

February 3, 2006

Site No.: 255353 Site Address: 600 Westlake Avenue N., Seattle, Washington

ConocoPhillips Site Manager: Kipp Eckert

ConocoPhillips Address: P.O. Box 923, Bothell, WA 98041

Consultant/Contact Person: Delta Environmental Consultants, Inc. – Eric Larsen

Consultant Address: 4006 148th Avenue NE, Redmond, WA 98052

Primary Agency/Regulatory ID No.: Washington DOE Northwest Region

WORK PERFORMED THIS QUARTER [Third - 2005]

Monthly operation and maintenance (O&M) of the remediation system. The remediation system consists of an air sparge (AS) unit operating at 15 AS wells within a sparge trench, a deep air sparge (DAS) unit operating at four DAS wells, and a vapor extraction (VE) unit to extract combined vapors from five on-site VE wells and three off-site VE wells, and to capture sparge vapors from two sections of horizontal piping within the sparge trench (east and west VE trenches).

WORK PROPOSED FOR NEXT QUARTER [Fourth - 2005]

> Continue monthly O&M of the remediation system.

VE SUMMARY

Extraction Equipment:	Rotron EN6F5L VE blower	-
Offgas Treatment Equipment:	H2Oil 55-gallon moisture separator; Two 1,800-pound activated carbon units	_
Permits for Discharge:	PSCAA No. 8905 (air)	(NPDES, POTW, etc.)
Start-up Date:	8/20/03	-
Reporting Period:	0 <u>7/01/05 - 09/30/05</u>	_
Days in Operation During Period:	100	(days)
Total Days in Operation Since Start-Up:	730	(days)
Percent Operating Time During Period:	100%	_(%)
System Alarms and Shutdowns:	Check motor thermals	_
VE Points Extracted During Period:	On-site VE wells, East & West VE trench	<u>nes</u>
Average Influent Vacuum:	4.0	(inches H2O)
Average Vapor Influent Flow Rate:	217 (estimated based on blower curve)	(SCFM)
Maximum Vapor Influent Concentration for Period (PID):	45.2	_(ppmv)
Maximum Vapor Effluent Concentration for Period (PID):	0.0	_(ppmv)
Total Hydrocarbon Removal for Period:	279.0	_(lbs)
Cumulative Hydrocarbon Removal to Date:	1178.1 (since 8/20/03 startup)	(lbs)
Analytical Results of TPH Concentration in Offgas Emission Sample:	Not sampled	_(ppmv)



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AS SUMMARY

Sparging Equipment: Sutortbilt air sparge blower Start-up Date: 8/20/03 Reporting Period: 07/01/05 - 09/30/05 Days in Operation During Period: 92 (days) Total Days in Operation Since Start-Up: 722 (days) Percent Operating Time During Period: 92% (%) Number of Wells On-line: 15 AS Wells (AS-1 through AS-15) Average System Injection Pressure: 7.5 (psig) 7.4 (per AS point) (SCFM) Average System Flow Rate:

DAS SUMMARY

Sparging Equipment: Gast 6066 Compressor Start-up Date: 9/22/04 Reporting Period: 07/01/05 - 09/30/05 Days in Operation During Period: 100 (days) Total Days in Operation Since Start-Up: 363 (days) Percent Operating Time During Period: 100% (%)Number of Wells On-line: 4 DAS Wells (DAS-2 through DAS-5) (psig) Average System Injection Pressure: 16.5 Average System Flow Rate: 3.75 (per DAS point) (SCFM)



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DISCUSSION

System Operation and Maintenance

Delta conducted monthly site visits on August 23 and September 30, 2005 to perform operation and maintenance (O&M) of the remediation system during the second quarter of 2005. The deep air-sparge (DAS) and vapor extraction (VE) units operated continuously over the reporting period.

The air sparge (AS) unit operated an estimated 92 days over the reporting period and was found to be inoperational on the September 30, 2005 visit. A Delta technician noted that the system panel showed a motor thermal alarm and that the circuit breaker for the AS motor was tripped. Once the circuit breaker was reset, the technician was able to restart the system.

