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March 24, 2009

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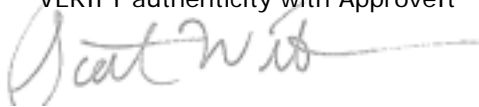
Subject: Maxey Flats Project –2008 Annual Report

Dear Ms. Scully;

The Commonwealth of Kentucky is submitting the 2008 Annual Report for the Maxey Flats Disposal Site to fulfill the requirements of Section 4.0 of the Performance Verification Standard Plan (PSVP). The report was prepared by the Maxey Flats Section and summarizes information from the period of January 2008 through December 2008.

If you have any questions, please contact me at (606) 783-8680.

Sincerely,

E-Signed by Wilburn, Scott
VERIFY authenticity with ApproveIt 


Scott Wilburn, Project Coordinator

e-attachment

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**MAXEY FLATS PROJECT
ANNUAL REPORT
2008**

March 17, 2009



Energy and Environment Cabinet
Department for Environmental Protection
Division of Waste Management
Superfund Branch

Maxey Flats Project
2597 Maxey Flat Road
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List of Acronyms

BoRP	Balance of Remedial Phase
Commonwealth	Commonwealth of Kentucky
DCSW	Drainage Channels Surface Water
IRP	Initial Remedial Phase
IMP	Interim Maintenance Period
MFP	Maxey Flats Project
O&M	Operation and Maintenance Requirement Summary
PSVP	Performance Standards Verification Plan
PSSW	Perennial Streams Surface Water
RA	Remedial Action
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

List of Appendices

(Files separate from Main Report)

- Appendix A** – Maxey Flats Project Analytical Data 2008
- Appendix B** – Maxey Flats Project Annual Precipitation Data – 2004-2008
- Appendix C** – Drainage Channel Erosion Monitoring; East 2004-2008
- Appendix D** – Maxey Flats Project Additional Data 2008

1.0 Introduction

The Commonwealth is submitting this report in accordance with Section 4.0 of the PSVP. The report summarizes sampling and maintenance activities listed in the PSVP and the O&M.

2.0 Scope of Work

The IMP is ongoing pursuant to the Consent Decree (Civil Action Number 95-58) signed by the USEPA, the Maxey Flats Steering Committee (Settling Private Parties), and the Commonwealth. The Commonwealth is responsible for completion of the BoRP that includes the Interim Maintenance Period, Final Closure Period and Associated Remedial Activities and Performance Monitoring.

The Interim Maintenance Period Work Plan describes the tasks to be completed including:

- Surface/ground water monitoring
- IRP cap maintenance and replacement
- Trench leachate management and monitoring
- Subsidence monitoring and surveys
- Erosion evaluation
- General site maintenance
- Contaminated liquid and waste disposal
- Data collection, analysis, and reporting
- Site drainage and erosion control features
- Installation of a horizontal flow barrier, if necessary

3.0 Surface Water Monitoring

The 2008 tritium averages for all surface water locations yielded tritium results lower than the previous year and also lower than the previous five year average. Although the decrease is statistically insignificant, seasonal precipitation and counting control factors could contribute to the overall decrease.

3.1 East Detention Basin

The first point of monitoring surface water runoff from the MFP is at the East Detention Basin (EDB). Sampling is performed at the EDB based on storm events of 2.8 inches of rainfall in a 24-hour period. In order for the sequential sampler to collect a storm event sample, the sampler is programmed to collect a sample based on 0.11 inches of rainfall per hour. A total of 32 samples were collected in 2008 and analyzed for tritium. Results ranged from -0.95 to 0.65

pCi/ml providing an average of 0.05 pCi/ml. Annual averages for 2004, 2005, 2006, and 2007 were of 0.14 pCi/ml, 0.16 pCi/ml and 0.16 pCi/ml, 0.55 pCi/ml respectively.

3.2 Perennial Streams Surface Water

Perennial Streams Surface Water (PSSW) monitoring is conducted at five locations in three streams inside and outside the MFP's boundary. These locations are monitored using sequential samplers that collect a four aliquot, daily composite.

Sample location 122A serves as the background sample; it is located on Rock Lick Creek up-gradient from site influence. Tritium results for 2008 at this location ranged from -1.08 to 0.81 pCi/ml, producing an average of -0.10 pCi/ml. Annual averages for 2004, 2005, 2006 and 2007 were 0.06 pCi/ml, 0.05 pCi/ml, 0.05 pCi/ml and 0.02 pCi/ml respectively.

