U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF INSPECTOR GENERAL

Catalyst for Improving the Environment

Evaluation Report

EPA Should Improve Its Oversight of Long-Term Monitoring at Wheeling Disposal Superfund Site in Missouri

Report No. 11-P-0034

December 20, 2010

Report Contributors: Carolyn Copper
Patrick Milligan
Martha Chang
Anne Bavuso

Abbreviations

CFR	Code of Federal Regulations
EDB	1,2-Dibromoethane
EPA	U.S. Environmental Protection Agency
mg/L	Milligrams per Liter
NPL	National Priorities List
O&M	Operation and Maintenance
OIG	Office of Inspector General
ROD	Record of Decision
RP	Responsible Party
TDS	Total Dissolved Solids
µg/L	Micrograms per Liter
VOC	Volatile Organic Compound

Cover photo: Signage on barbed wire fence surrounding Wheeling Disposal Superfund Site, near Amazonia, Missouri, December 12, 2007. (EPA OIG photo)

U.S. Environmental Protection Agency
Office of Inspector General

11-P-0034
December 20, 2010

At a Glance

Catalyst for Improving the Environment

Why We Did This Review

The Office of Inspector General is testing long-term monitoring results at Superfund sites the U.S. Environmental Protection Agency (EPA) has deleted from the National Priorities List. The Wheeling Disposal Superfund Site, located near Amazonia, Missouri, in EPA Region 7, is one of eight sites reviewed.

Background

Wheeling Disposal is a landfill that received hazardous wastes, including leather tanning sludges, pesticides, asbestos, laboratory wastes, paint sludges, battery wastes, and cyanide wastes. The site was added to the National Priorities List in 1989 and deleted in 2000 when EPA determined that cleanup goals had been achieved.

For further information, contact our Office of Congressional, Public Affairs and Management at (202) 566-2391.

To view the full report, click on the following link:
www.epa.gov/oig/reports/2011/20101220-11-P-0034.pdf

EPA Should Improve Its Oversight of Long-Term Monitoring at Wheeling Disposal Superfund Site in Missouri

What We Found

Our independent sampling results from the Wheeling Disposal Superfund Site were generally consistent with the sampling data that Region 7 has obtained historically. However, when the responsible parties reported their annual monitoring results, Region 7 inadvertently allowed them to use incorrect and outdated surface water standards, and outdated ground water standards. Also, Region 7 did not always require the responsible parties' laboratories to properly analyze some contaminants. By allowing incorrect standards and analysis methods, the region has limited assurance that unsafe levels of contaminants are not migrating offsite and creating risk to human health and the environment. These issues do not adversely impact the region's current protectiveness determination. However, if incorrect and outdated standards continue to be used, or results are not properly analyzed, the region may be unable to detect when excess levels of contaminants migrate offsite.

In a 2009 report, Region 7 should have explained the impact of excess levels of iron and aluminum at sampling locations close to the site boundaries. EPA records describe the site as a "habitat for wildlife and birds." However, the region had not addressed contaminants in the site's surface water that can pose risks to ecological receptors. In response to Office of Inspector General inquiries and Agency guidance, in October 2010, the region completed an ecological risk assessment. The risk assessment showed that the remedy is protecting the environment.

What We Recommend

We recommend that the Region 7 Administrator ensure accurate surface water and ground water standards are used to assess conditions at the site; laboratories use the correct analytic standards; the ecological risk assessment is completed; and excess levels of iron, aluminum, and any other compounds are controlled at the site. Region 7 agreed with OIG recommendations and has initiated or completed some actions.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE INSPECTOR GENERAL

December 20, 2010

MEMORANDUM

SUBJECT: EPA Should Improve Its Oversight of Long-Term Monitoring at Wheeling Disposal Superfund Site in Missouri
Report No. 11-P-0034

FROM: Arthur A. Elkins, Jr.
Inspector General

TO: Karl Brooks
Region 7 Administrator

This is our report on the subject evaluation conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). This report contains the findings from our sampling at the Wheeling Disposal Superfund Site and corrective actions the OIG recommends. EPA Region 7 concurred with and provided comments on the recommendations of the draft report. This report represents the opinion of the OIG and does not necessarily represent the final EPA position. Final determinations on matters in this report will be made by EPA managers in accordance with established resolution procedures.

The estimated cost of this report, calculated by multiplying the project's staff days by the applicable daily full cost billing rates in effect at the time, then adding in the contractor costs, is $654,653.