A summary of VE unit operation parameters is presented in Table 1. Operation summaries of the AS and DAS units are presented in Tables 2 and 3, respectively.

Hydrocarbon Removal and Vapor Emissions

During this reporting period, the VE unit effectively removed hydrocarbons from the site at an average rate of 2.79 pounds per day (279 pounds over the operational period during second quarter of 2005). An estimated total of 1178.1 pounds of hydrocarbons have been removed from the subsurface by vapor extraction since startup of the current remediation system. Hydrocarbon concentrations in vapor emissions were below the limits of the PSCAA permit based on monthly field monitoring conducted during site visits. A summary of the estimated hydrocarbons removed by the VE unit is included in Table 1.

LIMITATIONS

The services described in this report were performed in accordance with generally accepted professional consulting principles and practices. No other warranty, either express or implied, is made. These services were performed in accordance with terms established with our client. This report is solely for the use of our client and reliance on any part of this report by a third party is at such party's sole risk.



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Delta appreciates the opportunity to provide environmental services for ConocoPhillips Company. Please call (425) 882-3528 if you have any questions regarding the contents of this report.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

ena feeds Tena Seeds Project Engineer

Eric Larsen, L.H.G. Senior Geologist

ATTACHMENTS

Table 1 – VE Unit and Vapor Treatment Operation Summary

Table 2 - Air Sparge Unit Operational Summary

Table 3 - Deep Air Sparge Unit Operational Summary

Figure 1 - Remedial System Site Map

Eric Bruce Larsen

LUST Coordinator, WA State Dept. of Ecology - Northwest Regional Office, Bellevue, WA 98008

TABLE 1 VE UNIT AND VAPOR TREATMENT OPERATION SUMMARY

ConocoPhillips Site No. 255353 600 Westlake Avenue North Seattle, Washington

Date	Operational Time Since Last Event (days)	Power Reading (KWH)	Vapor Extraction Vacuum (inches H2O)	Average Flowrate ¹ (SCFM)	Influent Petroleum Hydrocarbon Concentration ² (ppm)	Petroleum Hydrocarbon Concentration Between Carbons ³ (ppm)	Emission Petroleum Hydrocarbon Concentration ⁴ (ppm)	Estimated Petroleum Hydrocarbons Removed During Operating Period ⁵ (pounds)
01/29/04	45 ⁶	NM	3.0	218	1.2	0.0	0.0	4.7
02/28/04	30	32,432	3.0	218	1.2	0.0	0.0	3.1
03/30/04	31	35,592	3.0	218	2.7	0.2	0.0	7.3
04/28/04	29	38,516	3.5	217	0.1	0.1	0.1	0.3
05/27/04	29	41,465	3.5	217	9.8 ⁹	0.1	0.1	24.7
06/22/04	26	44,045	3.5	217	4.2 9	0.1	0.1	9.5
07/22/04	30	47,097	3.5	217	17.9 ⁹	11.1	1.8	46.8
08/16/04	23	49,449	3.5	217	6.4	0.2	0.1	12.8
09/21/04	26	52,907	3.7	217	10.5	0.3	0.2	23.8
10/28/04	37	58,559	3.5	217	14.1	5.4	1.1	45.4
11/22/04	25	62,578	3.5	217	4.9	0.1	0.0	10.7
12/17/04 ¹⁰	25	66,601	4.0	215	10.7	6.6	2.3	23.1
01/27/05 ¹¹	21	70,013	4.0	215	1.0	0.6	0.0	1.8
02/17/05	21	73,083	4.0	215	28.9	15.8	0.0	52.4
03/17/05	28	76,709	3.5	217	0.1	0.0	0.0	0.2
04/15/05	29	80,613	3.5	217	4.6	4.2	2.2	11.6
05/11/05	27	84,069	3.5	217	1.7	1.1	0.3	4.0
06/21/05	41	90,727	3.5	217	0.3	3.4	0.0	1.1
08/23/05	63	99,562	NM	217	45.2	26.9	0.0	248.0
09/30/05	37	104,474	4.0	217	9.3	0.0	0.0	30.0
Total To Date	730 ⁷							1178.1 ⁸
Total for 3rd Qtr 2005	100							279.0

