloroethane-d4 (S)	%.	102	75-125	07/16/14 04:09	
4-Bromofluorobenzene (S)	%.	100	75-125	07/16/14 04:09	
Toluene-d8 (S)	%.	100	75-125	07/16/14 04:09	

LABORATORY CONTROL SAMPLE: 1733171

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	18.6	93	75-125	
Ethylbenzene	ug/L	20	18.7	93	75-125	
Toluene	ug/L	20	18.3	91	75-125	
Xylene (Total)	ug/L	60	57.5	96	75-125	
1,2-Dichloroethane-d4 (S)	%.			99	75-125	
4-Bromofluorobenzene (S)	%.			99	75-125	
Toluene-d8 (S)	%.			98	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1735836 1735837

Parameter	Units	10274267001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	206	100	100	296	287	89	80	75-129	3	30	
Ethylbenzene	ug/L	620	100	100	701	676	81	56	75-128	4	30	M1
Toluene	ug/L	20.2	100	100	116	112	96	91	75-129	4	30	
Xylene (Total)	ug/L	302	300	300	624	591	107	96	75-129	5	30	
1,2-Dichloroethane-d4 (S)	%.						103	102	75-125			
4-Bromofluorobenzene (S)	%.						99	99	75-125			
Toluene-d8 (S)	%.						99	98	75-125			

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

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

QUALITY CONTROL DATA

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

QC Batch: MSV/27802 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10273735003

METHOD BLANK: 1734428 Matrix: Water
Associated Lab Samples: 10273735003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	07/18/14 06:10	
Ethylbenzene	ug/L	ND	1.0	07/18/14 06:10	
Toluene	ug/L	ND	1.0	07/18/14 06:10	
Xylene (Total)	ug/L	ND	3.0	07/18/14 06:10	
1,2-Dichloroethane-d4 (S)	%.	105	75-125	07/18/14 06:10	
4-Bromofluorobenzene (S)	%.	102	75-125	07/18/14 06:10	
Toluene-d8 (S)	%.	96	75-125	07/18/14 06:10	

LABORATORY CONTROL SAMPLE: 1734429

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	18.4	92	75-125	
Ethylbenzene	ug/L	20	18.2	91	75-125	
Toluene	ug/L	20	18.1	90	75-125	
Xylene (Total)	ug/L	60	58.0	97	75-125	
1,2-Dichloroethane-d4 (S)	%.			94	75-125	
4-Bromofluorobenzene (S)	%.			102	75-125	
Toluene-d8 (S)	%.			100	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1734430 1734431

Parameter	Units	10274040002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	16.7	17.2	83	86	75-129	3	30	
Ethylbenzene	ug/L	ND	20	20	16.3	16.9	82	84	75-128	3	30	
Toluene	ug/L	ND	20	20	16.9	15.9	84	79	75-129	6	30	
Xylene (Total)	ug/L	ND	60	60	50.6	50.7	84	84	75-129	0	30	
1,2-Dichloroethane-d4 (S)	%.						94	97	75-125			
4-Bromofluorobenzene (S)	%.						100	99	75-125			
Toluene-d8 (S)	%.						99	95	75-125			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1734432 1734433

Parameter	Units	10274040010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	17.5	17.1	87	85	75-129	2	30	
Ethylbenzene	ug/L	ND	20	20	16.6	16.7	82	83	75-128	1	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

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

QUALITY CONTROL DATA

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1734432 1734433

Parameter	Units	10274040010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Toluene	ug/L	ND	20	20	16.9	17.7	83	86	75-129	4	30	
Xylene (Total)	ug/L	ND	60	60	52.6	52.5	88	87	75-129	0	30	
1,2-Dichloroethane-d4 (S)	%.						96	97	75-125			
4-Bromofluorobenzene (S)	%.						98	102	75-125			
Toluene-d8 (S)	%.						97	99	75-125			

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

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

QUALIFIERS

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

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

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC-1396-P66 Westlake/Mercer
Pace Project No.: 10273735

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10273735001	**W-DSCHG**	NWTPH-Gx/8021	GCV/12312		
10273735002	**W-OUT-WC1**	NWTPH-Gx/8021	GCV/12312		
10273735003	**W-INF-WS1**	NWTPH-Gx/8021	GCV/12312		
10273735001	**W-DSCHG**	EPA 8260	MSV/27785		
10273735002	**W-OUT-WC1**	EPA 8260	MSV/27785		
10273735003	**W-INF-WS1**	EPA 8260	MSV/27802		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

10273735

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Cardno ATC	Report To:	Kyle Sattler	Attention:	
Address:	7070 SW Fir Loop, Suite 100	Copy To:	Keith Fox	Company Name:	
	Tigard, OR 97223			Address:	
Email To:	kyle.sattler@cardno.com	Purchase Order No.	03132603B	Pace Quote Reference:	
Phone:	503 430 6696 Fax:	Client Project ID:	AOC 1396 - P66 Westlake/Mercer	Pace Project Manager:	Jenni Gross
Requested Due Date/TAT:	10 Day (Standard)	Container Order Number:		Pace Profile #:	33332 #1