Action Required

In accordance with EPA Manual 2750, you are required to provide a written response to this report within 90 calendar days. Your response will be posted on the OIG's public website, along with our comments on your response. Your response should be provided in an Adobe PDF file that complies with the accessibility requirements of section 508 of the Rehabilitation Act of 1973, as amended. If your response contains data that you do not want to be released to the public, you should identify the data for redaction. You should include a corrective action plan for agreed upon actions, including milestone dates. We have no objections to the further release of this report to the public. This report will be available at http://www.epa.gov/oig.

If you or your staff have any questions regarding this report, please contact Wade Najjum, Assistant Inspector General, at (202) 566-0832 or najjum.wade@epa.gov; or Carolyn Copper, Director for Program Evaluation, Hazardous Waste Issues, at (202) 566-0829 or copper.carolyn@epa.gov.

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Chapter 1
Introduction

Purpose

The Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA) is evaluating long-term monitoring at Superfund sites deleted from the National Priorities List (NPL). This evaluation is to ensure that EPA has valid and reliable data on the conditions of these sites. Wheeling Disposal Superfund Site near Amazonia, Missouri, is one of eight sites reviewed. We collected ground water and surface water samples and compared our results to historical results reported by Region 7. We also compared results to applicable federal and state standards and conducted a site inspection.

Background

Wheeling Disposal Superfund Site operated from the 1970s through 1986. Wastes disposed at the site include leather tanning sludges, pesticides, asbestos, laboratory wastes, building debris, paint sludges, battery wastes, cyanide wastes, and miscellaneous crushed drums. The site's 20-acre central disposal area sits in the middle of the 200-acre site. Surface runoff flows to tributaries and creeks north and south of the site and eventually discharges into the Missouri River 2 miles south of the site.

In 1989, EPA listed the site on the Superfund NPL. A consent decree between EPA and the responsible parties (RPs) established the remediation goals and cleanup objectives for the site. As defined in the site's record of decision (ROD), the remediation objective was to eliminate current and prevent future unacceptable exposures to contaminated ground water, surface water, surface soils and sediments, and subsurface soils. According to the ROD, the performance criteria will be used to define whether the remedy will continue to be protective of human health and the environment over time. If the monitoring program indicates exceedance of the performance criteria, additional remedial activities may be required. The site remedy included upgrading the landfill cover and conducting long-term monitoring of ground water and surface water. Also, the remedy called for implementing site maintenance activities, installing security signs, and closing some onsite wells. In 1994, the RPs completed the remedial actions to eliminate unacceptable exposures. The site then transitioned to the operation and maintenance (O&M), or long-term monitoring phase.

According to the consent decree, O&M activities will be conducted by the RPs. The purpose of O&M is to conduct such activities as site inspection, fence maintenance, cap or cover repair, and sampling. The RPs' 1993 O&M plan provided the sampling and site maintenance activities and frequencies.

Using data and information obtained from long-term monitoring activities at least once every 5 years, Region 7 must evaluate the site to determine if it is protective of human health and the environment. The results of this determination are reported in a publicly released Five-Year Review report. The region completed Five-Year Reviews for the site in 1999, 2004, and 2009. EPA's Five-Year Review guidance establishes that exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy selection should be evaluated to determine whether assumptions are still valid. The 1999 and 2004 reviews concluded that the remedy continued to protect human health and the environment. However, the 2009 review only found the remedy to be protective of human health and deferred making a statement on ecological protectiveness until an ecological risk assessment under current guidance was performed.

Noteworthy Achievements

Four landfill caps were constructed to cover the site's industrial waste disposal areas. There were nine waste disposal areas including solid waste trenches, liquid waste trenches, evaporation ponds, a farm chemicals area, tannery waste disposal areas, and a rinsed container area. Region 7 imposed deed restrictions to prevent farming on certain onsite areas, and prohibited the use of ground water for the entire 200-acre site. A long-term monitoring program was developed to monitor the effectiveness of the remedy in preventing offsite migration of contaminated ground water and surface water. As part of its long-term monitoring program, Region 7 is conducting an ecological risk assessment to determine whether the remedy continues to be protective of the environment.

Scope and Methodology

We conducted this performance evaluation in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the evaluation to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our evaluation objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our evaluation objectives.