TABLE 1 VE UNIT AND VAPOR TREATMENT OPERATION SUMMARY

ConocoPhillips Site No. 255353 600 Westlake Avenue North Seattle, Washington

Notes:

KWH = kilowatt-hours

SCFM = standard cubic feet per minute

ppm = parts per million

NM = not measured

- ¹ Flowrate based on blower vacuum/flow rate curve.
- ² Influent petroleum hydrocarbon concentrations based on field measurements using a photoionization detector (PID), unless otherwise indicated.
- ³ Concentrations between carbon units based on field measurements using a PID.
- ⁴ Effluent concentrations based on field measurements using a PID.
- ⁵ Hydrocarbons removed during each operating period estimated using influent concentration, average flowrate, and operational time period.
- ⁶ Operation and maintenance of the remedial system was performed on 12/15/03 by the previous consultant. Delta assumed operation and maintenance of the system during January 2004.
- ⁷ Total operational time to date includes 107.1 days operated by previous consultant, from system startup on 8/20/03 through 12/15/03.
- ⁸ Total estimated petroleum hydrocarbons removed to date includes 616.9 pounds reportedly removed by previous consultant, from system startup on 8/20/03 through 12/15/03.
- ⁹ Petroleum hydrocarbon concentration from laboratory analysis.
- ¹⁰ At the request of ConocoPhillips, the remedial system was shut down upon departure of the site on 12/17/04, to be restarted at a later date.
- ¹¹ At the request of ConocoPhillips, the remedial system was restarted on 1/6/05.

TABLE 2 AIR SPARGE UNIT OPERATIONAL SUMMARY

ConocoPhillips Site No. 255353 600 Westlake Avenue North Seattle, Washington

	Header	Air Flowrates per Air Sparge Point (SCFM)														
Data	Pressure	۸٥.4	40.0	40.0	A C. 4	40.5	40.0	40.7	40.0	40.0	40.40	A C 44	40.40	A C 40	A C 4 4	A C 4 F
Date	(psig)	AS-1	AS-2	AS-3	AS-4	AS-5	AS-6	AS-7	AS-8	AS-9	AS-10	AS-11	AS-12	AS-13	AS-14	AS-15
01/29/04	5	11	12	12	10	11	12	13	8	8	3	<3	5	11	12	8
02/28/04	4	11	12	14	11	11	12	13	8	8	3	4	<3	10	11	9
03/30/04	5	11	12	14	11	12	12	14	8	8	<3	<3	<3	10	12	8
04/28/04	NM	10.5	11.5	14	10.5	11	11.5	13.5	8	7.5	<3	<3	<3	9	10.5	7
05/27/04	4.5	10	11	14	9	10	11	12	7	7	<3	<3	<3	5.5	9	7.5
06/22/04	4.5	11	11	14	10	11	11	12	12.5	11	<3	<3	<3	<3	10	8
07/22/04	4	12	13	16	11	12	12	13	8	5.5	<3	<3	<3	<3	10.5	8
08/16/04	4.5	10	11.5	16	9.5	11	12	10.5	8	5.5	<3	<3	<3	<3	9.5	10.5
09/21/04	4.5	10	10	11.5	8.5	9	9.5	11	6	4.5	<3	<3	4	<3	9.5	7
10/28/04	4.5	9.5	10	11.5	9.5	9	9.5	10.5	5.5	4	<3	<3	<3	<3	10	6
11/22/04	4.5	8.5	10	10.5	9	9	9.5	10.5	5	3.5	<3	<3	<3	<3	8	6
12/17/04 ¹	4.5	8.0	8.7	9.7	7.8	7.5	8.5	9.5	4	3.2	<3	<3	<3	<3	10	7
01/27/05 ²	4.5	8.0	8.7	9.5	7.6	7.5	8.2	9.4	3.8	3.2	<3	<3	<3	<3	10	5
02/17/05	4.5	8.0	8.8	9.7	7.7	7.5	8.3	9.2	3.6	3	<3	<3	<3	<3	9.7	5
03/17/05	4.5	6.0	9.5	11.5	8.5	8	9	8	3	3	<3	<3	<3	<3	10	<3
04/15/05	5	8.0	9	11	8	8	8.5	4	<3	<3	<3	<3	<3	<3	9	4.5
05/11/05	5	8.2	9	11.5	8	8	8.5	3	<3	<3	<3	<3	<3	<3	8.5	3
06/21/05	7	5.0	4.5	5	4.5	3	3.5	3.5 E	9	5 E	<3	<3	<3 E	<3	5.5	5 E
08/23/05	7	5.0	5	5.5	5	1	1	1	7	6	1	1	1	0	4	9
09/30/05	8	5.5	5.5	7	6	3	<3	<3E	5.5	6.5	<3	<3	<3	<3	4	<3
Average:	5.0	8.8	9.6	11.4	8.6	8.5	9.3	9.8	6.7	5.7	2.3	2.5	3.3	7.6	9.1	7.0