Sample location 106 is located on No Name Branch, a tributary to Rock Lick Creek. Location 106 receives direct influence from drain 144. Tritium results for 2008 at this location ranged from 0.18 to 9.96 pCi/ml, producing an average of 3.33 pCi/ml. Annual averages for 2004, 2005, 2006 and 2007 were 4.55 pCi/ml, 4.23 pCi/ml, 3.41 pCi/ml and 5.24 pCi/ml respectively.

Sample location 122C is located on Rock Lick Creek, downstream of 106 and 143 influences. Tritium results for 2008 at this location ranged from -0.28 to 2.73 pCi/ml, producing an average of 0.87 pCi/ml. Annual averages for 2004, 2005, 2006 and 2007 were 1.10 pCi/ml, 1.01 pCi/ml, 0.86 pCi/ml and 1.27 pCi/ml respectively.

Sample location 103E is located on Drip Springs Creek and receives influence from Drain 107. Tritium results for 2008 at this location ranged from -0.66 to 3.06 pCi/ml, producing an average of 0.47 pCi/ml. Annual averages for 2004, 2005, 2006 and 2007 were 0.90 pCi/ml, 0.67 pCi/ml, 0.47 pCi/ml and 0.62 pCi/ml respectively.

Sample location 102D is the only PSSW sampler located outside the Buffer Zone. Due to its location below the confluence of three streams and its location outside the Buffer Zone, 102D is designated as the compliance point for site runoff. In addition to the 4-mrem/year dose limit, this location is also compared to the USEPA tritium in drinking water standard of 20 pCi/ml. Tritium results for 2008 at this location ranged from -0.41 to 2.35 pCi/ml, producing an average of 0.62 pCi/ml. Annual averages for 2004, 2005, 2006 and 2007 were 1.10 pCi/ml, 0.79 pCi/ml, 0.62 pCi/ml and 0.93 pCi/ml respectively.

A total of 1,680 PSSW samples were collected and analyzed for tritium during this period with no anomalous data reported. For 2008 all PSSW locations were

below the average annual tritium concentration action limit of 20 pCi/ml; assuring that the 4 mrem/yr drinking water standard has been met.

3.3 Drainage Channels Surface Water

Sample location C107 is located at the base of the West Drain which discharges into Drip Springs Creek. For 2008 this location yielded 165 samples for tritium analysis. Results ranged from 0.24 pCi/ml to 32.57 pCi/ml and averaged 10.42 pCi/ml. Annual averages for 2004, 2005, 2006 and 2007 were 14.58 pCi/ml, 16.97 pCi/ml, 8.62 pCi/ml and 13.28 pCi/ml respectively.

Sample location 143 is located near the base of the South Drain which discharges into Rock Lick Creek. For 2008 this location yielded 265 samples for tritium analysis. Results ranged from -1.17 pCi/ml to 0.78 pCi/ml and averaged -0.11 pCi/ml. For comparison, averages for 2004, 2005, 2006 and 2007 were 0.21 pCi/ml, 0.10 pCi/ml, 0.10 pCi/ml and 0.07 pCi/ml respectively.

Sample location 144 is located at the base of the East Drain which discharges into No Name Branch. For 2008 this location yielded 318 samples for tritium analysis. Results ranged from 0.61 pCi/ml to 122.55 pCi/ml and averaged 33.76 pCi/ml. For comparison, averages for 2004, 2005, 2006 and 2007 were 60.66 pCi/ml, 40.03 pCi/ml, 43.35 pCi/ml and 70.03 pCi/ml respectively.

3.4 Sampling Equipment Status

Samples were collected in accordance with the PSVP unless problems occurred beyond the site's control such as freezing lines, washouts, equipment failure, no flow, or power outages.

4.0 Groundwater Monitoring

4.1 Alluvial Wells

Alluvial well samples for 2008 were collected as outlined in the PSVP and the 2007 US EPA Five Year Review. In accordance with the US EPA 2007 Five Year Review, the frequency of alluvial well monitoring has changed to conducting annual sampling at AW-6, 10 and 12 and quarterly sampling AW-1 and 7. Sampling of all other alluvial wells has been discontinued.

During this reporting period, a total of 11 alluvial well samples were collected and analyzed for tritium, yielding results typical of historical trends. For 2008 AW-7 yielded the highest tritium analysis; 6.91 pCi/ml. Comparison of this analysis to the 20 pCi/ml annual average allowable limit indicates compliance of this limit.

Access to the alluvium within the buffer zone is controlled by the Commonwealth, therefore the alluvial wells are not considered a drinking water source and do not represent a potential radiological dose to the public.

4.2 USGS Monitoring Wells

Fifteen monitoring wells known as the USGS Monitoring Wells are located along the west perimeter fence. The wells are maintained by the USGS with continuous level data loggers and are hand measured on a quarterly basis. One additional well is located within the restricted area north of the Burial Trenches. Historic data indicates the largest water level fluctuations occur within UF-5 and ESI-1.