We conducted our work in two phases. In the first phase, from November 2007 to August 2008, we conducted a site visit, took ground water samples, and performed data validation on the sample results. In the second phase, from March 2009 to June 2010, we analyzed and compared OIG's and Region 7's sampling data.

We reviewed relevant guidance documents and key decision documents, such as the 2001 Five-Year Review Guidance, consent decree, ROD, O&M plan, and Five-Year Reviews. We interviewed the site project managers and the program manager from both Region 7 and the Missouri Department of Natural Resources. Our ground water and surface water sampling methodology and data analyses are detailed in Appendix A.

A draft of this report was sent to the Region 7 Administrator for official comment. Region 7's comments on the draft report are in Appendix C.

Chapter 2
Incorrect Standards Used and Contaminants Improperly Analyzed

Region 7 managers said they inadvertently allowed the RPs to use both incorrect and outdated surface water standards and outdated ground water standards when analyzing contaminant levels after the site remedy was completed. Region 7 also has not taken action to ensure RPs' laboratories always use reporting limits that analyze sampling results down to the contaminant standard. By using the wrong standards and not analyzing results correctly, the region limits its ability to identify excess or unsafe levels of contaminants that could potentially migrate offsite. In the 2009 Five-Year Review, Region 7 did not explain whether site protectiveness was impacted by results that showed iron and aluminum exceeded standards at sampling locations used to detect potential offsite migration. Further, in response to OIG inquiries and Agency guidance, the region decided to conduct an environmental assessment to ensure the remedy is protective of the environment. The risk assessment will also enable the region to ensure current and appropriate standards are being used. Region 7 needs to improve its oversight of the RPs' long-term monitoring activities to ensure protection of human health and the environment into the future.

Region 7 Inadvertently Allowed Use of Some Incorrect Standards

The RPs' labs have been inadvertently using some incorrect surface water standards when analyzing sampling results at Wheeling. This occurred because Region 7 did not detect and correct the RPs using the wrong regulation in the annual monitoring reports they submitted to Region 7. The monitoring reports inform Region 7 of yearly contaminant levels at the site. Region 7's oversight did not detect this error even though the consent decree and ROD cite the correct regulation, which is found in section 304(a) of the Clean Water Act. Instead, in analyzing the sampling results in the annual monitoring reports, the RPs inadvertently used some incorrect standards found in 40 Code of Federal Regulations (CFR) 131.36. The CFR is not the applicable regulation for citing surface water standards for Wheeling because the CFR does not apply to the State of Missouri, where the site is located. Region 7 needs to ensure that the RPs measure sample results against the correct standards.

OIG's review of the standards used to monitor surface water and ground water found that 29 standards for surface water contaminants and 12 for ground water contaminants were not updated when applicable standards were applied. Appendix B lists the 41 contaminants along with their correct standards. Twenty-five surface water standards and 7 ground water standards became more stringent through updates. Four surface water and five ground water standards became less stringent through updates. By inadvertently allowing incorrect standards,

Region 7 may not have detected unacceptable levels of these contaminants in the site's surface and ground water. In addition, where updated standards are now less stringent than those being used at the site, EPA could incorrectly identify unacceptable levels of contaminants. We found two contaminants (bromodichloromethane and tetrachloroethylene) exceeding the updated, but not the original, standards Region 7 is using. These exceedances were found at monitoring locations near the center of the site. Region 7 stated in the 2009 Five-Year Review that it was not concerned with exceedances at wells positioned adjacent to the source area. As a result, site protectiveness decisions would not be altered due to these 2 exceedances. However, if exceedances of these two contaminants were to occur at other monitoring locations used to detect offsite migration of contaminants, Region 7 would not be able to detect these exceedances because it used outdated standards.

Some Contaminants Improperly Analyzed

Region 7 has not taken action in the past to ensure RPs' labs always achieve a reporting limit that is at or below the contaminant standard. Reporting limits are the minimum concentrations of a compound or contaminant that can be measured by the lab with certainty. The O&M plan provides a list of contaminants that are monitored at the site and their respective reporting limits. These reporting limits generally have been set low enough to assess whether the lab is measuring down to each contaminant's standard. However, Region 7 has not always ensured that the labs analyzed down to the standard.

With the exception of the contaminants shown in Table 1, the RPs' laboratories achieved the reporting limits at or below the standard for site contaminants. Table 1 shows the four contaminants we found that have reporting limits above the site's ground water standards. The table also includes the six contaminants that have reporting limits above the site's surface water standards.