Notes:

psig = pounds per square inch, gauge SCFM = standard cubic feet per minute

¹ At the request of ConocoPhillips, the remedial system was shut down upon departure of the site on 12/17/04, to be restarted at a later date.

² At the request of ConocoPhillips, the remedial system was restarted on 1/6/05.

TABLE 3 DEEP AIR SPARGE UNIT OPERATIONAL SUMMARY

ConocoPhillips Site No. 255353 600 Westlake Avenue North Seattle, Washington

	Header	Air Flowrates per Air Sparge Point (SCFM)							
Date	Pressure (psig)	DAS-1	DAS-2	DAS-3	DAS-4	DAS-5			
01/29/04	NIO	NIO	NIO	NIO	NIO	NIO			
02/28/04	12	NIO	3	5	3.5	<3			
03/30/04	NIO	NIO	NIO	NIO	NIO	NIO			
04/28/04	NIO	NIO	NIO	NIO	NIO	NIO			
05/27/04	NIO	NIO	NIO	NIO	NIO	NIO			
06/22/04	NIO	NIO	NIO	NIO	NIO	NIO			
07/22/04	NIO	NIO	NIO	NIO	NIO	NIO			
08/16/04	NIO	NIO	NIO	NIO	NIO	NIO			
09/21/04	NIO	NIO	NIO	NIO	NIO	NIO			
09/22/04 ¹	10.5*	NIO	5*	22*	4*	7*			
10/28/04	10.5	NIO	5	22	4	7			
11/22/04	10.5	NIO	6	5.5	4	7.5			
12/17/04 ²	11	NIO	6.5	3.5	4	6.5			
01/27/05 ³	11	NIO	6.5	4	<3	5			
02/17/05	11.5	NIO	7.5	4 E	4 E	4 E			
03/17/05	13.5	NIO	4	<3	<3	5			
04/15/05	11.5	NIO	9	3 E	3 E	4 E			
05/11/05	11.5	NIO	9.2	3	<3 E	5 E			
06/21/05	14.5	NIO	4.5	3.5 E	3 E	6.5			
08/23/05	NM	NIO	NM	NM	NM	NM			
09/30/05	16.5	NIO	5.5	3.5	<3	<3			

Notes:

psig = pounds per square inch, gauge

SCFM = standard cubic feet per minute

NIO = not in operation

E = Erratic readings

^{*} Estimated value

¹ The DAS system was modified and restarted on 9/22/04. DAS pressure and flowrates are estimated based on values recorded during fourth quarter monitoring in October 2004.

² At the request of ConocoPhillips, the remedial system was shut down upon departure of the site on 12/17/04, to be restarted at a later date.

 $^{^{3}}$ At the request of ConocoPhillips, the remedial system was restarted on 1/6/05.

