

FIVE-YEAR REVIEW REPORT FOR BETTER BRITE PLATING COMPANY CHROME AND ZINC SHOPS SUPERFUND SITE DE PERE, BROWN COUNTY, WISCONSIN



Prepared by

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Date

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LIST OF ACRONYMS

A	RAR	Applicable or Relevant and Appropriate Requirement
A	VOC	Administrative Order on Consent
C	^D	Consent Decree
C	CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C	CFR	Code of Federal Regulations
C	CIC	Community Involvement Coordinator
C	COC	Contaminant of Concern
E	PA ·	United States Environmental Protection Agency
E	S	Enforcement Standard
F	YR	Five-Year Review
G	SIS	Geographic Information System
Ι	Cs	Institutional Controls
I	CIAP	Institutional Control Implementation Assurance Plan
N	ICP	National Contingency Plan
N	IPL	National Priorities List
0	ЖМ	Operation and Maintenance
P	AL	Preventive Action Limit
Р	COR	Preliminary Close Out Report
P	PB	Parts Per Billion
Р	RP	Potentially Responsible Party
R	AO	Remedial Action Objectives
R	AS	Remedial Action Standard
R	OD	Record of Decision
	PM	Remedial Project Manager
	JU/UE	Unlimited Use/Unrestricted Exposure
	'OC	Volatile Organic Compound
	VAC	Wisconsin Administrative Code
Ŋ	VDNR	Wisconsin Department of Natural Resources

EXECUTIVE SUMMARY

This is the fourth Five-Year Review (FYR) for the Better Brite Plating Company Chrome and Zinc Shops Superfund Site (the Better Brite Site) located in the City of De Pere, Brown County, Wisconsin. The purpose of this FYR is to review information to determine if the remedy is and will continue to be protective of human health and the environment. The triggering action for this statutory FYR was the signing of the previous FYR on November 20, 2009.

The Better Brite Site consists of 2 separate properties: The Better Brite Zinc Shop and the Better Brite Chrome Shop. These two properties were listed as one site on the National Priorities List (NPL) August 30, 1990 (Federal Register 35502 - 35512 / Vol. 55, No. 169) due to similarities in contaminants, site history, and ownership. The primary contaminant of concern (COC) remaining above the Remedial Action Standard (RAS) at each location is hexavalent chromium.

The imminent public health threats were addressed between 1980 and 1995 through Wisconsin Department of Natural Resources (WDNR) enforcement actions and United States Environmental Protection Agency (EPA) removal actions. These resulted in the disposal of all containerized waste, contaminated debris, and contaminated soil; construction of fencing; placement of clean soil over the remaining contaminated soil; and construction and operation of a groundwater extraction and treatment system.

EPA issued an interim Record of Decision (ROD) in 1991 that required the following:

- Expand the operation of the treatment facility in order to meet the pretreatment standards set by the City of De Pere's publicly owned treatment works.
- Improve surface water drainage and modify the groundwater collection system to prevent contamination leaving the area.
- Secure the site with fencing and siding material to prevent contact with contaminated soil and debris.
- Install monitoring wells to serve as an early detection system for a nearby municipal well and monitor potential contamination within the deep aquifer.

The ROD for the final remedial action was signed on September 24, 1996. This ROD added the following requirements:

- Extract and treat groundwater from the sump at the Zinc Shop.
- Relocate the treatment plant from the Chrome Shop to the Zinc Shop.
- Stabilize hexavalent chromium in soil and groundwater to prevent further migration.
- Construct new exterior foundation drains at two properties near the Zinc Shop and pump collected water to the treatment facility.
- Continue groundwater monitoring at the Chrome Shop and the Zinc Shop to evaluate the effectiveness of the remedial action.
- Implementation of Institutional Controls (ICs) and site access restrictions.

The Better Brite Site remedy currently protects human health and the environment in the short term. The groundwater extraction and treatment system began operating at the Zinc Shop in November of 1999, and is maintained by WDNR. A Preliminary Closeout Report (PCOR) for the Site was signed in February 2000. The Grant Street Municipal well, located 250 feet northwest of the Zinc Shop, has been abandoned and the City of De Pere now draws its drinking

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water from Lake Michigan. Groundwater quality and public health concerns are regularly assessed at both the Zinc and Chrome Shop properties. The groundwater plume is controlled by the extraction system at the Zinc Shop, and groundwater monitoring indicates exposure risks to neighboring property owners are within limits established under Wisconsin Administrative Code NR140 Enforcement Standards (ESs) and Preventive Action Limits (PALs) at both the Zinc and Chrome Shop properties. Soil stabilization at the Chrome Shop appears to have lowered the concentrations of hexavalent chromium significantly, and the primary COC remaining above the RAS at the Better Brite Site is hexavalent chromium. WDNR will conduct environmental monitoring and operate the groundwater extraction and treatment system at the Zinc Shop until RASs are achieved. Further, ICs are in place to aid in achieving short-term protectiveness. In order for the remedy to be protective in the long term, the following actions should be taken: a review of the ICs is needed to ensure that the remedy continues to function as intended and that effective procedures are in place for long-term stewardship of the Better Brite Site. An Institutional Control Implementation Assurance Plan (ICIAP) or equivalent document should be prepared and implemented.

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Five-Year Review Summary Form

	SITE	DENTIFICATION		· · · ·					
Site Name: Better B	Site Name: Better Brite Plating Company Chrome and Zinc Shops								
EPA ID: WIT560010118									
Region: 5	State: Wisconsin	City/County: De	e Pere/Brown						
	S	ITE STATUS	· · · · · · · · · · · · · · · · · · ·						
NPL Status: Final		·							
Multiple OUs? Yes	Has the Yes	e site achieved cons	struction completion	?					
	RE	IEW STATUS							
Lead agency: EPA									
Author name (Federal o	or State Project Ma	nager): William Ry	yan .						
Author affiliation: U.S.	EPA Region 5, SFI) · ·							
Review period: 6/1/2014	- 11/20/2014								
Date of site inspection:	8/20/2014								
Type of review: Statutor	у								
Review number: 4									
Triggering action date:	11/20/2009								
Due date (five years afte	r triggering action a	late): 11/20/2014							

Five-Year Review Summary Form (continued)

OU(s): OU1,	Issue Category: In	nstitutional Contro	ols			
<i>OU2</i>	Issue: A review of the ICs is needed to ensure that the remedy continues to function as intended and that effective procedures are in place for long-term stewardship of the Better Brite Site.					
	Recommendation: Prepare and implement an ICIAP or equivodocument to ensure long-term stewardship.	r equivalent				
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date		
No	Yes	EPA	EPA	11/30/2016		

OU(s): OU1,	Issue Category: Remedy PerformanceIssue: Concern about effectiveness of stabilization treatment and off-site migration of hexavalent chromium contaminated groundwater at the Chrome Shop.Recommendation: Further evaluate the effectiveness of the soil stabilization and the potential for off-site migration of hexavalent chromium contaminated groundwater at the Chrome Shop.					
OU2						
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date		
No	Yes	EPA/State	EPA/State	11/30/2016		

OU(s): OU1,	Issue Category: Monitoring						
OU2	Issue: Concerns about groundwater sampling procedures.						
	Recommendation: Evaluate whether it is possible to collect groundwater samples using a low-flow sampling procedure and the advisability of field filtration.						
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date			
No	Yes	EPA/State	EPA/State	11/30/2016			

Protectiveness Determination: Short-term Protective

Protectiveness Statement:

The Better Brite Site remedy currently protects human health and the environment in the short term. The groundwater extraction and treatment system began operating at the Zinc Shop in November of 1999, and is maintained by WDNR. A Preliminary Closeout Report (PCOR) for the Site was signed in February 2000. The Grant Street Municipal well, located 250 feet northwest of the Zinc Shop, has been abandoned and the City of De Pere now draws its drinking water from Lake Michigan. Groundwater quality and public health concerns are regularly assessed at both the Zinc and Chrome Shop properties. The groundwater plume is controlled by the extraction system at the Zinc Shop, and groundwater monitoring indicates exposure risks to neighboring property owners are within limits established under Wisconsin Administrative Code NR140 Enforcement Standards (ESs) and Preventive Action Limits (PALs) at both the Zinc and Chrome Shop properties. Soil stabilization at the Chrome Shop appears to have lowered the concentrations of hexavalent chromium significantly, and the primary COC remaining above the RAS at the Better Brite Site is hexavalent chromium. WDNR will conduct environmental monitoring and operate the groundwater extraction and treatment system at the Zinc Shop until RASs are achieved. Further, ICs are in place to aid in achieving short-term protectiveness. In order for the remedy to be protective in the long term, the following actions should be taken: a review of the ICs is needed to ensure that the remedy continues to function as intended and that effective procedures are in place for long-term stewardship of the Better Brite Site. An Institutional Control Implementation Assurance Plan (ICIAP) or equivalent document should be prepared and implemented.

I. INTRODUCTION

The purpose of a FYR is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA 121 states:

"If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."

EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

"If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action."

EPA conducted a FYR on the remedy implemented at the Better Brite Site in De Pere, Brown County, Wisconsin. EPA and WDNR are the lead agencies for developing and implementing the remedy for the Site. WDNR has reviewed all supporting documentation and provided input to EPA during the FYR process.