Table 1: 2007 reporting limits above the site's standards[1]

Ground water			Surface water		
Contaminants monitored	Standard	2007 reporting limit	Analyte	Standard	2007 reporting limit
Atrazine (µg/L)	3	10	Arsenic (mg/L)	0.00014	0.005
Antimony (mg/L)	0.006	0.05	Mercury (mg/L)	0.00015	0.0002
Thallium (mg/L)	0.002	0.01	Silver (mg/L)	0.0035	0.005
1,2-Dibromoethane (EDB) (µg/L)	0.05	1	Thallium (mg/L)	0.0063	0.01
			Selenium (mg/L)	0.005	0.01
			1,2-Dibromoethane (EDB) (µg/L)	0.05	1

Source: Region 7's annual monitoring reports.
µg/L: micrograms per liter mg/L: milligrams per liter

[1] We used the stricter of the federal criteria for "Human Health Based on Consumption of Organisms Only" under Section 304(a) of the Clean Water Act (33 USC 1314(a)) or the Missouri water quality standards for protection of aquatic life under 10 CSR 20-7.031.

When the labs' report results for these contaminants fall between the standard and the reporting limit, Region 7 has limited assurance of the actual contaminant concentrations or whether exceedance of a standard has occurred. For example, the ground water standard for atrazine is 3 µg/L, while the reporting limit is 10 µg/L. If atrazine were detected in a sample at 7 µg/L, it would exceed the standard. However, the lab's use of the wrong reporting limits would cause it to fail to report this as an exceedance, because the lab cannot guarantee the certainty of the result below the reporting limit of µg/L.

Five-Year Review Did Not Explain High Levels of Metals in Ground Water

In the 2009 Five-Year Review, Region 7 did not explain or address standard exceedances for iron and aluminum at sampling locations close to the site boundaries. Likewise, the region's 2004 review did not address exceedances for iron and aluminum. From 1999 through 2007, iron exceeded the standard in four out of nine sampling events, and aluminum exceeded the standard in four out of eight sampling events. The review should demonstrate that the remedy continues to protect human health and the environment and an explanation of the metals' exceedances should have appeared in the review. Our analysis shows that iron was detected at levels within the background concentrations. This suggests that the levels of iron may be naturally occurring. However, the region's 2004 Five-Year Review did not offer any explanation regarding the iron exceedances. In half of the samples taken to check for aluminum, the metal exceeded State of Missouri surface water standards at a sampling location that is intended to measure contaminants as they migrate offsite. In the 2009 Five-Year Review, Region 7 did not disclose these aluminum exceedances or address the likelihood of unsafe levels of aluminum migrating offsite. If aluminum is migrating offsite at levels above the standard, it may negatively impact the region's current protectiveness determination.

Ecological Risk Assessment Needed

According to an EPA document, the entire 200-acre Wheeling site is a "habitat for wildlife and birds and is also a recreational hunting and fishing area." During the site cleanup, the current site owner planted native wild grasses and other foliage that would attract birds and wildlife. During our onsite sampling event, we saw signs of wildlife and the site is used for hunting wildlife. Elevated concentrations of volatile organic compounds (VOCs) in onsite surface waters are shown in the historical sampling results and were also found in OIG's independent sampling. However, the current site ROD does not address the protectiveness of onsite surface waters for ecological receptors, such as birds and wildlife.

Given the elevated concentrations of VOCs in site surface waters and the designation of the site as a wildlife habitat, we asked Region 7 whether the site was still protective of the environment. The region responded that past risk assessments have found the remedy to be protective of the environment and the region believes

this is still the case, because site conditions have not changed. However, the region believes that an environmental assessment under current Agency guidance is needed to verify that the remedy is protective of the environment.

In its 2009 Five-Year Review, Region 7 stated that the environmental assessment concluded that a screening level ecological risk assessment should be conducted to ensure the remedy is protecting the environment.[1] The 2009 review further concluded that the site is primarily ecological in nature. Therefore, although the contamination may be contained onsite (thereby preventing human health exposure), the potential *onsite* impacts of the surface water on plants and animals may not have been fully addressed. In its response to the draft report, Region 7 responded that it completed a Screening Level Ecological Risk Assessment for the Wheeling Disposal site on October 13, 2010. The region stated that the result of the assessment was that the remedy for the site is protective of the environment, and no changes to the remedy are necessary. Therefore, the region determined that a further ecological risk assessment is not necessary.