Regulatory Agency
KCIW
State / Location
WA

ITEM#	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	TPH-Gx & BTEX by 8260B	FOG Analysis by 1664	Residual Chlorine (Y/N)	
1	W-DSCHG	WT	G			07/09/14	13:55		3				X						X			001
2	W-OUT-WC1	WT	G			07/09/14	14:00		3				X						X			002
3	W-INF-WS1	WT	G			07/09/14	14:05		3				X						X			003
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
				PACE	7-10-14	10:15	2.6	Y	Y	Y
				PACE	7-11-14	9:45	0.4	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Edward Burgess

SIGNATURE of SAMPLER: [signature]

DATE Signed: 7.9.14

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

Sample Condition Upon Receipt

Client Name: Cardno ATC

Project #: WO# : 10273735

10273735

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

Tracking Number: 5779 5331 8253

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

Optional: Proj. Due Date: Proj. Name:

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

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

Cooler Temp Read (°C): 0.4 **Cooler Temp Corrected (°C):** 0.4 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.0 **Date and Initials of Person Examining Contents:** KB 7-11-14

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☐ Yes	☑ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☑ Yes	☐ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☑ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☑ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

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

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Jenni Gross **Date:** 07/14/14

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

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

August 27, 2014

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

RE: Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on August 15, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: Keith Fox, Cardno ATC

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.: 10278011

Minnesota Certification IDs

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

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

SAMPLE SUMMARY

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10278011001	**W-DSCHG**	Water	08/13/14 18:40	08/15/14 09:55
10278011002	**W-OUT-WC1**	Water	08/13/14 18:45	08/15/14 09:55
10278011003	**W-INF-WS1**	Water	08/13/14 18:50	08/15/14 09:55

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10278011001	**W-DSCHG**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10278011002	**W-OUT-WC1**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M
10278011003	**W-INF-WS1**	NWTPH-Gx/8021	LLC	2	PASI-M
		EPA 8260	AJC	7	PASI-M

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

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

Sample: W-DSCHG **Lab ID: 10278011001** Collected: 08/13/14 18:40 Received: 08/15/14 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		08/21/14 21:47		
Surrogates								
a,a,a-Trifluorotoluene (S)	93	%.	70-125	1		08/21/14 21:47	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		08/21/14 16:19	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		08/21/14 16:19	100-41-4	
Toluene	ND	ug/L	1.0	1		08/21/14 16:19	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		08/21/14 16:19	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%.	75-125	1		08/21/14 16:19	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		08/21/14 16:19	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		08/21/14 16:19	460-00-4	

Sample: W-OUT-WC1 **Lab ID: 10278011002** Collected: 08/13/14 18:45 Received: 08/15/14 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		08/22/14 20:32		
Surrogates								
a,a,a-Trifluorotoluene (S)	97	%.	70-125	1		08/22/14 20:32	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		08/21/14 16:43	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		08/21/14 16:43	100-41-4	
Toluene	ND	ug/L	1.0	1		08/21/14 16:43	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		08/21/14 16:43	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1		08/21/14 16:43	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		08/21/14 16:43	2037-26-5	
4-Bromofluorobenzene (S)	107	%.	75-125	1		08/21/14 16:43	460-00-4	

Sample: W-INF-WS1 **Lab ID: 10278011003** Collected: 08/13/14 18:50 Received: 08/15/14 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
NWTPH-Gx GCV	Analytical Method: NWTPH-Gx/8021							
TPH as Gas	ND	ug/L	100	1		08/23/14 00:13		
Surrogates								
a,a,a-Trifluorotoluene (S)	96	%.	70-125	1		08/23/14 00:13	98-08-8	
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		08/21/14 17:06	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		08/21/14 17:06	100-41-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

Sample: W-INF-WS1 **Lab ID: 10278011003** Collected: 08/13/14 18:50 Received: 08/15/14 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		08/21/14 17:06	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		08/21/14 17:06	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	91	%.	75-125	1		08/21/14 17:06	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		08/21/14 17:06	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	1		08/21/14 17:06	460-00-4	

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

QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

QC Batch: GCV/12496 Analysis Method: NWTPH-Gx/8021
QC Batch Method: NWTPH-Gx/8021 Analysis Description: NWTPH-Gx/8021B Water
Associated Lab Samples: 10278011001

METHOD BLANK: 1767325 Matrix: Water
Associated Lab Samples: 10278011001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	08/21/14 15:24	
a,a,a-Trifluorotoluene (S)	%.	93	70-125	08/21/14 15:24	

METHOD BLANK: 1767326 Matrix: Water
Associated Lab Samples: 10278011001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	08/21/14 19:06	
a,a,a-Trifluorotoluene (S)	%.	92	70-125	08/21/14 19:06	

LABORATORY CONTROL SAMPLE & LCSD: 1767327 1768468

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	1120	960	112	96	75-125	16	20	
a,a,a-Trifluorotoluene (S)	%.				102	98	70-125			

MATRIX SPIKE SAMPLE: 1767794

Parameter	Units	10277861001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
TPH as Gas	ug/L	ND	1000	1040	101	52-150	
a,a,a-Trifluorotoluene (S)	%.				96	70-125	

SAMPLE DUPLICATE: 1767795

Parameter	Units	10277861002 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	324	312	4	30	
a,a,a-Trifluorotoluene (S)	%.	94	95	1		

SAMPLE DUPLICATE: 1767796

Parameter	Units	10277861003 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	152	148	3	30	
a,a,a-Trifluorotoluene (S)	%.	94	94	0		