This is the fourth FYR for the Better Brite Site. The triggering action for this statutory review is the date of the previous FYR. The FYR is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for Unlimited Use and Unrestricted Exposure (UU/UE). The Site comprises two Operable Units (OUs), both of which are addressed in this FYR. Implementation of the 1991 interim ROD and the 1996 final ROD were treated as separate OUs for administrative purposes.

II. PROGRESS SINCE THE LAST REVIEW

OU #	Protectiveness Determination	Protectiveness Statement
1 and 2 (sitewide)	Short-term Protective	 The remedy currently protects human health and the environment because the removal and remedial actions addressed risks from soils and from groundwater recharge of building sumps, the soil cover is being maintained, groundwater monitoring is ongoing, the aquifer affected is low in permeability, and there are no longer any groundwater users in the vicinity of the site. However, in order for the remedy to be protective in the long-term, the following actions need to be taken: At the Zinc Shop: 1) implement measures to maximize the groundwater removal rate; 2) install additional water level monitoring points; 3) perform a capture zone evaluation correlating capture zone to removal rates; 4) submit accurate monitoring reports containing adequate information to interpret groundwater data; and, 5) add more off-site, downgradient monitoring well locations, if needed;
		 At the Chrome Shop, further evaluate the effectiveness of the soil stabilization and the potential for off-site migration of hexavalent chromium contaminated groundwater; Evaluate whether it is possible to collect groundwater samples using a low-flow sampling procedure, and the advisability of field filtration; Add measurement of field parameters to future sampling events, and add analysis of cyanide and some metals to future comprehensive sampling events; and, Evaluate whether restrictive covenants are necessary on properties not owned by the City and, if so, pursue restrictive covenants on these properties.

Table 1: Protectiveness Determinations/Statements from the 2009 FYR

Table 2: Status of Recommendations from the 2009 FYR

OU #	Issue -	Recommendations/ Follow-up Actions	Party Responsible	Oversight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
1 and 2	Operational	At the Zinc Shop:	WDNR	EPA	12/30/11	See	1) Completed in
(sitewide)	and capture	1) implement measures to		1		below	2011
	zone problems at	maximize the					2) Considered but
	the Zinc	groundwater					not implemented
	Shop	removal rate; 2)					
		install additional					3) Considered but
		water level					not implemented
		monitoring points;					
		3) perform a capture zone			-		4) Completed in 2010
		evaluation			•	-	2010
		correlating capture	-				5) Considered but
		zone to removal					not implemented
		rates; 4) submit					_
		accurate monitoring					
		reports containing					
		adequate information to					
		interpret					
		groundwater data;					

		and 5) add more off-site, downgradient monitoring well locations, if needed.					
1 and 2 (sitewide)	Concern about effectiveness of stabilization treatment and off-site migration of the hexavalent chromium contaminated groundwater	At the Chrome Shop, further evaluate the effectiveness of the soil stabilization and the potential for off-site migration of hexavalent chromium contaminated groundwater.	WDNR	EPA	12/30/10	See below	Ongoing
	at the Chrome Shop	- -	-		-		· · ·
1 and 2 (sitewide)	Concerns about groundwater	Evaluate whether it is possible to collect groundwater	WDNR	ЕРА	12/30/10	See below	Under discussion
	sampling procedures.	samples using a low-flow sampling procedure and the advisability of field filtration.					
1 and 2 (sitewide)	Lack of monitoring for cyanide, some metals, and field parameters	Add measurement of field parameters to future sampling events, and add analysis of cyanide and some metals to future comprehensive sampling events.	WDNR	EPA	12/30/10	See below	Cyanide was added to the list of analytical parameters for the Zinc Shop sump in August 2010.
1 and 2 (sitewide)	Contamina- tion extends beyond properties covered by the restrictive covenant.	Evaluate whether restrictive covenants are necessary on affected properties not owned by the City, and, if so, pursue restrictive covenants on these properties.	WDNR	EPA	12/30/10	See below	Under discussion

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Status of Recommendation 1

The 1996 ROD did not require an "active" pump and treat system using extraction wells, but instead relies on passive sumps to capture contaminated groundwater. The Zinc Shop groundwater removal and treatment system was upgraded in 2011 by adding a telemetry system, which provides a consistent way

to determine when there is enough water in the system to treat a batch of contaminated groundwater efficiently. WDNR has determined that additional wells are not warranted at this time, because increased efficiency has improved hydraulic control of the contaminant plume and contaminant concentrations are stable or decreasing at all monitoring points. A groundwater capture zone evaluation was also considered but has not been completed due to the stable or receding contaminant trends and the more effective groundwater removal. A new groundwater sampling contractor was also selected in 2007.

Status of Recommendation 2

Groundwater Contamination above the enforcement standard is still present within the area of soil stabilization. Nevertheless, contaminant concentrations have been significantly reduced compared to historical groundwater concentrations within the soil stabilization area. Additional groundwater extraction events will be performed at the Chrome Shop using a vac-truck to remove contaminated groundwater from the source monitoring well (MW116). Downgradient monitoring wells continue to show no signs of plume migration. Further evaluation of the effectiveness of soil stabilization and the potential for off-site migration of hexavalent chromium contaminated groundwater is ongoing.

Status of Recommendation 3

Both a bailer and low flow sampling techniques were used to collect samples from the monitoring well at the Chrome Shop. Similar results using either of the two sampling techniques indicates that the sampling method does not impact the analytical results. WDNR has determined that field filtration for hexavalent chromium is not advisable. Discussions regarding whether it is possible to collect groundwater samples using a low-flow sampling procedure and the advisability of field filtration are ongoing.

Status of Recommendation 4

Additional metals and VOCs have been added to the sampling schedule. Dissolved hexavalent chromium continues to drive the cleanup. WDNR has determined that field parameters are not required for evaluation of the effectiveness of the remedial action at this time. Cyanide was added to the list of analytical parameters for the Zinc Shop sump in August 2010.

Status of Recommendation 5

An agreement has been worked out with the City of De Pere. If construction permits are issued in the general area of either site, the WDNR will be notified.

Remedy Implementation Activities

A summary of previous remedial implementation activities is presented in Appendix A.

Institutional Controls

Institutional Controls are required to ensure the protectiveness of the remedy. ICs are non-engineered instruments, such as administrative and legal controls, that help to minimize the potential exposure to contamination and protect the integrity of the remedy. ICs are required to ensure long-term protectiveness for any areas that do not allow UU/UE. The 1996 ROD required that deed restrictions be

placed on the Zinc and Chrome Shop properties to prevent activities that could affect or disturb the effectiveness of the remedy, including future subsurface excavation and water well installation. Restrictive covenants have been recorded for properties owned by the City. A copy of the environmental protection easement and declaration of restrictive covenants is provided in Appendix B.

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)	
Soil/Groundwater	Ver	Ver	Chrome Shop area of soil treatment owned by City of De Pere	Restrict groundwater use,	• Municipal groundwater use restrictions (De Pere Municipal Code, Chapter 26)	
Soil/Groundwater	Yes	Yes	Chrome Shop area of soil treatment not owned by City of De Pere	soil excavation, and disturbing the cap.	• Well drilling restrictions (De Pere Municipal Code, Chapter 26 & Wisconsin Administrative Code NR# 812)	
Groundwater	Vac	Vas	Zinc Shop area of groundwater contamination owned by the City	Restrict	 Restrictive covenants filed with Brown County, April 2010 State of Wisconsin Continuing Obligation (CO), 	
Groundwater	Yes	Yes	Zinc Shop area of groundwater contamination not owned by the City	groundwater use.	 WDNR Geographic Information System (GIS) registry, April 2010. 	

Table 3: Summary of Planned and/or Implemented ICs

Status of Access Restrictions and ICs:

The City of De Pere assumed ownership of the Better Brite properties in 2001. City ownership and oversight by WDNR and EPA provide assurance that the remedial actions will be properly maintained, and that the contaminated areas will not be improperly developed in the future. The City has no plans to sell the Better Brite properties at this time. The portion of the Zinc Shop that is paved with asphalt is being leased by the City for parking. At this time, the City has no other plans for the Better Brite properties.

Continuing Obligations:

For the areas where the residual contamination that remains following a cleanup is above state standards, the State of Wisconsin will place a "continuing obligation" on the property. A CO is a legal requirement that applies to a property even after ownership changes. It helps ensure long-term protection of public health and the environment in accordance with state laws. Information on COs can be found at:

http://dnr.wi.gov/topic/brownfields/residual.html

WDNR provides searchable online databases on their GIS registry regarding COs for people purchasing land, governments planning redevelopment, businesses planning expansion, and well drillers. Information on the Chrome Shop can be found at:

http://dnrmaps.wi.gov/efiles/Ner/BROWN/02%20ERP/0205000030/0205000030.pdf

And information on the Zinc Shop can be found at:

http://dnrmaps.wi.gov/efiles/Ner/BROWN/02%20ERP/0205000031/0205000031.pdf

The City of De Pere's drinking water wells are no longer in operation, as the City now uses Lake Michigan water. The City of De Pere regulates all well construction, use, and abandonment within the city limits. Chapter 26 of the municipal code of De Pere includes the following requirements: if the building is adjacent to an installed water line, the owner is required to connect to the City water line; cross connections between City and private water supplies are prohibited; a permit is required for any well, constructed, installed, or maintained (the permit can be revoked if the well water is found to be contaminated); and, unused wells must be abandoned in accordance with Wisconsin Administrative Code (WAC) NR# 812. WAC 812 also prohibits installation of new wells within 1,200 feet of a hazardous waste treatment facility.

