



Review of 2017 1st Semi-annual Groundwater Monitoring Report for J.E.D. Solid Waste Management Facility

Review Date: 9/25/17	Reviewed By: Allen Rainey, Environmental Specialist III	WACS Facility ID #: 89544
Facility Name: J.E.D. Solid Waste Management Facility	County: Osceola	
Monitoring Period: May 2017		
Type: Routine	Facility Class Types: Class I, Construction & Demolition Debris	
Report Date: 7/31/17	Received Date: 8/4/17	WACS Upload Date: 8/4/17 (8:05 pm)
Prepared By: Environmental Planning Specialists (EPS)	Submitted By: EPS	
Report Title: 26 th Semi-annual Water Quality Monitoring Report		

Review Details

Summary

- The report indicates that a likely source of benzene in the wells is landfill gas. The Department continues to work with the facility concerning corrective actions for landfill gas influences upon the saturation zone.
- The facility sent a "Notice of Exceedances" letter dated 6/29/17 for this sampling event.
- ADaPT data for the lead re-analyses must be sent to the Department.
- For well MW-9A, the facility needs to explain the discrepancy in the benzene concentration between ADaPT and that reported on PDF page 26.

Parameter Exceedances

- Benzene standard (1 µg/L) was exceeded in groundwater wells as follows. The report on PDF page 15 indicates that a likely source of benzene is landfill gas. The facility took duplicate samples from well MW-9A. There is a 72% difference between the values reported of 2.6 µg/L and 9.4 µg/L.

Well ID	Well Type	Concentration (µg/L)
MW-1A	Detection	2.5
MW-3A	Detection	4.4
MW-4A	Detection	1.6
MW-6A	Detection	4.4
MW-8A	Detection	4.1
MW-9A	Detection	2.6 & 9.4 (duplicate sample)
MW-10A	Detection	5.2
MW-10B	Detection	8.1
MW-11A	Detection	1.5
MW-12A	Detection	6.1
MW-13A	Detection	3.2
MW-16AR	Detection	2.1

- Lead standard (15 µg/L) was exceeded in the unfiltered sample for detection well MW-31B at 18 µg/L. A lead concentration was not detected in the filtered sample from that well. Report PDF page 14 indicates that detection wells MW-22AR, MW-22BR, MW-24A, MW-24B, MW-25A, and MW-25B had high unfiltered lead concentrations (from 39 µg/L to 58 µg/L). The facility requested that those samples be re-analyzed. Because the laboratory had already disposed of the preserved sample containers, the laboratory took aliquots from unpreserved sample containers. Lead concentrations from the unpreserved samples were undetected in all of those wells except MW-25B, in which the concentration was 2.4 µg/L. The report indicates that the initial high results in those wells was probably due to laboratory bias. The Department will continue to watch lead concentrations in all wells.
- 1,2-Dibromo-3-Chloropropane standard (0.2 µg/L) was exceeded in detection well MW-16BR at 0.31 µg/L. Report PDF page 15 indicates the result may be a laboratory artifact. The Department will watch future concentrations of this contaminant.
- Sodium standard (160 mg/L) was exceeded in detection well MW-1A at 290 mg/L.
- Chloride standard (250 mg/L) was exceeded in detection wells MW-16 AR at 360 mg/L, MW-23A at 600 mg/L, MW-2A at 140, and MW-1A at 590 mg/L. In detection well MW-9A, chloride was exceeded at 350 mg/L in only one of the duplicate samples.