Conclusion

When the RPs reported their annual monitoring results, Region 7 inadvertently allowed the RPs to use some incorrect and outdated standards. The region acknowledged the use of outdated and incorrect standards to determine whether the remedy was protecting human health and the environment. Likewise, we found laboratories not analyzing results down to the reporting limits that were as low as the applicable standard, and the region used the lab results as part of its protectiveness determination. None of the problems we found had an adverse impact on the region's protectiveness determination for human health. However, if incorrect standards continue to be used, or results are not properly analyzed, excess levels of contaminants could migrate offsite without Region 7's knowledge. Region 7 must improve monitoring and oversight activities at Wheeling Disposal to assure that the site is protective for all current and future uses, including its primary "ecological use."

Recommendations

We recommend that the Region 7 Administrator:

1. Ensure updated and correct standards for surface water and ground water are used to assess conditions at the site and that these corrected standards are listed in all relevant site documents.

2. Require that the reporting limits for all analyses are at or below the applicable standard to ensure that all contamination above the standard is properly analyzed by the laboratory.

[1] Current Risk Assessment guidance for the environment is entitled *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (EPA 540-R-97-006, 1997).

3. Document in an addendum to the 2009 Five-Year Review that iron, aluminum, and any other compounds exceeding applicable standards are controlled at the site.

4. Complete an ecological risk assessment to determine whether changes to the remedy are necessary and, if so, amend or generate new site documents, including the ROD, to ensure the site is protective of the environment. Issue an addendum to the 2009 Five-Year Review to include the results of the ecological risk assessment.

EPA Region 7 Response to Draft Report and OIG Evaluation

Region 7 agreed with all four OIG findings and recommendations. Where appropriate, we made changes to the report based on Region 7's comments.

For recommendation 1, Region 7 has made arrangements with the Wheeling Responsible Party group to perform a review of performance standards to ensure that the most current and appropriate standards are used in the annual monitoring program for the Wheeling Disposal site. This review is planned for early 2011 and will be completed by June 30, 2011. This recommendation is open with agreed-to actions pending. In its 90-day response to this report, the region should confirm the completion of this recommendation or update OIG on the status.

For recommendation 2, Region 7 responded that it will require that the reporting limits for all analyses are at or below the applicable standards, and that this task will be performed as part of the performance standards review scheduled for early 2011 and will be completed by June 30, 2011. This recommendation is open with agreed-to actions pending. In its 90-day response to this report, the region should confirm the completion of this recommendation or update OIG on the status.

For recommendation 3, Region 7 agreed to issue by September 2011 an addendum to the 2009 Five-Year Review to document that iron, aluminum, and any other compounds exceeding applicable standards are controlled at the site. This recommendation is open with agreed-to actions pending. In its 90-day response to this report, the Region should confirm the completion of this recommendation or update OIG on the status.

For recommendation 4, Region 7 stated that it completed the ecological risk assessment on October 13, 2010. The region stated that the risk assessment showed that the remedy for the site is protective of the environment, and no changes to the remedy are necessary. We revised recommendation 4 for Region 7 to issue an addendum to the 2009 Five-Year Review to include the results of the risk assessment. Region 7 managers concurred with the revised recommendation. This recommendation is open with agreed-to actions pending. In its 90-day response to this report, the region should confirm the completion of this recommendation or update OIG on the status.

Status of Recommendations and Potential Monetary Benefits

RECOMMENDATIONS						POTENTIAL MONETARY BENEFITS (in $000s)	
Rec. No.	Page No.	Subject	Status[1]	Action Official	Planned Completion Date	Claimed Amount	Agreed-To Amount
1	7	Ensure updated and correct standards for surface water and ground water are used to assess conditions at the site and that these corrected standards are listed in all relevant site documents.	O	Region 7 Administrator	06/30/11		
2	7	Require that the reporting limits for all analyses are at or below the applicable standard to ensure that all contamination above the standard is properly analyzed by the laboratory.	O	Region 7 Administrator	06/30/11		
3	8	Document in an addendum to the 2009 Five-Year Review that iron, aluminum, and any other compounds exceeding applicable standards are controlled at the site.	O	Region 7 Administrator	09/30/11		
4	8	Complete an ecological risk assessment to determine whether changes to the remedy are necessary and, if so, amend or generate new site documents, including the ROD, to ensure the site is protective of the environment. Issue an addendum to the 2009 Five-Year Review to include the results of the ecological risk assessment.	O	Region 7 Administrator			