Deed restrictions have been filed on the affected properties owned by the City, a copy of which is provided in Appendix B. There are no plans to pursue restrictive covenants on affected properties that are not owned by the City, because City and WDNR regulations should be effective in preventing residential groundwater use, and an agreement between the City of De Pere and WDNR will ensure notification to WDNR should construction permits be issued in the general area of either site. The State of Wisconsin's CO and listing on WDNR's GIS registry provide an additional layer of protection for the Site.

Current Compliance:

Based on inspections and discussions with WDNR, EPA is not aware of Site or media uses which are inconsistent with the stated objectives to be achieved by the ICs. The remedy appears to be functioning as intended. No Site uses which are inconsistent with the implemented ICs or remedy IC objectives have been noted during the Site inspection.

IC Follow-up Actions Needed:

EPA will develop an ICIAP or equivalent document that will include IC evaluation activities and the development of long-term stewardship procedures. The IC evaluation activities will include, as needed,

updated maps depicting current conditions in areas that do not allow for UU/UE, and conducting title work to ensure no prior encumbrances exist on the Site that are inconsistent with the ICs.

Long-Term Stewardship:

Since compliance with ICs is necessary to assure the protectiveness of the remedy, planning for longterm stewardship is required to ensure that the ICs are maintained, monitored and enforced so that the remedy continues to function as intended. Long-term stewardship involves assuring effective procedures are in place to properly maintain and monitor the Site. The ICIAP will include procedures to ensure long-term stewardship such as regular inspection of the engineering controls and access controls at the Site and review of the ICs at the Site. The ICIAP should also include a requirement for an annual certification by WDNR to EPA that ICs are in place and effective. Finally, development of a communications plan and use of the State's one call system should be explored by WDNR.

System Operation/Operation and Maintenance Activities

EPA funded WDNR to perform remedy Operation and Maintenance (O&M) at the Better Brite Site under a cooperative agreement until July 18, 2011, after which WDNR became solely responsible for financing O&M. The 1996 ROD predicted annual O&M costs of approximately \$103,400. Current annual O&M costs are approximately \$30,000 per year. O&M at the Better Brite Site includes running the groundwater treatment plant, disposal of treatment byproducts, and annual groundwater sampling and analysis. There are currently no substantive problems with system operations or environmental monitoring.

HSI Geotrans, a WDNR contractor, prepared a Quality Assurance Project Plan for Groundwater Monitoring and a Remedial Action Documentation Report. Together these documents provide a plan for long-term monitoring, sampling, analysis, validation, health and safety, maintaining the grounds, and the content of monitoring reports. Until March 31, 2009, the City of De Pere was responsible for O&M of the Zinc Shop groundwater removal system under an agreement with WDNR. O&M was performed by City of De Pere wastewater treatment staff. In April 2009, Foth Infrastructure and Environment assumed responsibility for O&M under a contract with WDNR.

III. FIVE-YEAR REVIEW PROCESS

Administrative Components

The Better Brite Site Five-Year Review was led by Bill Ryan of the EPA, Remedial Project Manager (RPM) for the Site and Sue Pastor, the Community Involvement Coordinator (CIC). Keld Lauridsen, of the WDNR, assisted in the review as the representative for the support agency.

The review, which began on 12/9/2013, consisted of the following components:

- Community Involvement;
- Document Review;
- Data Review;
- Site Inspection; and
- Five-Year Review Report Development and Review.
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Community Notification and Involvement

Activities to involve the community in the FYR process were initiated with correspondence in January 2013 between the RPM and CIC for the Site. A notice was published in the De Pere Journal, on 3/5/2014, stating that there was a FYR and inviting the public to submit any comments to EPA. The results of the review and the report will be made available at the Site information repository located at the Brown County Library, Kress Family Branch, 333 N. Broadway, De Pere, Wisconsin.

Document Review

This FYR consisted of a review of relevant documents including O&M records and monitoring data, previous FYRs, remedial investigation reports, and decision documents. Applicable soil and groundwater cleanup standards, as listed in the September 24, 1996 ROD, were also reassessed.

Data Review

The primary COC remaining at the Better Brite Site above the RAS is hexavalent chromium (with a Wisconsin Administrative Code NR 140 PAL of 10 parts per billion (ppb)). Currently, monitoring wells MW115, MW115A, and MW116 are sampled at the Chrome Shop and monitoring wells MW3R, MW6, and the sump are sampled at the Zinc Shop on an annual basis. Additional wells are included as deemed necessary. The 2009 FYR concluded that WDNR's decision to reduce the frequency of hexavalent chromium and VOC monitoring is reasonable because the data have consistently indicated that the total chromium in groundwater is mostly if not all hexavalent chromium, and VOCs are not the focus of the remedy. Maps showing the location of these wells are provided in Appendix B. Wisconsin groundwater enforcement standard exceedances for hexavalent chromium remain at both locations. At the former chrome shop site (as of the most recent sampling in October 2014) the groundwater enforcement standard for hexavalent chromium was exceeded in monitoring well MW-116 (13000 ppb, down from a high of 54000 ppb in May 2005). At the former zinc shop site (as of the most recent sampling in October 2014) the groundwater enforcement standard for hexavalent chromium was exceeded in monitoring wells MW3R (190 ppb, down from a high of 2800 ppb in June 2011), MW5 (1000 ppb, down from a high of 4900 ppb in May 2003) and MW6 (3300 ppb, down from a high of 47000 ppb in October 1994), and the sump (9600 ppb, down from a high of 144900 ppb in October 1994). The most recent summary of monitoring results, which includes historical results and a photographic survey of the monitoring wells, is provided in Appendix B.

Site Inspection

The Better Brite Site inspection was conducted on 8/20/2014. Bill Ryan, EPA, and Keld Lauridsen, WDNR, conducted the inspection. The purpose of the inspection was to assess the protectiveness of the remedy.

The inspection team examined the groundwater extraction and treatment system at 315 S. Sixth Street and the overall condition of the Better Brite Site. The site inspection identified nothing out of the ordinary. The following photos demonstrate that the soil cap is generally well maintained and the Better Brite Site is accessible by authorized personnel for operation and maintenance of critical infrastructure:

Aerial Photo of 519 Lande Street



Street View of 519 Lande Street



Aerial Photo of 315 S. Sixth Street



Street View of the treatment plant at 315 S. Sixth Street



Interviews

No interviews were conducted for this FYR due to lack of community interest.

IV. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

YES—The Site inspection and current review of data, documents, Applicable or Relevant and Appropriate Requirements (ARARs), and risk assumptions, indicate that the remedy is functioning as intended by the ROD. The only COC remaining above the RAS at the Better Brite Site is hexavalent chromium, and soil stabilization at the Chrome Shop appears to have lowered the concentrations of hexavalent chromium significantly. System operations appear effective and costs remain significantly below predictions from the 1996 ROD. Access controls (fencing) at the Site are no longer necessary, because all potential routes of exposure to contaminated soil have been eliminated. Restrictive covenants placed on property owned by the City of De Pere, and State and local controls on the installation of water supply wells and the uninformed transfer of affected property, prevent risks from residential groundwater use. An ICIAP or an equivalent document should be developed to ensure that long term stewardship procedures are developed and implemented so that ICs are properly maintained, monitored, and enforced.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy section still valid?

YES—The exposure assumptions used to assess Site risks included both current exposures and potential future exposures. There have been no changes in the toxicity factors for the COCs that were used in the baseline risk assessment. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No changes to these assumptions or the cleanup levels developed from them are warranted, and there has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

NO—No new ecological risks have been identified, there have been no impacts from natural disasters, and no other information has come to light that could affect the protectiveness of the remedy.

Technical Assessment Summary

The remedy is currently functioning as intended by the decision documents. The exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy section are still valid. No other information has come to light that could call into question the protectiveness of the remedy.