The 2008 tritium results for the USGS wells were all typical of historical data and trends.

5.0 Data Management

A data package is prepared for each group of samples analyzed on site. The data package contains the tritium instrument's QC charts (efficiency and background), chain of custody forms, raw data sheets and data reduction sheets. Data is reviewed and validated through on-site procedures. An employee of the Commonwealth whose normal duties are not involved with the Maxey Flats Project validates the data on a monthly basis. Following data validation, the data is entered into the site's database and transmitted to USEPA, USDOE, *de maximis, inc.* and the Commonwealth. These packets are available on site for review. Results are contained in the electronic file, Appendix A.

6.0 Rainfall Data

Presently there are three rain gauges on site; East Detention Basin (EDB), Well UF-37 and the main office. The official annual rainfall data is obtained from the rain gauge located at the EDB. This data was chosen because the gauge is used in conjunction with the sampler at the EDB. A total of 39.07 inches of rainfall was measured at the EDB gauge during 2008. The 2008 rainfall total was below the annual area precipitation average of 4.55 inches (see electronic file, Appendix B).

7.0 Initial Remedial Phase Cap Maintenance

7.1 Geo-membrane Liner and Boots

The annual inspection of the geo-membrane liner covering the trench cap began in March 2008 and was completed in June 2008. Air lancing of the field seams and visual inspection of the factory seams were conducted as required in O&M,

Sections 3.1.1, Geo-membrane Liner Maintenance and 3.1.2, Geo-membrane Liner Boots. During the 2008 annual inspection a total of 89 defects were found and repaired as compared to 35 defects in 2007, 55 defects in 2006, 42 defects in 2005 and 19 defects in 2004.

The trench sump boots were inspected during the monthly liner inspections and during the collection of trench sump liquid level measurements. The IMP inspections have revealed no defects to the liner material but deterioration of the extrusion welds has been widely observed.

7.2 Headwall Maintenance

Headwall maintenance includes the four headwalls and associated items along the North Channel and the northeast corner piping, geo-membrane liner batten and the liquid collection system.

During this reporting period, debris/leaves were removed numerous times from the trash grate and restricting plate of the upstream headwall of the northeast corner piping. Removal of the leaves/debris will be a continuous maintenance issue for the site.

7.3 Subsidence Monitoring and Repair

Subsidence inspections were conducted monthly in accordance with the O&M, Section 3.3.3, and Subsidence Monitoring. Two areas requiring subsidence repair were identified in 2008. The first was a 988 square foot subsidence with a maximum depth of over 5 inches, requiring 9 tons of fill sand over Trench 37; repaired September 15, 2008. The second area, located over Trench 30, was repaired on October 26, 2008. It was a 2,800 square foot subsidence, with a maximum depth of four inches, requiring 15.5 tons of fill sand.

Minor subsidences are being monitored over trench 32.

Curd Surveying, Inc. performed the annual engineering subsidence survey of the trench cap in May 2008. Elevations were obtained for the 28 subsidence control points established during the remedial work. The measured variations between the 2007 and 2008 subsidence control points ranged from +0.06 feet to -0.10 feet. The variations between the 2004 (baseline) and the 2008 subsidence control points ranged from +0.03 feet to -0.28 feet. No particular area of significant subsidence was indicated.

To ensure that the subsidence survey is conclusive six additional monitoring points were added in 2008 in areas suspected of subsidence.

7.4 Diversion Berms

The diversion berms were inspected twice a month as required by the O&M. Excluding possible liner repairs, all were found to be in satisfactory condition.

7.5 Anchor Trenches

The anchor trenches were inspected twice a month as required by the O&M. A significant hole was located during the annual inspection near the north perimeter channel on the north edge of LP 363. This hole has not been permanently patched. There is an excessive amount of moisture in the soil which would make the welding process ineffective. The inability to effectively patch this hole does not impact the protectiveness of the liner to prevent infiltration.

7.6 Drainage Channels

All drainage channels were inspected during this period as required by the O&M. Control of weeds and vegetation in the Articulating Block mats and at the gabions was performed by spraying the areas with weed killer and/or manually removing the vegetation.

7.7 Articulating Concrete Block Mat (AB Mat) System

The AB mat system was inspected monthly as required by the O&M. Buildup of sediment within the AB-mats has reduced their ability to reduce velocity of water flowing to the EDB and increased the need for vegetation control. This buildup of sediment should be expected as this is an inherent design feature of AB mats. In various locations the cable linking the blocks is showing signs of stress; this will continue to be closely monitored. The signs of stress on the cable indicate movement which could impact liner integrity. One section of blocks in the east drainage channel on LP-191ext is eroding at an accelerated rate.