- Ammonia 62-777 GCTL (2.8 mg/L) was exceeded in 15 A-zone groundwater wells and 7 B-zone groundwater wells. The facility's MPIS establishes a background concentration of 10 mg/L for wells MW-5A, MW-9A, MW-10A, and MW-11A. Of those wells, only detection well MW-10A had an exceedance at 13 mg/L. The report states that "Under reducing geochemical conditions, nitrogen containing compounds can be converted to ammonia. Reducing conditions are favorable in the shallow aquifer at the site and may develop in several ways such as the shadow effect of the lined disposal areas preventing the infiltration of oxygen-rich precipitation, displacement of oxygen by landfill gas immediately above the water table, or high organic matter content found in site soils which promotes the growth of oxygen consuming microorganisms." That is an acceptable conclusion.
- Total dissolved solids standard (500 mg/L) was exceeded in 8 A-zone groundwater wells and 9 B-zone groundwater wells. The Department will continue to monitor total dissolved solids concentrations in the wells.
- Iron standard for groundwater (0.3 mg/L) was exceeded in a majority of groundwater wells. The "Sixth Technical Report on Water Quality" that covers November 2014 to November 2016 states that "there appears to be a slight increasing trend in A-zone and B-zone wells on the west side of the facility and a stable or decreasing trend in wells on the north and east side of the facility." The Department will continue to watch iron concentrations.
- Dissolved iron standard for groundwater (300 µg/L) was exceeded in detection well MW-31B at 1,900 µg/L. The Department will continue to watch dissolved iron concentrations.
- pH in all of the wells was below the range of 6.5 to 8.5. That is consistent with data since 2010. Condition 6 of the facility's MPIS establishes a background pH value for the site of 4.5 STU.
- Evaluation monitoring wells CW-1A, CW-2A, and CW-3A exceedances are as follows. (iron standard exceeded in all three). The Department incorporated those wells into the MPIS effective 12/23/16 and will continue to monitor parameter exceedances in them. The earliest data in ADaPT for those wells is from 2013. Summaries of concentrations for the parameters shown in the table below are presented at the bottom of this review document.

Well ID	Parameter & Standard				
	Ammonia (2.8 mg/L)	Arsenic (10 µ/L)	Sodium (160 mg/L)	Chloride (250 mg/L)	Total Dissolved Solids (500 mg/L)
CW-1A	4.2 mg/L	120 µg/L	-	-	710 mg/L
CW-2A	12 mg/L	-	-	710 mg/L	950 mg/L
CW-3A	11 mg/L	-	200 mg/L	-	1,300 mg/L

Notations

- Condition 5 of the facility's MPIS establishes an arsenic background concentration of 20 mg/L for wells MW-11A and MW-13A. The only detection of arsenic occurred in well CW-1A.
- Sodium and chloride exceedances first appeared during the November 2012. They originally occurred only in well MW-1A, and now they also appear in well MW-16AR. The report on PDF page 19 attributes the ammonia, chloride, and total dissolved solids concentrations in well MW-16AR to "storm water runoff and cover soil erosion from uncapped areas that occurred within the past year directly upslope between the Cell 6 and Cell 9 sump areas." The report states that the facility is considering use of geosynthetic tarps as a control measure for the stormwater runoff and soil erosion. The Department will observe the sodium and chloride concentrations in these monitoring wells for trends and if there may be a correlation between the sodium, chloride, and total dissolved solids concentrations. The Department accepts the recommendation to continue to monitor the ammonia, chloride, and total dissolved solids concentrations as part of the MPIS.
- The evaluation monitoring mentioned on report PDF page 19 was ended in November 2014. It does not impact this sampling event. However, on 12/29/16, the Department added evaluation monitoring wells CW-1A, CW-2A, and CW-3A to the semi-annual monitoring requirements in the MPIS to help determine any benzene impacts at the edge of the ZOD.
- The Department continues to work with the facility concerning corrective actions for landfill gas influences, primarily benzene, upon the saturation zone.
- Vanadium results for wells CW-1A, CW-2A, and CW-3A were accompanied by qualifier code "V," meaning vanadium was detected in both the sample and associated method blank.
- Both surface water locations were dry.

Purging Completion

Dissolved oxygen \leq 20% saturation? YES	Turbidity \leq 20 NTUs? NO (wells MW-31B & MW-25B)
If no, \pm 0.2 mg/L or readings are within 10%? N/A	If no, \pm 5 NTUs or readings are within 10%? YES
Temperature \pm 0.2° C? YES	pH \pm 0.2 standard units? YES
Specific conductance \pm 5% of reading? YES	