V. ISSUES/RECOMMENDATIONS AND FOLLOW-UP ACTIONS

O U #	195110	Recommendations/			Milestone	Affects Protectiveness? (Y/N)	
		Follow-up Actions	Responsible	Agency	Date	Current	Future
OU1, OU2	A review of the ICs is needed to ensure that the remedy continues to function as intended and that effective procedures are in place for long- term stewardship of the Better Brite Site.	Prepare and implement an ICIAP or equivalent document to ensure long-term stewardship.	EPA	EPA	11/30/2016	No	Yes
OU1, OU2	Concern about effectiveness of stabilization treatment and off- site migration of the hexavalent chromium contaminated groundwater at the Chrome Shop	Further evaluate the effectiveness of the soil stabilization and the potential for off-site migration of hexavalent chromium contaminated groundwater at the Chrome Shop	EPA/State	EPA/State	11/30/2016	No	Yes

Table 4: Issues and Recommendations/Follow-up Actions

OU #	Issue	Recommendations/	Party	Oversight	Milestone	Affects Protectiveness (Y/N)	
		Follow-up Actions	Responsible	Agency	Date	Current	Future
OU1, OU2	Concerns about groundwater sampling procedures	Evaluate whether it is possible to collect groundwater samples using a low-flow sampling procedure and the advisability of field filtration.	EPA/State	EPA/State	11/30/2016	No	Yes

VI. PROTECTIVENESS STATEMENT

OU 1 & 2 (Sitewide) Protectiveness Statement

Protectiveness Determination: Short-term Protective

Protectiveness Statement:

The Better Brite Site remedy currently protects human health and the environment in the short term. The groundwater extraction and treatment system began operating at the Zinc Shop in November of 1999, and is maintained by WDNR. A Preliminary Closeout Report (PCOR) for the Site was signed in February 2000. The Grant Street Municipal well, located 250 feet northwest of the Zinc Shop, has been abandoned and the City of De Pere now draws its drinking water from Lake Michigan. Groundwater quality and public health concerns are regularly assessed at both the Zinc and Chrome Shop properties. The groundwater plume is controlled by the extraction system at the Zinc Shop, and groundwater monitoring indicates exposure risks to neighboring property owners are within limits established under Wisconsin Administrative Code NR140 Enforcement Standards (ESs) and Preventive Action Limits (PALs) at both the Zinc and Chrome Shop properties. Soil stabilization at the Chrome Shop appears to have lowered the concentrations of hexavalent chromium significantly, and the primary COC remaining above the RAS at the Better Brite Site is hexavalent chromium. WDNR will conduct environmental monitoring and operate the groundwater extraction and treatment system at the Zinc Shop until RASs are achieved. Further, ICs are in place to aid in achieving short-term protectiveness. In order for the remedy to be protective in the long term, the following actions should be taken: a review of the ICs is needed to ensure that the remedy continues to function as intended and that effective procedures are in place for long-term stewardship of the Better Brite Site. An Institutional Control Implementation Assurance Plan (ICIAP) or equivalent document should be prepared and implemented.

VII. NEXT REVIEW

The next five-year review report for the Better Brite Site is required five years from the completion date of this review.

APPENDIX A – EXISTING SITE INFORMATION

A. SITE CHRONOLOGY

Table 1 Site Chronology

Event	Date
Initial discovery of problem or contamination	1979
Proposed for NPL	October 26, 1989
Final NPL listing	August 30, 1990
Fund-lead Removal actions	October 1986 and October 1993
State-lead Remedial Investigation/Feasibility Study completed	September 1995
Interim ROD signature	June 28, 1991
Final ROD signature	September 24, 1996
Remedial design complete	December 3, 1998
Superfund State Contract, Cooperative Agreement, or Federal Facility Agreement signature	July 16, 1991
On-site remedial action construction start	August 23, 1999
First five-year review	November 23, 1999
Construction completion date (EPA issued Preliminary Closeout Report)	February 8, 2000
Second five-year review	November 23, 2004
Third five-year review	November 20, 2009
Restrictive covenant filed with Brown County	April 2010

C. BACKGROUND

Physical Characteristics

The Better Brite Chrome and Zinc Shop properties are located at 519 Lande Street and 315 South Sixth Street, respectively. They are about 2,000 feet apart in the City of De Pere, Brown County, Wisconsin. The Chrome Shop property covers 3.7 acres and the Zinc Shop property covers 0.61 acres. Both are located in a mixed residential/commercial area situated approximately a quarter mile west of the Fox River. Several homes directly border both properties, with the nearest residence located across the street to the south of the Zinc Shop property. Approximately seven single-family residences are adjacent to the Chrome Shop property. Commercial operations nearby include a foundry on South Sixth Street, and a resale shop adjacent to the Zinc Shop.

Hydrology

The ground-water flow regime beneath both properties consists of three distinct water bearing units. These units include the following:

- The saturated thickness of the unconsolidated glacial deposits
- Shallow bedrock of the Ordovician-age Galena-Platteville aquifer
- Deep bedrock consisting of Ordovician and Cambrian-age sandstones

The glacial deposits in this area do not produce significant quantities of water and are not considered an aquifer, although some private wells use the unconsolidated glacial deposits, which consist primarily of low permeability clay, silty clay, and silty clay loam. The direction of regional ground-water flow in the glacial deposits is predominantly to the northeast toward the Fox River. Recharge occurs due to precipitation and is approximately three inches per year.

Water in the shallow bedrock Galena-Platteville aquifer is primarily derived from the overlying glacial deposits. Ground-water flow in the Galena-Platteville aquifer is generally towards the northeast. The Galena-Platteville aquifer is of little importance as an aquifer in this area, and work completed by the U.S.G.S. confirms that the Galena-Platteville unit functions as an aquitard in De Pere near the Better Brite Site. This unit is approximately 150 feet thick with minimal permeability and no fractures to allow groundwater movement in the vicinity of the Better Brite Site.

The deep bedrock sandstone aquifer underlying east-central Wisconsin is an important source of water for industry and municipalities. In Brown County, the sandstone aquifer is the principal source of water for many municipal and industrial supplies. The sandstone aquifer includes all sedimentary bedrock units below the top of the Ordovician St. Peter Sandstone, and that part of the Galena-Platteville aquifer.

Land and Resource Use

Land use in the vicinity of the Site is mixed residential/commercial and is expected to remain the same in the foreseeable future. According to the Final Design Report (HSI Geotrans, December 3, 1998), an estimated 46,000 people obtained drinking water from municipal wells within three miles of the Better Brite Site. The City of De Pere had six municipal wells, all screened in the deep sandstone aquifer, but the city now uses Lake Michigan water. One municipal well was located 250 feet northwest of the Zinc Shop, but is now abandoned. A 1991 door-to-door survey located five unused and two used private wells near the site, but these wells are now abandoned according to the City of De Pere. The private wells drew water from the dolomite or the sandstone formations.

History of Contamination

The Better Brite Plating Company began operations at the Zinc Shop in the late 1960s and was primarily engaged in plating 15- to 20-foot rollers for paper mills in the area. By 1978 chrome plating operations began at the Chrome Shop, and operations at the Zinc Shop were converted to zinc plating only. Vertical in-ground dip tanks were used for chromium plating operations. Known chemicals used include muriatic acid, sodium hypochlorite, degreasers containing VOCs, chromic acid, and sodium cyanide solutions.

Operational practices were poor. Numerous complaints from neighbors and employees regarding spills and dumping prompted initial investigations by WDNR in 1979. Limited site investigations and remedial efforts were conducted during the 1980s. The Better Brite Plating Company filed for bankruptcy protection and discontinued operations at the Chrome Shop in 1985, but operations continued at the Zinc Shop until 1989. Investigations found that the vertical tanks at the Chrome Shop had leaked between 20,000 and 60,000 gallons of chrome plating solution while the plant was in operation. Early investigations discovered high concentrations of chromium, zinc, cadmium, and

cyanide in stored waste, surface water, and soil samples.

Initial Response

Chrome Shop

From 1979-1990, ongoing investigations and litigation by WDNR resulted in limited measures to remove or contain contamination. EPA prepared a response plan in 1979, which the Better Brite Plating Company implemented, including excavation of a groundwater collection trench, installation of surface water controls and groundwater monitoring wells, and limited soil removal. Groundwater from the collection trench was discharged to a City of De Pere sanitary sewer. Following the 1985 bankruptcy, the Site owner removed the Chrome Shop building, excavated a holding pond, and capped the building area with clay. In April 1986, EPA removed four subsurface plating tanks from the Chrome Shop property. In September 1986, EPA prepared a Site Assessment and Emergency Action Plan, which concluded that the Chrome Shop posed an immediate threat to human health. From September 1986 to April 1987, EPA completed actions that removed 83 tons of contaminated soil, 9,270 gallons of chromic acid, 3,600 gallons of caustic liquid, 550 gallons of cyanide solution, 150 pounds of cyanide sludge, and 500 gallons of flammable liquid.

The Better Brite Plating Company discontinued pumping from the collection trench in 1986. As a result, chromium contaminated surface water began collecting in nearby yards. As an interim measure in March 1988, EPA started pumping from the collection trench and discharging waste to the sanitary sewer. In 1990 EPA built a 2,000 gallon per day system to treat groundwater prior to discharging to the sanitary sewer, and initiated pumping from a recovery well in addition to the collection trench. In 1993 EPA replaced the recovery well and groundwater collection trench with an engineered groundwater collection sump.

In 1993, EPA excavated and removed approximately 10,000 tons of contaminated soil, concrete, and debris. Contaminated surface soil was excavated from the Chrome Shop property, and some from adjacent properties. A smaller area was excavated to a depth of 20 feet, where sampling indicated that soils outside of and below the excavated area were uncontaminated. The excavated area was subsequently filled with clean soil.

Zinc Shop

In October 1989, EPA performed a site assessment at the Zinc Shop. The assessment confirmed WDNR's discovery of contamination and illegally stored hazardous substances. Based on the results of the site assessment, EPA conducted a removal action that entailed sampling and sorting hazardous materials; securing, decontaminating, and heating the building; removing waste, and compiling the analytical results from previous investigations.

In 1990, EPA constructed a groundwater recovery sump along the east side of the building. Contaminated groundwater from the sump was trucked to the Chrome Shop for pretreatment. Approximately 350 cubic yards of chromium contaminated soil was excavated during installation of the sump. In 1991, EPA conducted additional decontamination of the building and investigated beneath the concrete slab foundation. The original sump was replaced with a larger sump following further excavation in 1993. Until the fall of 1999, contaminated groundwater was regularly extracted from the sump and trucked to the Chrome Shop for treatment.