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

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

QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

QC Batch: GCV/12503 Analysis Method: NWTPH-Gx/8021
QC Batch Method: NWTPH-Gx/8021 Analysis Description: NWTPH-Gx/8021B Water
Associated Lab Samples: 10278011002, 10278011003

METHOD BLANK: 1768642 Matrix: Water
Associated Lab Samples: 10278011002, 10278011003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	08/22/14 19:52	
a,a,a-Trifluorotoluene (S)	%.	98	70-125	08/22/14 19:52	

METHOD BLANK: 1771601 Matrix: Water
Associated Lab Samples: 10278011002, 10278011003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH as Gas	ug/L	ND	100	08/22/14 23:33	
a,a,a-Trifluorotoluene (S)	%.	96	70-125	08/22/14 23:33	

LABORATORY CONTROL SAMPLE & LCSD: 1768643 1768644

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	1000	939	935	94	93	75-125	0	20	
a,a,a-Trifluorotoluene (S)	%.				101	98	70-125			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1768645 1768646

Parameter	Units	10278091001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH as Gas	ug/L	ND	1000	1000	1060	1110	105	110	52-150	5	30	
a,a,a-Trifluorotoluene (S)	%.						105	104	70-125			

SAMPLE DUPLICATE: 1771163

Parameter	Units	10278041002 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	8870	8700	2	30	
a,a,a-Trifluorotoluene (S)	%.	99	99	0		

SAMPLE DUPLICATE: 1771164

Parameter	Units	10278041006 Result	Dup Result	RPD	Max RPD	Qualifiers
TPH as Gas	ug/L	2290	2190	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

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

QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

SAMPLE DUPLICATE: 1771164

Parameter	Units	10278041006 Result	Dup Result	RPD	Max RPD	Qualifiers
a,a,a-Trifluorotoluene (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.

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

QC Batch: MSV/28265 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10278011001, 10278011002, 10278011003

METHOD BLANK: 1767650 Matrix: Water
Associated Lab Samples: 10278011001, 10278011002, 10278011003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	08/21/14 12:47	
Ethylbenzene	ug/L	ND	1.0	08/21/14 12:47	
Toluene	ug/L	ND	1.0	08/21/14 12:47	
Xylene (Total)	ug/L	ND	3.0	08/21/14 12:47	
1,2-Dichloroethane-d4 (S)	%.	95	75-125	08/21/14 12:47	
4-Bromofluorobenzene (S)	%.	102	75-125	08/21/14 12:47	
Toluene-d8 (S)	%.	104	75-125	08/21/14 12:47	

LABORATORY CONTROL SAMPLE: 1767651

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	17.1	86	75-125	
Ethylbenzene	ug/L	20	17.6	88	75-125	
Toluene	ug/L	20	16.6	83	75-125	
Xylene (Total)	ug/L	60	53.7	89	75-125	
1,2-Dichloroethane-d4 (S)	%.			100	75-125	
4-Bromofluorobenzene (S)	%.			106	75-125	
Toluene-d8 (S)	%.			100	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1771806 1771807

Parameter	Units	10279086001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	14.0	12.1	69	60	75-129	14	30	M1
Ethylbenzene	ug/L	ND	20	20	14.5	12.9	72	65	75-128	11	30	M1
Toluene	ug/L	ND	20	20	14.2	12.4	70	61	75-129	14	30	M1
Xylene (Total)	ug/L	ND	60	60	45.2	39.9	75	67	75-129	12	30	MS
1,2-Dichloroethane-d4 (S)	%.						93	92	75-125			
4-Bromofluorobenzene (S)	%.						100	100	75-125			
Toluene-d8 (S)	%.						99	100	75-125			

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

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

QUALIFIERS

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

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

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
MS	Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P66 Westlake/Mercer
Pace Project No.: 10278011

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10278011001	**W-DSCHG**	NWTPH-Gx/8021	GCV/12496		
10278011002	**W-OUT-WC1**	NWTPH-Gx/8021	GCV/12503		
10278011003	**W-INF-WS1**	NWTPH-Gx/8021	GCV/12503		
10278011001	**W-DSCHG**	EPA 8260	MSV/28265		
10278011002	**W-OUT-WC1**	EPA 8260	MSV/28265		
10278011003	**W-INF-WS1**	EPA 8260	MSV/28265		

CHAIN-OF-CUSTODY / Analytical Request Document

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

10278011

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Cardno ATC	Report To:	Kyle Sattler	Attention:	
Address:	7070 SW Fir Loop, Suite 100	Copy To:	Keith Fox	Company Name:	
	Tigard, OR 97223			Address:	
Email To:	kyle.sattler@cardno.com	Purchase Order No.	03132603B	Pace Quote Reference:	
Phone:	503 430 6696 Fax:	Client Project ID:	AOC 1396 - P66 Westlake/Mercer	Pace Project Manager:	Jenni Gross
Requested Due Date/TAT:	10 Day (Standard)	Container Order Number:		Pace Profile #:	33332 #1