7.8 Former Leachate Storage Facility Area

The covered area of the former leachate storage facility was found to be in satisfactory condition. The area shows no signs of subsidence or any damage to the geo-membrane liner or boots around the tank extensions.

7.9 Inspections

A total of 95 inspections were performed during the period of January 2008 through December 2008. Excluding subsidence issues, no unsatisfactory notations were recorded that presented a major problem, typically leaf collection and liner defects. All unsatisfactory items either received actions to return them to satisfactory status or were designated for monitoring.

7.10 Equipment Status

The primary extrusion weld gun is no longer operational. The backup extrusion weld gun has been placed into service and is performing well. The non-operational gun is in need of major repair and will be placed in backup status once the MFP operation budget allows for repairs. All other liner repair equipment remains in good working condition.

8.0 Trench Leachate Management and Monitoring

Trench sump liquid level measurements were obtained in accordance with the PSVP, Section 2.3, Sump Measurement and the 2007 US EPA Five Year Review. The purpose of collection and evaluation of the trench sump leachate levels is to detect recharge conditions that may require leachate management and provide data for future evaluation of the horizontal flow barriers.

A comparison of the baseline to the manual measurements collected in October 2008 indicates little change in site wide freeboard. The average loss of freeboard for all sumps is less than one percent. Only two sumps have a greater than 10% loss of freeboard. Sump 7-4 and Sump 46-1 have a freeboard percentage loss of 54% and 17%, respectively.

A leachate management engineering evaluation of Sump 7-4 was completed and submitted to US EPA in August of 2008. The results of the evaluation initiated quarterly monitoring of the sump until it stabilizes at or exceeds pre-pump level. If the sump stabilizes near pre-pump levels, monitoring will continue with additional attention focused on the other two sumps within trench 7. If the sump liquid level significantly exceeds pre-pump levels, a leachate management plan will be developed.

9.0 Contaminated Liquid and Solid Waste

Contaminated liquid and waste generated on-site will be disposed of in accordance with the IMP Work Plan; Section 3.2, Treatment of Other Contaminate Liquids and Section 3.3, Waste Burial.

No liquid removed from the trench cap area required management during this reporting period. No solid waste was disposed of on-site during this reporting period. Solid and liquid waste generated from laboratory, radiological activities and site maintenance is temporarily stored in a secured area.

Twelve cubic feet of Class A Waste at 47 mCi and three cubic feet of tritium liquid waste at less than 25 mCi is stored on site. Disposal will occur once sufficient quantities are accumulated to warrant the effort.

10.0 Erosion Monitoring

Erosion monitoring consists of obtaining elevation measurements and observations of the east drainage channel. The USGS staff monitored the East Main Drainage Channel twice during the reporting period. The results were reported to USEPA. Tables for the 2004-2008 East Drain erosion measurements and the calculated areas are presented in the electronic file, Appendix C.

There was no major water erosion or mud/rock slides evident in any of the channels during this reporting period.

11.0 IMP Work Plan Revisions, Changes and Correspondence

Revisions and changes to the IMP Work Plan are required to be submitted in writing to USEPA for approval. During this reporting period, no change requests were submitted.

12.0 Custodial Care Activities

12.1 Vegetation

All vegetation was maintained below required height limits to allow for leachate monitoring.

12.2 Building and Grounds Maintenance

In addition to the established buildings receiving routine maintenance, a furnace was installed in the garage and extensive repairs were completed on the garage roof to prevent leaking.

Insulation of the garage and a new HVAC system for the office annex are planned for 2009.

12.3 Security Fence

The security fence surrounding the site remains in satisfactory condition with minor maintenance required. An operator upgrades for the East Perimeter Gate is planned for 2009.

12.4 Roadway Maintenance

Routine maintenance was performed on all facility owned roadways.

13.0 Cathodic Protection

The cathodic protection for the underground waste disposal tank was checked monthly. All readings were within the accepted range according to the operating instructions. Tom Stewart, Certified Cathodic Protection Tester, completed the annual inspection of the Cathodic Protection System on February 22, 2008. The system received a passing score with results indicating the cathodic protection system is functioning as designed.

14.0 Conclusion

This concludes the textual outlining of the IMP activities at the Maxey Flats Project for 2008. Appendix D is included along with this report which contains miscellaneous data relating to MFP. This data includes: Monthly Reports, Low Level Waste Report, USGS Well Monitoring Data, Potentiometric Surface Map, Trench Freeboard Data and the Leachate Investigation for Sump 7-4. If you would like to receive copies of inspections or deliverables not included in this report, please contact the MFP office.