[1] O = recommendation is open with agreed-to corrective actions pending
C = recommendation is closed with all agreed-to actions completed
U = recommendation is undecided with resolution efforts in progress

Appendix A

Details on Sampling Methodology and Data Analyses

Sampling Methodology

We acquired a qualified environmental contractor to collect ground water and surface water samples and to conduct a limited site inspection in December 2007. The contractor collected samples from six onsite ground water monitoring wells and six surface water locations. OIG staff members were present to ensure that proper sampling and quality assurance protocols were followed. The samples were analyzed for VOCs, polychlorinated biphenyls (PCBs), metals (total and dissolved), organochlorine pesticides, 1,2-Dibromoethane (EDB), dinoseb, atrazine, and cyanide (total) at a qualified laboratory using EPA-approved methods.

Data Analyses

We analyzed our sampling data from the site to determine whether Region 7 has been obtaining valid and reliable data on the conditions at the site. We compared our results to historical data spanning back to 1999. OIG sampling results greater than 2 standard deviations above the average EPA historical concentrations were considered different. Our review did not include a full evaluation of the reasons for these differences. Where we observed differences, we compared OIG results to the relevant federal and state standards to determine whether OIG's data had implications for human health or environmental protection.

We also evaluated all OIG results to applicable standards and reviewed their potential effect on Region 7's protectiveness determination for the site. The ROD established ground water and surface water cleanup standards for the purpose of determining whether the selected remedy will protect human health and the environment. The standards are developed and based upon relevant federal and state ground water and surface water regulations. Relevant federal and state standards are defined as (1) the Missouri Water Quality Standards [10 CSR 20-7.031], (2) the Federal Maximum Contaminant Levels for Inorganic and Organics in Drinking Water Supplies, and (3) the Federal Ambient Water Quality Standards as defined by the Clean Water Act. The ROD stipulates that, in the event that the monitoring program indicates exceedances of the standard, additional remedial activities may be required. Our approach and selection of applicable standards was consistent with the standards applied by EPA.

The ROD also established a ground water and surface water monitoring system to determine the long term effectiveness of the remedy. The monitoring system was intended to provide an early warning before hazardous substances migrate offsite and harm human health and the environment. Ground water and surface water samples

collected from various designated "compliance" locations would monitor the offsite migration of contaminants. Ground water and surface water cleanup levels must be achieved at these compliance points.

Our results show OIG's independent sampling and analyses generally confirm Region 7's data at the Wheeling Disposal Superfund Site. Of the 116 compounds analyzed by the OIG and by EPA in the past, 5 were different from the region's historical sampling results. The five analytes were manganese, potassium, sodium, total suspended solids, and total dissolved solids. These analytes either had no standards or their concentrations were detected below the standards. As a result, the OIG determined that these analytes do not have adverse implications for site protectiveness.

OIG also identified 17 other contaminants that exceeded applicable standards (see table below). Region 7's historical monitoring data also identified these exceedances. Thirteen of the 17 contaminants were detected at the center of the site near the contaminant source. Region 7 stated that elevated contaminant concentrations at the center of the site are expected and are not a concern because they do not indicate offsite migration. Two of the remaining four contaminants—total dissolved solids and manganese—are explained in the table footnote below. The other two contaminants—iron and aluminum—are discussed in the Five-Year Review section of the report.

Compounds Exceeding Applicable Standards

	Analyzed compound	Sampling location	Compound class	OIG result	Original applicable standard
1.	1,1-Dichloroethene (µg/L)	MW-35 I	VOC	17	7
2.	1,2-Dibromoethane (EDB) aka Ethylene Dibromide (µg/L)	MW-35 I	VOC	14	0.05
		MW-35 I	VOC	11.6	0.05
3.	1,2-Dichloroethane (µg/L)	MW-35 I	VOC	35	7
4.	Aluminum (mg/L)	SW-35	Total Metal	1.5	0.75
5.	Carbon Tetrachloride (µg/L)	MW-35 I	VOC	2660	5
6.	Chloroform (µg/L)	MW-35 I	VOC	392	5.7 (80 THM total)
7.	cis-1,2-Dichloroethene (µg/L)	MW-35 I	VOC	110	70
8.	Dichlorodifluoromethane (µg/L)	MW-35 I	VOC	251	170
9.	Dinoseb (µg/L)	MW-35 I	VOC	36	7