Sampling and Analysis

Sampling dates: May 16, 17, 18, 22, 23, 24	Last lab analysis date: 6/6/17
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# of active groundwater monitoring locations: 46	# of active surface water monitoring locations: 2
Initial sampling device: peristaltic & electric submersible pumps	Re-sampling device: N/A
All groundwater and surface water sampling points sampled? NO ^T	All analyses performed? YES
^T all groundwater wells sampled; both surface water locations were dry	
Trip blanks? YES	Field or equipment blanks? YES
Lab certified under National Environmental Laboratory Accreditation Program? YES	
Unionized ammonia analysis? N/A	Phenols analysis? N/A
Unfiltered samples? NO (well MW-31B)	
Monitoring Plan Implementation Schedule Reporting Requirements	
Revision Date: N/A	Effective Date: 12/23/16
Permit #: 0199726-032-SO-MM	
Notification made within 14 days of sampling? YES	
Cover letter? NO	
Ground Water Monitoring Report, DEP Form 62-520.900(2) (or equivalent)? YES	Certification Date: 6/29/17
Summary of exceedances & sampling issues? YES	
Groundwater contour maps? YES	Contour maps signed and sealed? YES
Water levels & water elevation table? YES	Water level measurements made within one-day period? YES
Groundwater Sampling Logs, DEP Form FD 9000-24? YES	
Chain of custody forms? YES	
Conclusions and recommendations? YES	
Lab and field EDD files named correctly (89544_201705_swldd.txt & 89544_201705_swfdd.txt)? YES	
Report named correctly (89544_201705_swgwmr.pdf)? YES	
File(s) indicate successful data export? YES	
Report signed and sealed by P.G.? YES	Date signed and sealed: 7/31/17
Report received within 60 days of completing lab analysis? YES	

Summary of Parameter Concentrations in Well CW-1A Since 2013

Testsite Name	Sample Date	Parameter Name	Result	Measurement Unit	Qualifier
CW-1A	5/24/2017	AMMONIA (NH3) TOTAL AS N	4.2	MG/L	
CW-1A	8/20/2014	AMMONIA (NH3) TOTAL AS N	1.13	MG/L	
CW-1A	8/20/2014	AMMONIA (NH3) TOTAL AS N	1.09	MG/L	
CW-1A	5/5/2014	AMMONIA (NH3) TOTAL AS N	0.575	MG/L	
CW-1A	2/24/2014	AMMONIA (NH3) TOTAL AS N	0.783	MG/L	
CW-1A	12/16/2013	AMMONIA (NH3) TOTAL AS N	1.05	MG/L	
CW-1A	5/24/2017	ARSENIC (AS)	120	UG/L	
CW-1A	8/20/2014	ARSENIC (AS)	161	UG/L	
CW-1A	8/20/2014	ARSENIC (AS)	187	UG/L	
CW-1A	5/5/2014	ARSENIC (AS)	77.6	UG/L	
CW-1A	2/24/2014	ARSENIC (AS)	166	UG/L	
CW-1A	12/16/2013	ARSENIC (AS)	278	UG/L	
CW-1A	5/24/2017	CHLORIDE	25	MG/L	
CW-1A	8/20/2014	CHLORIDE	18.4	MG/L	
CW-1A	8/20/2014	CHLORIDE	18.1	MG/L	
CW-1A	5/5/2014	CHLORIDE	17.6	MG/L	
CW-1A	2/24/2014	CHLORIDE	21.2	MG/L	
CW-1A	12/16/2013	CHLORIDE	21.7	MG/L	
CW-1A	5/24/2017	SODIUM (NA)	38	MG/L	
CW-1A	8/20/2014	SODIUM (NA)	17.6	MG/L	
CW-1A	8/20/2014	SODIUM (NA)	17.6	MG/L	
CW-1A	5/5/2014	SODIUM (NA)	15.1	MG/L	
CW-1A	2/24/2014	SODIUM (NA)	17.1	MG/L	
CW-1A	12/16/2013	SODIUM (NA)	20.4	MG/L	
CW-1A	5/24/2017	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	710	MG/L	
CW-1A	8/20/2014	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	348	MG/L	
CW-1A	8/20/2014	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	335	MG/L	
CW-1A	5/5/2014	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	237	MG/L	
CW-1A	2/24/2014	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	268	MG/L	
CW-1A	12/16/2013	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	445	MG/L	