Regulatory Agency
KCIW
State / Location
WA

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

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

ITEM#	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	TPH-Gx & BTEX by 8260B	FOG Analysis by 1664	Residual Chlorine (Y/N)	
1	W-DSCHG	WT	G			08/13/14	18:40		3				X						X			C01
2	W-OUT-WC1	WT	G			08/13/14	18:45		3				X						X			002
3	W-INF-WS1	WT	G			08/13/14	18:50		3				X						X			C03
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
				PACE	8/14/14	11:30	5.6	Y	N	Y
				PACE	8/13/14	955	0.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE				
PRINT Name of SAMPLER:	Edward Burnacci			
SIGNATURE of SAMPLER:		DATE Signed:	8/13/2014	

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

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

Sample Condition Upon Receipt

Client Name: Cardno ATC

Project #: WO# : 10278011

10278011

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client

☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 5771 5331 9617

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

Optional: Proj. Due Date: Proj. Name:

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

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

Cooler Temp Read (°C): 0.3 **Cooler Temp Corrected (°C):** 0.3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.0 **Date and Initials of Person Examining Contents:** 8/19/14 TSD

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☐ Yes	☒ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? WT	☒ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix:				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☒ Yes	☐ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☒ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

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

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Jennifer Gross **Date:** 08/18/14

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

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

November 11, 2014

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

RE: Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

Dear Kyle Sattler:
Enclosed are the analytical results for sample(s) received by the laboratory on September 05, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

This report was revised on November 7, 2014 to add a case narrative and chromatograms.

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

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
Project Manager

Enclosures

cc: Keith Fox, Cardno ATC

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

CERTIFICATIONS

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

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

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

SAMPLE SUMMARY

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10280416001	**W-DSCHG**	Water	09/04/14 09:45	09/05/14 10:15
10280416002	**W-OUT-WC1**	Water	09/04/14 09:50	09/05/14 10:15
10280416003	**W-INF-WS1**	Water	09/04/14 10:00	09/05/14 10:15

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

SAMPLE ANALYTE COUNT

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10280416001	**W-DSCHG**	EPA 8260	AJC	7	PASI-M
10280416002	**W-OUT-WC1**	EPA 8260	AJC	7	PASI-M
10280416003	**W-INF-WS1**	EPA 8260	AJC	7	PASI-M

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

PROJECT NARRATIVE

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

Date: November 11, 2014

Case Narrative:

8260 - The samples were submitted for NW TPH as gas and BETX by 8260. The laboratory analyzed the samples for 8260 but did not analyze the samples for TPH as gasoline.

All of the BETX compounds in the 8260 analysis were not detected. Review of the chromatographic profile did not indicate the present of any target or non-target compounds above the reporting limit. It would be probable that the TPH as gasoline values would also be non detected.

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

PROJECT NARRATIVE

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

Method: **EPA 8260**
Description: 8260 MSV UST
Client: Phillips66_Cardno ATC Associates WA
Date: November 11, 2014

General Information:
3 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

QC Batch: MSV/28508

S0: Surrogate recovery outside laboratory control limits.

- MS (Lab ID: 1792221)
  - 1,2-Dichloroethane-d4 (S)

S3: Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.

- BLANK (Lab ID: 1786446)
  - 1,2-Dichloroethane-d4 (S)
- DUP (Lab ID: 1792220)
  - 1,2-Dichloroethane-d4 (S)
- W-INF-WS1 (Lab ID: 10280416003)
  - 1,2-Dichloroethane-d4 (S)
- W-OUT-WC1 (Lab ID: 10280416002)
  - 1,2-Dichloroethane-d4 (S)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

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

PROJECT NARRATIVE

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

Method: **EPA 8260**
Description: 8260 MSV UST
Client: Phillips66_Cardno ATC Associates WA
Date: November 11, 2014

QC Batch: MSV/28508

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10280416001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1792221)
  - Benzene
  - Ethylbenzene
  - Toluene

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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

ANALYTICAL RESULTS

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

Sample: W-DSCHG **Lab ID: 10280416001** Collected: 09/04/14 09:45 Received: 09/05/14 10:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		09/14/14 23:12	71-43-2	M1
Ethylbenzene	ND	ug/L	1.0	1		09/14/14 23:12	100-41-4	M1
Toluene	ND	ug/L	1.0	1		09/14/14 23:12	108-88-3	M1
Xylene (Total)	ND	ug/L	3.0	1		09/14/14 23:12	1330-20-7	MS
Surrogates								
1,2-Dichloroethane-d4 (S)	111	%.	75-125	1		09/14/14 23:12	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		09/14/14 23:12	2037-26-5	
4-Bromofluorobenzene (S)	110	%.	75-125	1		09/14/14 23:12	460-00-4	

Sample: W-OUT-WC1 **Lab ID: 10280416002** Collected: 09/04/14 09:50 Received: 09/05/14 10:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		09/15/14 01:39	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		09/15/14 01:39	100-41-4	
Toluene	ND	ug/L	1.0	1		09/15/14 01:39	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		09/15/14 01:39	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	132	%.	75-125	1		09/15/14 01:39	17060-07-0	S3
Toluene-d8 (S)	101	%.	75-125	1		09/15/14 01:39	2037-26-5	
4-Bromofluorobenzene (S)	110	%.	75-125	1		09/15/14 01:39	460-00-4	