The Zinc Shop burned down in September 1992. From November 1992 to January 1993, EPA removed the remains of the building, the slab foundation, and two 15-foot long vertical in-ground dip tanks. Contaminated soil was excavated from beneath the foundation until uncontaminated soil was reached. Approximately 6,032 tons of chromium contaminated soil, concrete, and building debris was removed from the site.

By August 1999 approximately 2,330,000 gallons of chromium-contaminated water had been removed from the Zinc Shop and Chrome Shop groundwater collection systems.

Basis for Taking Action

Hazardous substances have been released at the Better Brite Site. These substances include volatile organic compounds (VOCs), cyanide, and metals, especially chromium and hexavalent chromium. Exposure to soil and groundwater contaminated with these compounds in concentrations that exceed EPA's risk management criteria for either the average or reasonable maximum exposure scenarios is associated with significant human health risks. An ecological risk assessment was not conducted because this is primarily a groundwater remedy

D. REMEDIAL ACTIONS

Remedy Selection

On June 28, 1991, EPA issued an interim ROD that required expanding the operation of the treatment facility to meet the pretreatment standards set by the City of De Pere's publicly owned treatment works, improving surface water drainage and modifying the groundwater collection system to prevent contamination leaving the area, securing the site to prevent contact with contaminated soil and debris, and installing monitoring wells to protect a nearby municipal well and monitor potential contamination within the deep aquifer.

On September 24, 1996, EPA issued a ROD for the final remedial action at the Site. Remedial Action Objectives (RAOs) were developed for this Site to address groundwater and soil contamination. The RAOs listed in the ROD include protecting the bedrock aquifers and controlling the migration of contaminants in the short-term, and meeting state or federal groundwater quality standards (whichever are more stringent) in the long-term. The 1996 ROD Summary included an assessment of the remaining risks from groundwater contamination. EPA and WDNR concluded that Wisconsin Administrative Code NR140 ESs and PALs provide sufficient protection of public health for residential groundwater use. The RAS for all COCs at the Better Brite site is the PAL.

The major components of the remedy identified in the 1996 ROD include the following:

- Extraction and treatment of groundwater from the sump at the Zinc Shop.
- Relocation of the treatment plant from the Chrome Shop to the Zinc Shop.
- Stabilization of hexavalent chromium in soil and groundwater to prevent further migration.
- Construction of new exterior foundation drains at two properties near the Zinc Shop and pump collected water to the treatment facility.
- Continued groundwater monitoring at the Chrome Shop and the Zinc Shop to evaluate the effectiveness of the remedial action

• Deed restrictions placed on the Zinc and Chrome Shop properties to prevent activities that could affect the remedy, including subsurface excavation and water well installation

EPA and WDNR determined that hexavalent chromium was the primary contaminant of concern in groundwater at both the Zinc Shop and the Chrome Shop. A large percentage of the chromium was present in the form of hexavalent chromium—the most mobile and toxic form of chromium. The current RAS for hexavalent chromium is the Wisconsin Administrative Code NR140 PAL: 10 ppb.

Remedy Implementation

The remedial design, construction and O&M for the final ROD have been conducted by WDNR under a cooperative agreement with EPA. Sampling, treatability, design, and construction oversight were performed by HSI Geotrans under a contract with WDNR. WDNR selected RMT, Inc. to perform the construction. The sampling, treatability, and design work for the remedial actions are summarized in the Final Design Report.

Chrome Shop

Construction activities began at the Better Brite Site on August 23, 1999. The area with groundwater impacted by hexavalent chromium at the Chrome Shop was stabilized by adding a chemical reductant to the soil to a depth of 20 feet. Approximately 15,000 cubic yards of soil were treated. The mixing was performed primarily using a backhoe with a rototiller type attachment. The treated soil was field tested, then excavated, and stockpiled after field tests indicated that treatment was sufficient. Thirty-seven confirmation samples were collected from the treated soils and sent to a laboratory for testing using the Synthetic Precipitation Leaching Procedure, and some soil had to be further treated based on field or laboratory test results. After final treatment, all of the chromium leaching results were less than the PAL (10 ug/l). Soil stabilization at the Chrome Shop was completed on October 29, 1999.

The treated soils were deposited and compacted back into the excavation. The appearance of the Chrome Shop property was restored and the treated soil was protected from erosion and human contact by backfilling and grading in order to improve drainage, along with placement of topsoil, seeding and mulching. Approximately 1,080 cubic yards of topsoil were spread on the Chrome Shop to provide a four-inch cover over the stabilized soil and staging areas. The fence around the Chrome Shop was not replaced, and currently there is no fence at the Chrome Shop. Each monitoring well is protected by a locked steel casing.

Zinc Shop

Relocation and restart of the groundwater recovery and treatment system at the Zinc Shop was completed by the end of 1999. This included pumping groundwater from new exterior foundation drains at two nearby residences to the treatment system. Disturbed areas were restored and covered with four inches of top soil or four inches of crushed aggregate and asphalt paving. Approximately 2,100 square feet were paved, and 45 cubic yards of topsoil were spread. A fence was installed around the Zinc Shop sump, and treatment facilities were enclosed within a locked building, but no fence was installed around the Zinc Shop property. Monitoring wells are protected by a locked steel casing. The removal of hexavalent chromium contaminated groundwater and subsequent pretreatment prior to discharge to the sanitary sewer is ongoing at the Zinc Shop.

APPENDIX B

Additional Maps, Restrictive covenants filed with Brown County,

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and Recent Groundwater Sampling Data

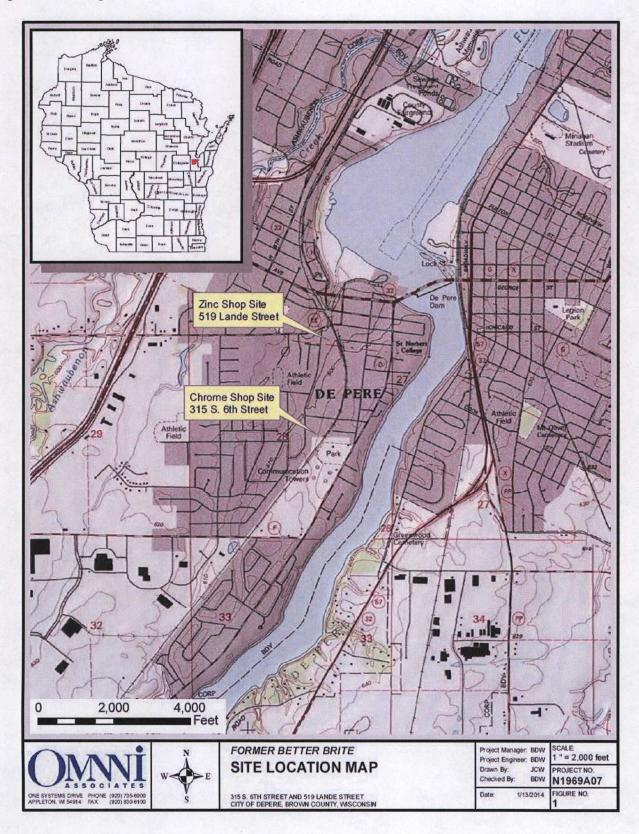
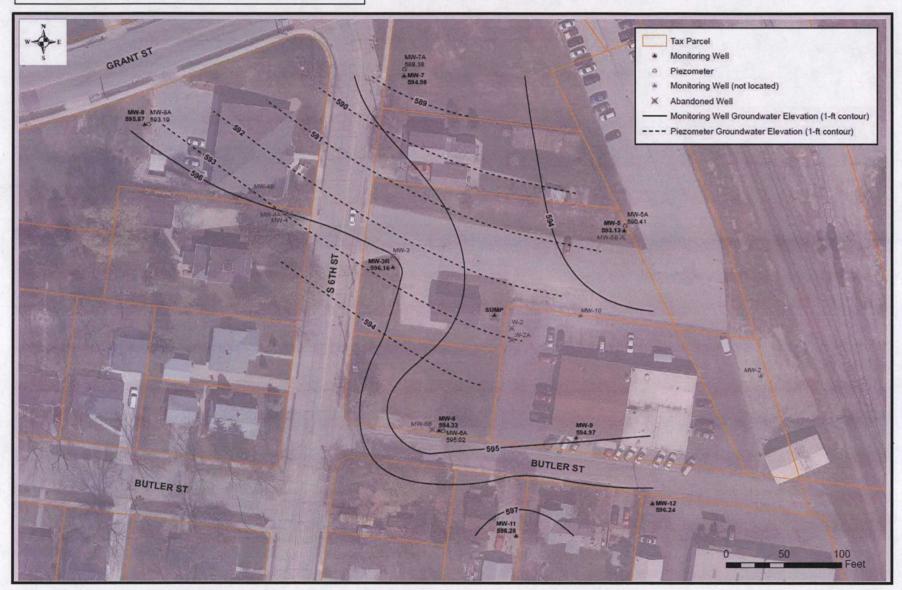