	Analyzed compound	Sampling location	Compound class	OIG result	Original applicable standard
10.	Iron (mg/L)	MW-35 D	Total Metal	1.5	0.3
		MW-35 I	Total Metal	0.511	0.3
		SW-35	Total Metal	1.7	1
		MW-32S	Total Metal	0.422	0.3
		MW-32S	Dissolved Metal	0.483	0.3
		MW-35 D	Dissolved Metal	1.77	0.3
		MW-35 I	Dissolved Metal	0.493	0.3
11.	*Manganese (mg/L)	MW-35 D	Total Metal	0.57	0.3
		MW-36I	Total Metal	0.45	0.05
		MW-35 D	Dissolved Metal	0.63	0.3
		MW-36I	Dissolved Metal	0.47	0.3
12.	Methylene Chloride (µg/L)	MW-35 I	VOC	23.1	5
13.	Nickel (mg/L)	MW-35 D	Total Metal	0.753	0.1 mg/L
		MW-35 D	Dissolved Metal	0.8	0.1 mg/L
14.	Thallium (mg/L)	MW-35 I	Dissolved Metal	0.0063 J	
15.	*Total Dissolved Solids (mg/L)	MW-32S	_	1580	0.5 mg/L
		MW-35 D	_	1320	0.5 mg/L
		MW-35 I	_	1540	0.5 mg/L
		MW-36I	_	410	0.5 mg/L
16.	Trichloroethene (µg/L)	MW-35 I	VOC	4320	5 µg/L
17.	Vinyl Chloride (µg/L)	MW-35 D	VOC	5.7	2 µg/L
		MW-35 I	VOC	317	2 µg/L

Source: OIG sampling.

* Total dissolved solids do not show as an exceedance when the correct, updated standard is used. Manganese exceedances may be the result of background levels of the contaminant indicating that these may be naturally occurring and not originating from historical site activities.

Appendix B

Compounds With Incorrect Standards

Compound	Surface water standard[1]	
	Original	Updated
1,1,2-Trichloroethane (µg/L)	42	16 [3]
1,2-Dichlorobenzene (µg/L)	NA	1,300 [3]
1,2-Dichloroethane (µg/L)	99	37 [3]
1,2-Dichloroethene** (µg/L)	NA (cis) NA (trans)	NA (cis) 10,000 (trans) [3]
1,2-Dichloropropane (µg/L)	NA	15 [3]
Benzene (µg/L)	NA	51 [3]
Bromodichloromethane (µg/L)	22	17 [3]
Carbon Tetrachloride** (µg/L)	4.4	1.6 [3]
Chlorobenzene (µg/L)	NA	1,600 [3]
Ethylbenzene (µg/L)	NA	320 [4]
Methylene Chloride** (µg/L)	1,600	590 [3]
Tetrachloroethene (µg/L)	8.85	3.3 [3]
Toluene** (µg/L)	200,000	15,000 [3]
Trichloroethene** (µg/L)	81	30 [3]
Vinyl Chloride (µg/L)	525	2.4 [3]
Endrin Aldehyde (µg/L)	NA	0.3 [3]
Heptachlor (µg/L)	0.00029	0.000079 [3]
Antimony (mg/L)	4.3	0.64 [3]
Cadmium (mg/L)	0.0091	0.0003 [4,6]
Chromium (mg/L)	0.011	0.089 (III) [4,6] 0.01 (IV) [4]
Copper (mg/L)	0.019	0.011 [4,6]
Lead (mg/L)	0.009	0.003 [4,6]
Nickel (mg/L)	0.16	0.063 [4,6]
Thallium (mg/L)	0.0063	0.00047 [3]
Silver (mg/L)	0.0035	0.0047 [4,6]
1,1-Dichloroethene** (µg/L)	3.2	7,100 [3]
Ethylene Dibromide (EDB) (µg/L)	0.05	NA
Mercury (mg/L)	0.00015	0.0005 [4]
Zinc (mg/L)	0.103	0.142 [4,6]

Compound	Ground water standard[2]	
	Original	Updated
1,2-Dibromoethane (EDB) (µg/L)	NA	0.05
1,2-Dichloropropane (µg/L)	5	0.52 [4]
Bromodichloromethane (µg/L)	100 80	0.56 [4] 80 (total THM)
Chloroform** (µg/L)	100	5.7 [4] 80 (total THM)
Chloromethane (µg/L)	20	5 [4]
Methylene Chloride** (µg/L)	5	4.7 [4]
Tetrachloroethene (µg/L)	5	0.8 [4]
1,1- Dichloroethane** (µg/L)	340	NA
Acetone (µg/L)	260	NA
Dichlorodifluoromethane (µg/L)	170	1,000 [5]
Naphthalene (µg/L)	100	NA
Total Dissolved Solids (mg/L)	500	NA

Source: Region 7's annual monitoring reports.