Sample: W-INF-WS1 **Lab ID: 10280416003** Collected: 09/04/14 10:00 Received: 09/05/14 10:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		09/15/14 01:56	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		09/15/14 01:56	100-41-4	
Toluene	ND	ug/L	1.0	1		09/15/14 01:56	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		09/15/14 01:56	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	127	%.	75-125	1		09/15/14 01:56	17060-07-0	S3
Toluene-d8 (S)	104	%.	75-125	1		09/15/14 01:56	2037-26-5	
4-Bromofluorobenzene (S)	111	%.	75-125	1		09/15/14 01:56	460-00-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

QC Batch: MSV/28508 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10280416001, 10280416002, 10280416003

METHOD BLANK: 1786446 Matrix: Water
Associated Lab Samples: 10280416001, 10280416002, 10280416003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	09/14/14 21:33	
Ethylbenzene	ug/L	ND	1.0	09/14/14 21:33	
Toluene	ug/L	ND	1.0	09/14/14 21:33	
Xylene (Total)	ug/L	ND	3.0	09/14/14 21:33	
1,2-Dichloroethane-d4 (S)	%.	130	75-125	09/14/14 21:33	S3
4-Bromofluorobenzene (S)	%.	107	75-125	09/14/14 21:33	
Toluene-d8 (S)	%.	102	75-125	09/14/14 21:33	

LABORATORY CONTROL SAMPLE: 1786447

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	23.2	116	75-125	
Ethylbenzene	ug/L	20	22.3	112	75-125	
Toluene	ug/L	20	22.5	112	75-125	
Xylene (Total)	ug/L	60	67.4	112	75-125	
1,2-Dichloroethane-d4 (S)	%.			102	75-125	
4-Bromofluorobenzene (S)	%.			111	75-125	
Toluene-d8 (S)	%.			105	75-125	

MATRIX SPIKE SAMPLE: 1792221

Parameter	Units	10280416001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	ND	20	30.6	153	75-129	M1
Ethylbenzene	ug/L	ND	20	27.3	136	75-128	M1
Toluene	ug/L	ND	20	27.2	136	75-129	M1
Xylene (Total)	ug/L	ND	60	82.4	137	75-129	MS
1,2-Dichloroethane-d4 (S)	%.				139	75-125	S0
4-Bromofluorobenzene (S)	%.				109	75-125	
Toluene-d8 (S)	%.				107	75-125	

SAMPLE DUPLICATE: 1792220

Parameter	Units	10280241001 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	

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

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

QUALITY CONTROL DATA

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

SAMPLE DUPLICATE: 1792220

Parameter	Units	10280241001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane-d4 (S)	%.	127	139	9		S3
4-Bromofluorobenzene (S)	%.	109	107	2		
Toluene-d8 (S)	%.	103	100	3		

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

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

QUALIFIERS

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

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

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
MS	Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.
S0	Surrogate recovery outside laboratory control limits.
S3	Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AOC 1396-P66 Westlake/M REV
Pace Project No.: 10280416

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10280416001	**W-DSCHG**	EPA 8260	MSV/28508		
10280416002	**W-OUT-WC1**	EPA 8260	MSV/28508		
10280416003	**W-INF-WS1**	EPA 8260	MSV/28508		

Pace Analytical
www.paceanalytical.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page : 1 Of 1

10280416

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Cardno ATC	Report To:	Kyle Sattler	Attention:	
Address:	7070 SW Fir Loop, Suite 100	Copy To:	Keith Fox	Company Name:	
	Tigard, OR 97223			Address:	
Email To:	kyle.sattler@cardno.com	Purchase Order No.	03132603B	Pace Quote Reference:	
Phone:	503 430 6696 Fax:	Client Project ID:	AOC 1396 - P66 Westlake/Mercer	Pace Project Manager:	Jenni Gross
Requested Due Date/TAT:	10 Day (Standard)	Container Order Number:		Pace Profile #:	33332 #1

Regulatory Agency
KCIW
State / Location
WA

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

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

ITEM#	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	TPH-Gx & BTEX by 8260B	FOG Analysis by 1664	Residual Chlorine (Y/N)
1	W-DSCHG	WT	G	09/04/14	9:45				3				X						X		001
2	W-OUT-WC1	WT	G	09/04/14	9:50				3				X						X		002
3	W-INF-WS1	WT	G	09/04/14	10:00				3				X						X		003
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Nicholas Gerkin	9/4/14	1100	Jenni Gross / Pace	9/4/14	11:00	14.6	Y	N	Y
				Pace	9/5/14	1015	2.5	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Nicholas Gerkin

SIGNATURE of SAMPLER: Nicholas Gerkin

DATE Signed: 9/4/14

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

Sample Condition Upon Receipt

Client Name: Cardno ATC

Project #: WO# : 10280416

10280416

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

Tracking Number: 5779 5332 1113

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

Optional: Proj. Due Date: Proj. Name:

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

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

Cooler Temp Read (°C): 2.0 **Cooler Temp Corrected (°C):** 2.5

Temp should be above freezing to 6°C **Correction Factor:** +0.5 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Date and Initials of Person Examining Contents: DMG 9/8/14

Comments:

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☒ Yes	☐ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☒ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