Summary of Parameter Concentrations in Well CW-2A Since 2013

Testsite Name	Sample Date	Parameter Name	Result	Measurement Unit	Qualifier
CW-2A	5/24/2017	AMMONIA (NH3) TOTAL AS N	12	MG/L	
CW-2A	8/20/2014	AMMONIA (NH3) TOTAL AS N	7.28	MG/L	
CW-2A	5/5/2014	AMMONIA (NH3) TOTAL AS N	7.19	MG/L	
CW-2A	2/24/2014	AMMONIA (NH3) TOTAL AS N	6.83	MG/L	
CW-2A	12/16/2013	AMMONIA (NH3) TOTAL AS N	6.72	MG/L	
CW-2A	5/5/2014	ARSENIC (AS)	1.3	UG/L	
CW-2A	12/16/2013	ARSENIC (AS)	1	UG/L	I
CW-2A	2/24/2014	ARSENIC (AS)	2.2	UG/L	
CW-2A	5/24/2017	CHLORIDE	710	MG/L	
CW-2A	8/20/2014	CHLORIDE	90.5	MG/L	
CW-2A	5/5/2014	CHLORIDE	106	MG/L	
CW-2A	2/24/2014	CHLORIDE	92.1	MG/L	
CW-2A	12/16/2013	CHLORIDE	76.3	MG/L	
CW-2A	8/20/2014	SODIUM (NA)	74.2	MG/L	
CW-2A	5/24/2017	SODIUM (NA)	130	MG/L	
CW-2A	5/5/2014	SODIUM (NA)	66.8	MG/L	
CW-2A	2/24/2014	SODIUM (NA)	59.4	MG/L	
CW-2A	12/16/2013	SODIUM (NA)	50.4	MG/L	
CW-2A	5/24/2017	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	950	MG/L	
CW-2A	8/20/2014	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	1010	MG/L	
CW-2A	5/5/2014	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	958	MG/L	
CW-2A	2/24/2014	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	952	MG/L	
CW-2A	12/16/2013	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	918	MG/L	

Summary of Parameter Concentrations in Well CW-3A Since 2013

Testsite Name	Sample Date	Parameter Name	Result	Measurement Unit	Qualifier
CW-3A	5/24/2017	AMMONIA (NH3) TOTAL AS N	11	MG/L	
CW-3A	8/20/2014	AMMONIA (NH3) TOTAL AS N	9.52	MG/L	
CW-3A	5/5/2014	AMMONIA (NH3) TOTAL AS N	7.8	MG/L	
CW-3A	2/24/2014	AMMONIA (NH3) TOTAL AS N	8.17	MG/L	
CW-3A	12/16/2013	AMMONIA (NH3) TOTAL AS N	11.1	MG/L	
CW-3A	2/24/2014	ARSENIC (AS)	2	UG/L	
CW-3A	5/5/2014	ARSENIC (AS)	1.7	UG/L	
CW-3A	8/20/2014	ARSENIC (AS)	2.3	UG/L	
CW-3A	5/24/2017	ARSENIC (AS)	8.5	UG/L	U
CW-3A	12/16/2013	ARSENIC (AS)	2.1	UG/L	
CW-3A	5/24/2017	CHLORIDE	33	MG/L	
CW-3A	8/20/2014	CHLORIDE	65.1	MG/L	
CW-3A	5/5/2014	CHLORIDE	59.6	MG/L	
CW-3A	2/24/2014	CHLORIDE	63	MG/L	
CW-3A	12/16/2013	CHLORIDE	62	MG/L	
CW-3A	2/24/2014	SODIUM (NA)	68.5	MG/L	
CW-3A	5/5/2014	SODIUM (NA)	57.9	MG/L	
CW-3A	8/20/2014	SODIUM (NA)	49.8	MG/L	
CW-3A	5/24/2017	SODIUM (NA)	200	MG/L	
CW-3A	12/16/2013	SODIUM (NA)	65.5	MG/L	
CW-3A	5/24/2017	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	1300	MG/L	
CW-3A	2/24/2014	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	1230	MG/L	
CW-3A	5/5/2014	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	1360	MG/L	
CW-3A	8/20/2014	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	1360	MG/L	
CW-3A	12/16/2013	TOTAL DISSOLVED SOLIDS TDS, (RES DISS)	1190	MG/L	