Figure 2: Groundwater Elevation Map—Zinc Shop



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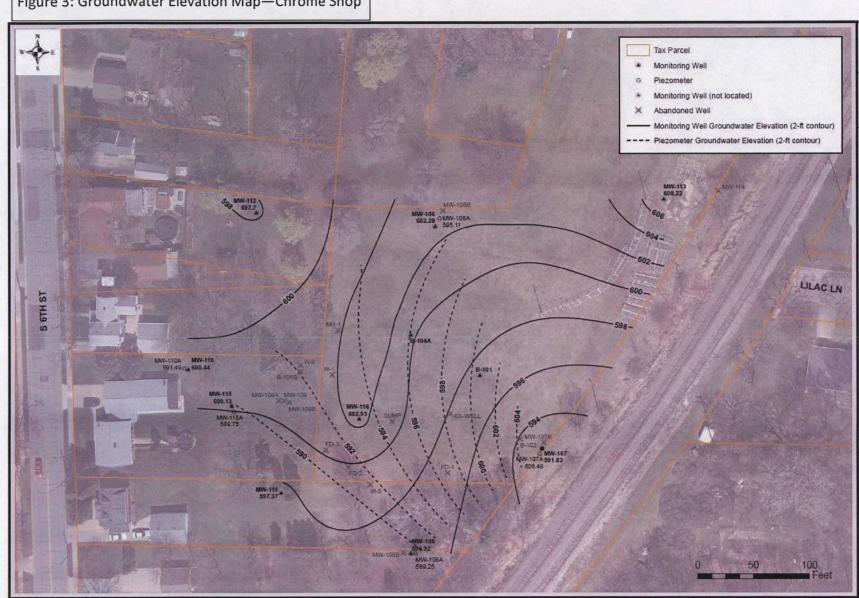


Figure 3: Groundwater Elevation Map—Chrome Shop

ENVIRONMENTAL PROTECTION EASEMENT AND DECLARATION OF RESTRICTIVE COVENANTS

1. This Environmental Protection Easement and Declaration of Restrictive Covenants is made this **B** day of March, 2010, by and between the City of DePere, Wisconsin, ("Grantor"), having an address of 335 S. Broadway Street, DePere, WI, and Wisconsin Department of Natural Resources ("Grantee"), having an address of 101 South Webster Street, Madison, WI. Grantee, Wisconsin Department of Natural Resources, is acquiring this interest pursuant to \$292.31 Wis. Stat. The Grantor and Grantee intend that the provisions of this Environmental Protection Easement and Declaration of Restrictive Covenants also be for the benefit of the United States, a third party beneficiary.

WITNESSETH:

2. WHEREAS, Grantor is the owner of two parcels of land located in the County of Brown, State of Wisconsin, more particularly described on Exhibit A attached hereto and made a part hereof (the "Property"); and

3. WHEREAS, the Property comprises the Better Brite Superfund Site ("Site"), which the U.S. Environmental Protection Agency ("EPA"), pursuant to Section 105 of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. § 9605, placed on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on August 30, 1990; and

4. WHEREAS, in a Record of Decision dated September 24, 1996 (the "ROD"), the EPA Region 5 Regional Administrator selected a "remedial action" for the Site, which provides, in part, for the following actions: Extraction of groundwater at Zinc Shop; Relocation of treatment plant from Chrome Shop to Zinc Shop; Stabilization of hexavalent chromium in soil; Construction of new external foundation drains at two (2) properties near the Zinc Shop with collected water pumped to the pretreatment facility at the Zinc Shop; and, continued groundwater monitoring at the Chrome Shop and the Zinc Shop (Exhibit C). With the exception of postremedial groundwater monitoring, the remedial action has been implemented at the Site; and

5. WHEREAS, the parties to this document, wishing to achieve necessary postremedial environmental institutional controls, agree that this document will provide for: 1) a grant of a right of access over the Property to the Grantee for purposes of implementing, facilitating and monitoring the remedial action until such time as EPA/WDNR determine that no monitoring of any media within the Site is required; and 2) to impose on the Property use restrictions as covenants that will run with the land for purpose of protecting human health and the environment until such time as EPA/WDNR determine that no monitoring of any media within the Site is required; and

 WHEREAS, Grantor has cooperated fully with the Grantee in the implementation of all response actions at the Site and wishes to continue to do so.

NOW, THEREFORE:

7. <u>Grant</u>: Grantor, on behalf of itself, its successors and assigns, in consideration of the remedial action performed pursuant to the September 1996 ROD and 2004 CERCLA Fiveyear Review Report (a copy of which is available in the DePere Branch of the Brown County Public Library), does hereby covenant and declare that the Property shall be subject to the restrictions on use set forth below for so long as continued monitoring is required, and does give, grant and convey to the Grantee, and its assigns, with general warranties of title, 1) the right to enforce said use restrictions, and 2) an environmental protection easement of the nature and character, and for the purposes hereinafter set forth, with respect to the Property, that will run with the land for the purpose of protecting human health and the environment until such time as EPA/WDNR determine that no monitoring of any media within the Site is required.

8. <u>Purpose</u>: It is the purpose of this instrument to convey to the Grantee real property rights, which will run with the land, to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to contaminants. It is also the purpose of this instrument that the EPA as Third Party Beneficiary shall have the right to enforce the terms of this instrument.

9. <u>Third Party Beneficiary:</u> Grantor on behalf of itself and its successors, transferees and assigns and the Grantee on behalf of itself and its successors, transferees, and assigns hereby agree that the United States and its successors and assigns shall be the Third Party Beneficiary under this instrument.

10. <u>Restrictions on use</u>: The following covenants, conditions, and restrictions apply to the use of the Property, run with the land for the benefit of the Grantee and the EPA as Third Party Beneficiary and are binding upon the Grantor including its successors, transferees, assigns or other person acquiring an interest in the Property and their authorized agents, employees, or persons acting under their direction and control, for the purpose of protecting human health and the environment until such time as EPA/WDNR determine that no monitoring of any media within the Site is required: a) To prohibit use of groundwater for consumptive or other uses

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without prior approval of WDNR and EPA on the Property; b) To prohibit excavation of soils or disturbance of the cap in the Chrome and Zinc shop areas of the Site (Exhibit D); and, c) to prohibit the following activities on the cap or cover in Exhibit E (unless prior written approval has been obtained from the WDNR or its successor or assign): (i) excavating or grading of the land surface; (ii) filling on the capped area; (iii) plowing for agricultural cultivation; and (iv) construction or installation of a building or other structure with a foundation that would sit on or be placed within the cap or cover in the Chrome and Zinc shop areas.

11. <u>Modification of restrictions:</u> Any request for modification or rescission of this instrument shall be made to the Grantee and the EPA at the addresses provided in Section 21 of this instrument. This instrument may be modified or rescinded only with the written approval of the EPA Superfund Division Director and the Director of the WDNR. Grantor on behalf of its successors, transferees, assigns or other person acquiring an interest in the Property agrees to record any EPA approved and WDNR approved modification to or rescission of this instrument with the Brown County Register of Deeds and a recorded copy shall be returned to the EPA and the WDNR at the addresses provided in Section 21 of this instrument.

12. <u>Environmental Protection Easement</u>: Grantor hereby grants to the Grantee for its use a right of access at all reasonable times to the Property for purposes of protecting human health and the environment until such time as EPA/WDNR determine that no monitoring of any media within the Site is required:

- a) Implementing the response actions in the ROD;
- b) Verifying any data or information submitted to EPA concerning the property or Site:
- c) Verifying that no action is being taken on the Property in violation of the terms of this instrument or of any federal or state environmental laws or regulations;
- Monitoring response actions on the Site and conducting investigations relating to contamination on or near the Site, including, without limitation, sampling of air, water, sediments, soils, and specifically, without limitation, obtaining split or duplicate samples;
- Conducting periodic reviews of the remedial action, including but not limited to, reviews required by applicable statutes and/or regulations; and
- f) Implementing additional or new response actions that either the Grantee or the U.S. EPA determine i) are necessary to protect the public health or the environment because either the original remedial action has proven to be ineffective or because new technology has been developed which will accomplish the purposes of the remedial action in a significantly more efficient or cost effective manner, and ii)

such additional or new response actions will not impose any significantly greater burden on the Property or unduly interfere with the then existing uses of the Property.

13. <u>Reserved rights of Grantor</u>: Grantor hereby reserves unto itself, its successors, and assigns, all rights and privileges in and to the use of the Property which are not incompatible with the restrictions, rights and easements granted herein.

14. <u>EPA Entry. Access and Response Authority</u>: The Grantor and Grantee consent to officers, employees, contractors, and authorized representatives of the EPA entering and having continued access to this property for the purposes described in paragraph 12. Nothing in this document shall limit or otherwise affect EPA's rights of entry and access pursuant to any and all powers conveyed by applicable federal or state environmental laws and regulations or EPA's authority to take response actions under CERCLA, the NCP, or other federal law.

15. <u>No Public Access and Use:</u> No right of access or use by the general public to any portion of the Property is conveyed by this instrument.