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

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: CB **Date:** CB 9/8/14

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

Data File: \\192.168.10.12\chem\10msv1.i\091414b.b/09141441.D

Report Date: 09/17/2014

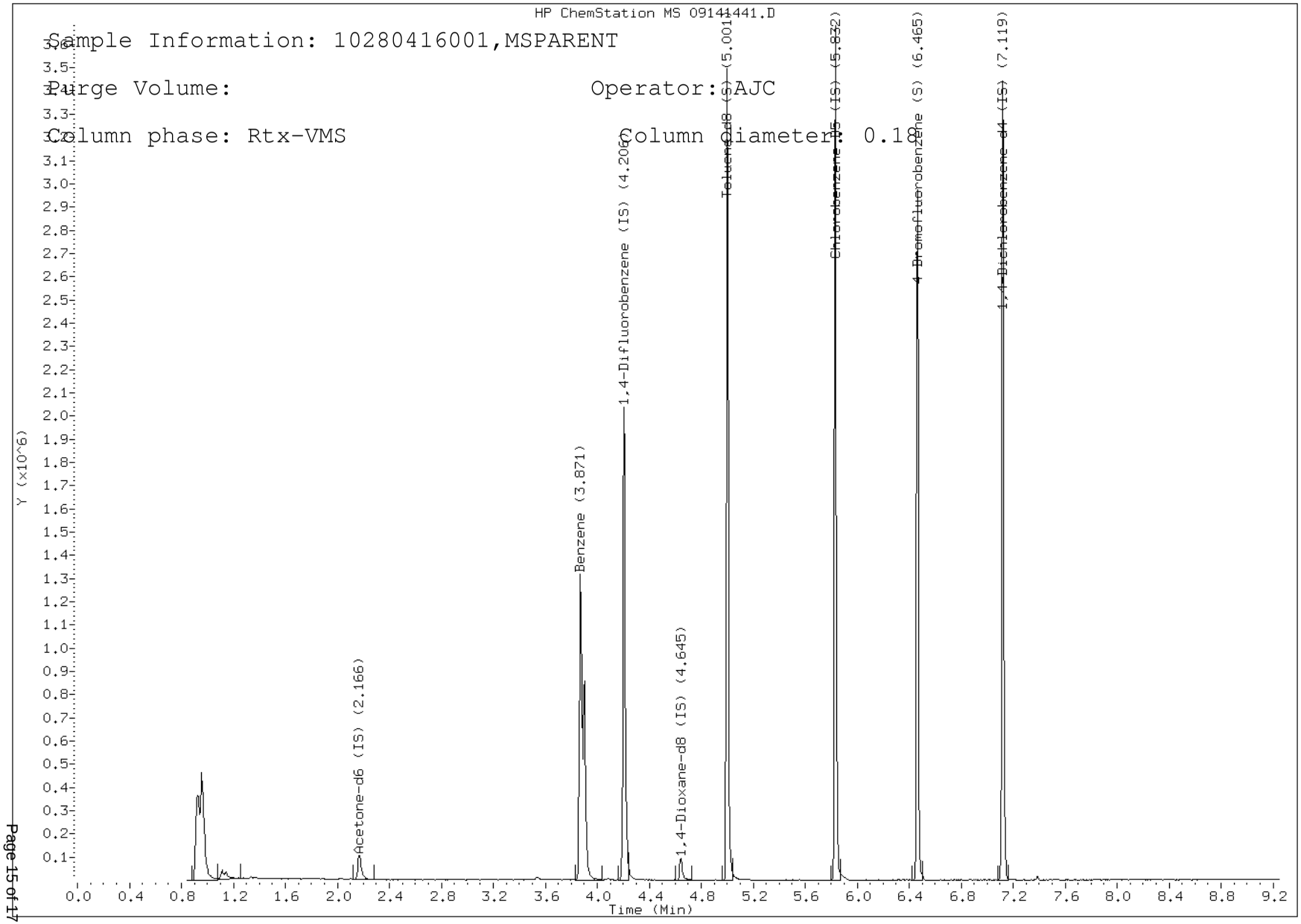
Sample ID: 10280416001

Client ID: Instrument: 10msv1.i

Sample Information: 10280416001,MSPARENT

Purge Volume: Operator: AJC

Column phase: Rtx-VMS Column Diameter: 0.18



Data File: \\192.168.10.12\chem\10msv1.i\091414b.b/09141450.D

Report Date: 09/17/2014

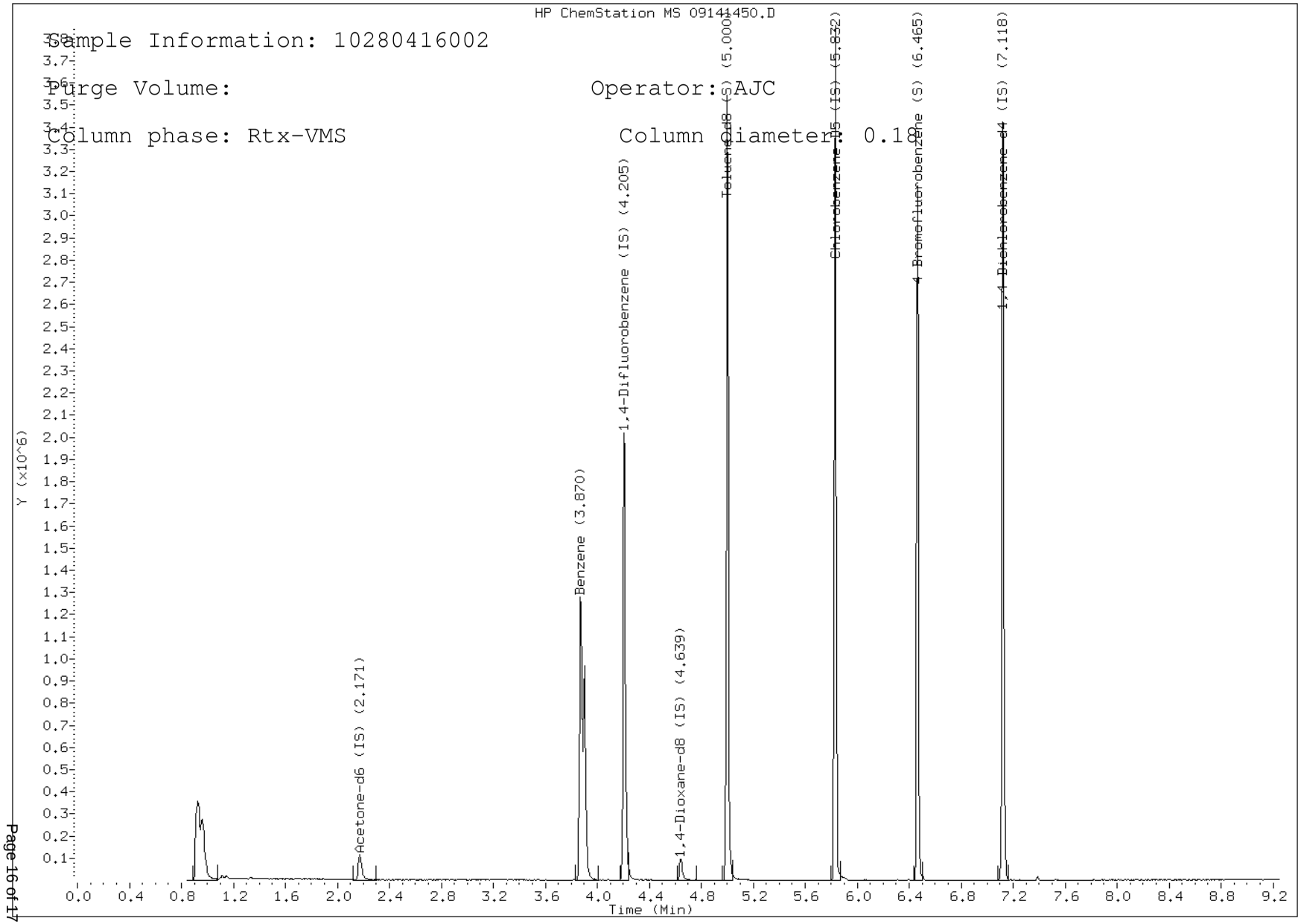
Sample ID: 10280416002

Client ID: Instrument: 10msv1.i

Sample Information: 10280416002

Purge Volume: Operator: AJC

Column phase: Rtx-VMS Column Diameter: 0.18



Data File: \\192.168.10.12\chem\10msv1.i\091414b.b/09141451.D

Report Date: 09/17/2014

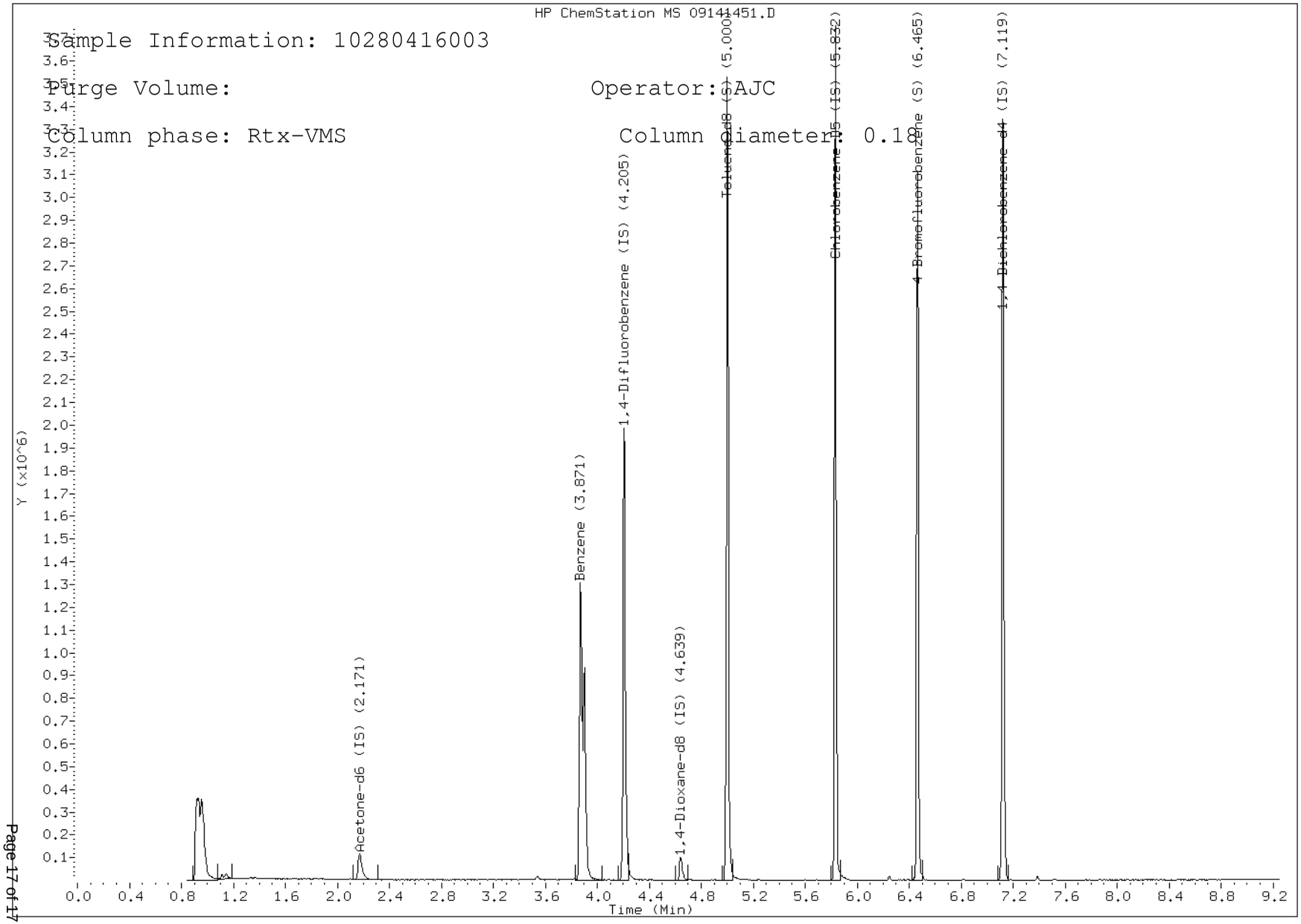
Sample ID: 10280416003

Client ID: Instrument: 10msv1.i

Sample Information: 10280416003

Purge Volume: Operator: AJC

Column phase: Rtx-VMS Column Diameter: 0.18



Cardno ATC
Shaping the Future

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

Appendix B
Carbon Change Documentation

EVOQUA
WATER TECHNOLOGIES

Evoqua Water Technologies LLC - Telephone: (928) 669-5758
2523 Mutahar Street - Box 3308 Facsimile: (928) 669-5775
Parker, AZ 85344

November 11, 2014

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

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

Site Address:	Facility No. 255353 (AOC 1396) 600
Profile Number:	W140069NH
Shipping Document Number:	102314SL-1
Date Of Receipt:	October 28, 2014
Container Quantity - Type:	3 - Bag
Reactivation Date:	11/6/2014

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

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

Sincerely,

Monte McCue
Plant Manager

Work Order Form

SR# 50977160

EVOQUA

BILL TO:	1125631
Cardno ERI	
801 Second Ave	
Suite, 700	
Seattle, WA 98104	
Ordered By:	Mike Miller
Contact Phone #:	206-767-2360

SHIP TO:	1232153339
Phillips 66	
600 Westlake Ave North	
Seattle WA 98109	
0	
Site Contact:	~~Kyle Sattler~~ MICHAEL
Contact Phone #:	~~503-430-6696~~ 206-550-7695