Standard became less stringent.

Standard became more stringent.

** Compound is an indicator chemical under the consent decree (per EPA data).

[1]We used the stricter of the federal criteria for "Human Health Based on Consumption of Organisms Only" under Section 304(a) of the Clean Water Act (33 USC 1314(a)) or the Missouri water quality standards for protection of aquatic life under 10 CSR 20-7.031.

[2]Stricter of the federal maximum contaminant levels under the Safe Drinking Water Act or the Missouri Water Quality Standards for drinking water [10 CSR 20-7.031].

[3]Federal standard.

[4]State standard.

[5]EPA Lifetime Health Advisory, as required by Statement of Work.

[6]Hardness assumption of <125.

EPA Region 7 Response to Draft Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

NOV 24 2010

OFFICE OF
THE REGIONAL ADMINISTRATOR

MEMORANDUM

SUBJECT: EPA Should Improve Its Oversight of Long-Term Monitoring at Wheeling Disposal Superfund Site in Missouri
Report No. 2008-548

FROM: Karl Brooks
Regional Administrator

TO: Wade Najjum
Assistant Inspector General
Office of Program Evaluation

Thank you for the opportunity to comment on the draft report entitled, "EPA Should Improve Its Oversight of Long-Term Monitoring at Wheeling Disposal Superfund Site in Missouri."

Region VII offers the following clarification on the Background section of your report. The report states:

> The 1999, 2004, and 2009 reviews concluded that the remedy continued to protect human health and environment. However, the 2009 review also concluded that an ecological risk assessment was needed to ensure the remedy protects the environment.

OIG is correct that the 1999 and 2004 reviews found the remedy to be protective of human health and the environment, but the 2009 review only found the remedy to be protective of human health. The 2009 review deferred making a statement on ecological protectiveness until an ecological risk assessment under current guidance was performed.

Region VII generally agreed with your findings and offers the following comments on the recommendations:

Recommendation 1 – Ensure updated and correct standards for surface water and groundwater are used to assess conditions at the site and that these corrected standards are listed in relevant site documents.

Response: Region VII concurs with this recommendation. Region 7 has made arrangements with the Wheeling Potentially Responsible Party group to perform a review of performance standards to ensure that the most current and appropriate standards are used in the annual monitoring program for the Wheeling Disposal site. This review is planned for early 2011 and will be completed by June 30, 2011.

Recommendation 2 – Require that the reporting limits for all analyses are at or below the applicable standards to ensure that all contamination above the standards is properly analyzed by the laboratory.

Response: Region VII concurs with this recommendation. This task will be performed as part of the performance standards review scheduled for early 2011 and will be completed by June 30, 2011.

Recommendation 3 – Document in an addendum to the 2009 Five-Year Review that iron, aluminum, and any other compounds exceeding applicable standards are controlled at the site.

Response: Region VII concurs with this recommendation. An addendum to the 2009 Five-Year Review will be completed by September 30, 2011.

Recommendation 4 – Complete an ecological risk assessment to determine whether changes to the remedy are necessary; and, if so, amend or generate new site documents, including the Record of Decision, to ensure the site is protective of the environment.

Response: Region VII concurs with this recommendation. Region 7 completed a Screening Level Ecological Risk Assessment (SLERA) for the Wheeling Disposal site on October 13, 2010. The result of the SLERA is that the remedy for the site is protective of the environment, and no changes to the remedy are necessary. Therefore, a further ecological risk assessment is not necessary.

EPA looks forward to receiving your final report. Should you have any questions concerning this response, please contact DeAndre Singletary, Chief, Missouri/Kansas Remedial Branch at (913) 551-7373, or Kathy Finazzo, Regional Audit Follow-Up Coordinator, at (913) 551-7833.

Appendix D

Distribution

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