16. <u>Notice requirement</u>: Grantor agrees to include in any instrument conveying any interest in any portion of the Property, executed after the date of this instrument, including but not limited to deeds, leases and mortgages, a notice which is in substantially the following form:

NOTICE: THE INTEREST CONVEYED HEREBY IS SUBJECT TO AN ENVIRONMENTAL PROTECTION EASEMENT AND DECLARATION OF RESTRICTIVE COVENANTS, DATED , 20_, RECORDED IN THE PUBLIC LAND RECORDS OF THE BROWN COUNTY REGISTER OF DEEDS, ON _____, 20__, IN BOOK

_____, PAGE _____, IN FAVOR OF, AND ENFORCEABLE BY THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES AS GRANTEE AND THE UNITED STATES OF AMERICA AS THIRD PARTY BENEFICIARY.

Within thirty (30) days of the date any such instrument of conveyance is executed, Grantor must provide Grantee with a recorded copy of said instrument.

17. <u>Administrative jurisdiction</u>: The federal agency having administrative jurisdiction over the interests acquired by the United States by this instrument is the EPA. The WDNR has administrative jurisdiction over the interests acquired by this instrument.

18. <u>Enforcement</u>: The Grantee and the EPA, shall be entitled to enforce, individually or jointly, the terms of this instrument by all legal remedies available, including specific performance or other legal process. All remedies available hereunder shall be in addition to any and all other

remedies at law or in equity, including CERCLA. Enforcement of the terms of this instrument shall be at the discretion of the Grantee or the EPA, and any forbearance, delay or omission to exercise enforcement rights shall not be deemed to be a waiver by the Grantee or the EPA of the same or any other term, or of any other rights of the Grantee or the EPA, under this instrument.

19. <u>Damages</u>: Grantee and EPA shall be entitled to recover damages for violations of the terms of this instrument, or for any injury to the remedial action, to the public or to the environment protected by this instrument.

20. <u>Covenants</u>: Grantor hereby covenants to and with the Grantee and the United States and its assigns, that the Grantor is lawfully seized in fee simple of the Property, that the Grantor has a good and lawful right and power to sell and convey it or any interest therein, that the Property is free and clear of encumbrances, except those noted on **Exhibit B** attached hereto, and that the Grantor will warrant and defend the title thereto.

21. <u>Notices</u>: Any notice, demand, request, consent, approval, or communication that either party desires or is required to give to the other shall be in writing and shall either be served personally or sent by first class mail, postage prepaid, addressed as follows:

To Grantor:

To Grantee:

City Clerk-Treasurer 335 S. Broadway Street DePere, WI 54115 Director, Bureau of Remediation and Redevelopment Wisconsin Department of Natural Resources 101 South Webster Street Madison, WI 53707-7921

To Third Party Beneficiary:

U.S. Environmental Protection Agency Region 5 Administrator 77 West Jackson Boulevard Chicago, IL 60604

22. <u>General provisions</u>:

a) <u>Controlling law</u>: The interpretation and performance of this instrument shall be governed by the laws of the United States or, if there are no applicable federal laws, by the law of the state of Wisconsin.

b) <u>Liberal construction</u>: If any provision of this instrument is found to be ambiguous, an interpretation consistent with the purpose of this instrument that would render the provision valid shall be favored over any interpretation that would render it invalid. c) <u>Severability</u>: If any provision of this instrument is found to be invalid, the remainder of the provisions of this instrument shall not be affected thereby.

d) <u>Entire Agreement</u>: This instrument sets forth the entire agreement of the parties with respect to rights and restrictions created hereby, and supersedes all prior discussions, negotiations, understandings, or agreements relating thereto, all of which are merged herein.

 e) <u>No Forfeiture</u>: Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

f) Successors: The covenants, terms, conditions, and restrictions of this instrument shall be binding upon, and inure to the benefit of the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall continue as a servitude running with the Property for purposes of protecting human health and the environment until such time as EPA/WDNR determine that no monitoring of any media within the Site is required. The term "Grantor", wherever used herein, and any pronouns used in place thereof, shall include the personal representatives, heirs, successors, and assigns. The term "Grantee", wherever used herein, and any pronouns used in place thereof, shall include the personal representatives, heirs, successors, and assigns. The term "Grantee", wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantor" and their personal representatives, heirs, successors, and assigns. The term "Grantee", wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as "Grantee" and their personal representatives, heirs, successors, and assigns. The rights of the Grantee and Grantor under this instrument are freely assignable, subject to the notice provisions hereof. However, the rights of the Grantee may be assigned only to a governmental entity with authority to assume the rights and obligations of that Grantee.

g) <u>Termination of Rights and Obligations</u>: A party's rights and obligations under this instrument terminate upon transfer of the party's interest in the Easement or Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

h) <u>Captions</u>: The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

i) <u>Counterparts</u>: The parties may execute this instrument in two or more counterparts, which shall, in the aggregate, be signed by both parties; each counterpart shall be deemed an original instrument as against any party who has signed it. In the event of any disparity between the counterparts produced, the recorded counterpart shall be controlling. To Have And To Hold So Long As WDNR/EPA Determine That Monitoring Of Media Inside The Site Is Necessary For The Protection Of Human Health And The Environment.

IN WITNESS WHEREOF, Grantor has caused this Agreement to be signed in its name.

Executed this 30 anualy 2016. day of

CITY OF DE PERE Michael J. Walso, Mayor

lite hartene M ina Charlene M. Peterson, Clerk- Treasurer

STATE OF WISCONSIN))SS.

BROWN COUNTY

personally came before me this <u>as</u> day on twn, 2010, 1 4 Charlene Fiterson the abovenamed What Will known as the person(s) who executed the for and acknowledge the same. ADTAR UBLIC Notery Public, Unitar L. Bistor My Commission Expires: 9-26-18

Drafted by: Jedith Schmidt Jehman

This Environmental Protection Easement and Declaration of Restrictive Covenants is accepted this 18th day of <u>Ilenh</u>, 2010.

STATE OF WISCONSIN WISCONSIN DEPT. OF NATURAL RESOURCES By: the Matthew J. Frank

Secretary

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DANE COUNTEY OF WISCONTEY OF WISCONTEY OF WISCONTEY OF WISCONTEY OF WISCONTEX and acknowledge the same.

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Notary Public Ervina Kaberach My Commission Expires: LA felw Margarit

STATE OF WISCONSIN) C- 0 .

	Attachments:	Exhibit A	-	legal description(s) of the Property
-		Exhibit B	-	list of recorded title encumbrances (Title Search)
	· ·	Exhibit C	-	Groundwater monitoring wells and ground water pump and treat system
		Exhibit D	-	Zinc and Chrome Shop Areas - prohibit disturbance of Soils
		Exhibit E	-	Survey of Cap Area

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EXHIBIT A TO

ENVIRONMENTAL PROTECTION EASEMENT AND DECLARATION OF RESTRICTIVE COVENANTS

LR NO. 57231 Page 3 of 3

Exhibit A

LEGAL DESCRIPTION:

A parcel of land being part of Lot One Hundred Sixty-seven (167), according to the recorded Assessor's Plat of West De Pere (f/k/a Assessor's Plat of Nicolet), in the City of De Pere, Brown County, Wisconsin, described as follows:

Beginning at the intersection of the West line of the right of way of the Wisconsin Central Limited Railroad Company and the South right of way line of Lande Street; thence along the arc of a 2775.99 foot radius eurive to the West right of way line of the Wisconsin Central Limited Railroad Company on a chord which bears South 32 deg. 52 min. 30 sec. West and is 553.14 feet in length to the South line of Lot 167; thence North 87 deg. 25 min. 18 sec. West, 187.67 feet along said South line to the West line of said Lot 167; thence North 06 deg. 11 min. 23 sec. East, 250.51 feet along said West line; thence South 87 deg. 26 min. 46 sec. East, 155.90 feet; thence North 19 deg. 54 min. 46 sec. East (recorded as North 19 deg. 53 min. 30 sec. East), 262.95 feet to a point on the North line of Lot 167; thence South 81 deg. 14 min. 00 sec. East, 217.96 feet to the point of beginning.

(Better Brite - Chrome) EXMBIT A

Falling Strains

LR NO. 57230 Page 3 of 3

Exhibit A

LEGAL DESCRIPTION:

. . .

The Northerly 42 feet of the Southerly 120 feet of the Westerly 131 feet of Lot One Hundred Twenty (120); and the Southerly 33 2/3 feet of Lot One Hundred Seventeen (117) and the Northerly 55 1/3 feet of Lot 120; all according to the recorded Plat of Assessor's Subdivision of Lands in Nicolet, in the City of De Pere, West side of Fox River, Brown County, Wisconsin.

(Better Brite - Zinc) EXMIBIT A

EXHIBIT B TO

ENVIRONMENTAL PROTECTION EASEMENT AND DECLARATION OF RESTRICTIVE COVENANTS

Bay Title & Abstract, Inc.

345 S. Monroe Avenue Green Bay, WI 54301 Phone: (920) 431-6100

LETTER REPORT

Attn: Penny Hubbard Greene

LR NO. 61926

A Search of the records in the office of the BROWN County Register of Deeds, BROWN County Clerk of Courts and BROWN County Treasurer was conducted on the following:

TRACT DATE: 11/2/2009 12:01:00AM

ADDRESS: 315 S. Sixth Street De Pere, WI 54115

TITLE VESTS;

City of De Pere by virtue of a Quit Claim Deed dated April 11, 2001 and recorded April 11, 2001 as Doc. No. 1805129.