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

PO #	03132603B
Requested Date	ASAP
Scheduled Date	7/6/14 9-10am

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

Profile #	W140069NH	Expiration Date	04/08/16
Profile #	0	Expiration Date	01/00/00

Customer Special Requests:	0
PPE:	0
Shop Notes:	0
Field Notes:	Change out (3) VSC1000 adsorbers with VCNS carbon, remove spent GAC from site.

notes from shop/field	

fresh carbon movement:

lot #	type	mesh	weight	packaging	# used	by
1406031	VCNS	4X10	3000	55	3	JH

spent carbon movement:

profile #	type	mesh	weight	packaging	# used	location
W140069NH	VCNS	4X10	1130	55	3	FL
			1234		↓	
			1152			

SR Time Tracking

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

V. 012014

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

Appendix C
PSCAA Permit

PUGET SOUND Clean Air Agency

Construction No. 10816

Registration No. 29548

Date SEP 2 2 2014

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

Modification of Approval No. 10602 for the following:

1. To allow monitoring breakthrough once every two weeks.

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

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

APPLICANT

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

OWNER

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

INSTALLATION ADDRESS

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

THIS ORDER IS ISSUED SUBJECT TO THE FOLLOWING RESTRICTIONS AND CONDITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

a. Hours and time of operation.

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

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

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

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

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

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

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

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

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

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

APPEAL RIGHTS

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

SEP 2 2 2014

MengChiu Lim
Reviewing Engineer

ns

Carole Cenci PE
Carole Cenci
Senior Engineer

WARNING:

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

APPLICANT or OWNER SECTION

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

The project described below was completed on _____.

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

FOR AGENCY USE ONLY

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

Project Description

Modification of Approval No. 10602 for the following:

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.

[X] Conditions on Reverse Side

Applicant

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

Owner

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

Location

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

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

Follow up _____ (Estimated completion date plus 7)

Date Inspected _____ Inspector _____

Remarks _____

_____

_____

_____

CONDITIONS

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

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

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

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

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

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

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

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

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

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

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

a. Hours and time of operation.

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

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

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

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

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

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

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

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

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

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