MORTGAGES:

No open mortgages of record.

JUDGMENTS, TAX LIENS AND /OR CONSTRUCTION LIENS:

None of record.

TAX PARCEL NO. WD-103-1

PROPERTY TAXES;

NOTE: The 2008 Real Estate Taxes are EXEMPT.

LR NO. 61926 Page 2 of 3

The Undersigned hereby certifies that this report is compiled from the public records of the county in which the property described herein is located. Liability herein is expressly limited to the cost of this report. No liability is assumed for facts not shown in detail. This report is not to be used as evidence of title in lieu of a certified abstract or title insurance.

Certification is only made from the date present owners received title to the tract date stated herein.

No search has been made for special improvement bonds, special assessments, deferred charges for public works, easements or encroachments.

.

Thank you for the opportunity to serve your title needs.

Sincerely,

BAY CT, INC TIT

LR NO. 61926 Page 3 of 3

Exhibit A

LEGAL DESCRIPTION:

The Northerly 42 feet of the Southerly 120 feet of the Westerly 131 feet of Lot One Hundred Twenty (120); and the Southerly 33 2/3 feet of Lot One Hundred Seventeen (117) and the Northerly 65 1/3 feet of Lot 120; all according to the recorded Plat of Assessor's Subdivision of Lands in Nicolet, in the City of De Pere, West side of Fox River, Brown County, Wisconsin.



Bay Title & Abstract, Inc.

345 S. Monroe Avenue Green Bay, WI 54301 Phone: (920) 431-6100

LETTER REPORT

Attn: Keld Lauridsen Wisconsin Dept. of Natural Resources

LR NO. 57230

A Search of the records in the office of the BROWN County Register of Deeds, BROWN County Clerk of Courts and BROWN County Treasurer was conducted on the following:

TRACT DATE: 5/22/2007 12:01:00AM

ADDRESS: 315 S. Sixth Street De Pere, WI 54115

TITLE VESTS:

City of De Pere by virtue of a Quit Claim Deed dated April 11, 2001 and recorded April 11, 2001 as Doc. No. 1805129.

MORTGAGES:

No open mortgages of record.

No Easements or Restrictions found.

JUDGMENTS, TAX LIENS AND /OR CONSTRUCTION LIENS:

None of record.

TAX PARCEL NO. WD-103-1

PROPERTY TAXES:

NOTE: The 2006 Real Estate Taxes are EXEMPT.

LR NO. 57230 Page 2 of 3

The Undersigned hereby certifies that this report is compiled from the public records of the county in which the property described herein is located. Liability herein is expressly limited to the cost of this report. No liability is assumed for facts not shown in detail. This report is not to be used as evidence of title in lieu of a certified abstract or title insurance.

Certification is only made from the date present owners received title to the tract date stated herein.

No search has been made for special improvement bonds, special assessments, deferred charges for public works, easements or encroachments.

Thank you for the opportunity to serve your title needs.

Sincerely,

BAY TITLE & ABSTRACT, C

LR NO. 57230 Page 3 of 3

Exhibit A

LEGAL DESCRIPTION:

The Northerly 42 feet of the Southerly 120 feet of the Westerly 131 feet of Lot One Hundred Twenty (120); and the Southerly 33 2/3 feet of Lot One Hundred Seventeen (117) and the Northerly 65 1/3 feet of Lot 120; all according to the recorded Plat of Assessor's Subdivision of Lands in Nicolet, in the City of De Pere, West side of Fox River, Brown County, Wisconsin.

INVOICE



345 SOUTH MONROE AVENUE GREEN BAY, WI 54301 (920) 431-6100

INVOICE NUMBER: B57230-IN

INVOICE DATE: 05/31/07

CUSTOMER NO .: WDNR

INVOICE TOTAL:

AMOUNT

150.00

150.00

Wis. Dept. of Natural Resource PO Box 10448 Green Bay, WI 54307

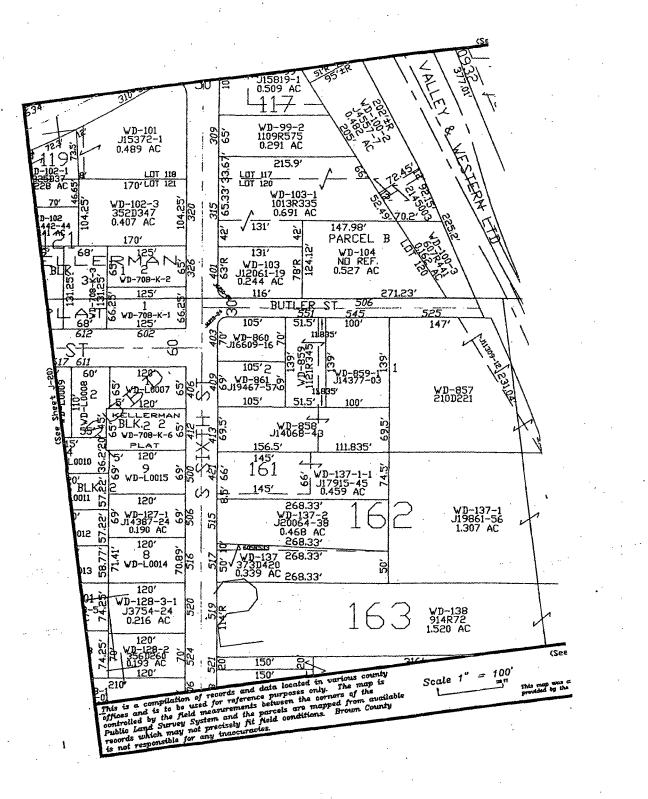
Attn: Keld Lauridsen DESCRIPTION

PROPERTY REPORT

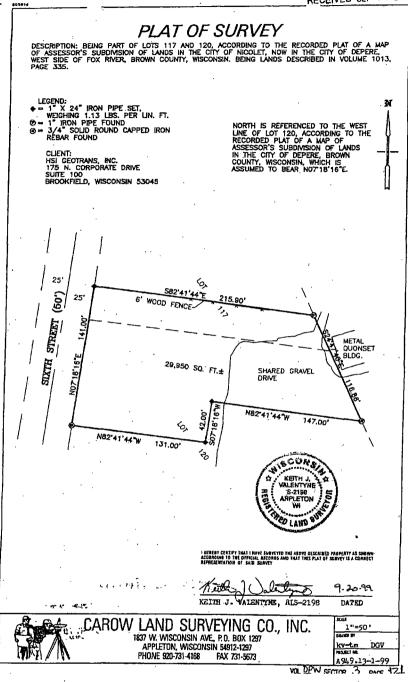
City of De Pere 315 S. Sixth Street Tax Parcel #WD-103-1

THANK YOU FOR YOUR ORDER WE APPRECIATE YOUR BUSINESS

i



RECEIVED SEP 1 5 2000



ENGINEERING ARCHITECTURE ENVIRONMENTAL PLANNING



OMNNI ASSOCIATES, INC. ONE SYSTEMS DRIVE APPLETON, WI 54914-1654 TEL: 920-735-6900

October 21, 2014

Mr. Keld Lauridsen Hydrogeologist/Project Manager WDNR-Northeast Region RR 2984 Shawano Avenue Green Bay, WI 54313-6727

RE: Summary of the October 16, 2014 groundwater sampling events at the former Better Brite Chrome and Zinc Shops.

Dear Keld:

The purpose of this letter report is to summarize the groundwater sampling events conducted on October 16, 2014 at the former Better Brite chrome and zinc shops. The former Better Brite facilities are located at 519 Lande Street (chrome shop, BRRTS # 02-05-000030) and 315 S. 6th Street (zinc shop, BRRTS # 02-05-000031), De Pere, Wisconsin. (See Figure 1 – Site Location Map.) This report includes:

- Figure 1 Site Location Map
- Figure 2 Monitoring Wells Chrome Site
- Figure 3 Monitoring Wells Zinc Site
- Well Specific Field Sheet
- Table 1 Groundwater Analytical Summary, Better Brite Chrome Shop
- Table 2 Groundwater Analytical Summary, Better Brite Zinc Shop
- Monitoring Well Photograph Summary
- Laboratory Report

Groundwater elevations were only taken at the monitoring points that were sampled. Groundwater elevations were recorded on the well specific field sheets. (See Well Specific Field Sheets.) Monitoring well MW115 had water inside the flushmount cover, almost to the top of the PVC pipe. The level of water in the flushmount cover was reduced prior to removing the J-plug. During purging, the water in the flushmount cover drained as the water in the well was removed. Although the water within the well was drawn down during purging, the well recovered rather quickly. Standing water was not observed around MW115; however, there was standing water on other areas of the site and the ground appeared saturated around MW115. The groundwater elevation at monitoring well MW115 should be considered suspect, since observations prior to and during purging indicated that surface water may be able to enter the well, bypassing the bentonite seal. Mr. Keld Lauridsen Page 2 of 2

The monitoring well covers were inspected at all monitoring points that could be located during the sampling event. The conditions of the covers were noted on the well specific field sheets and photographs of the covers were taken. (See Well Specific Field Sheets and Monitoring Well Photograph Summary.)

Color, odor, and turbidity observations were recorded on a well specific field sheet. The well specific field sheet also lists the measured depth to water from the top of the PVC pipe, mean sea level groundwater elevation, the length of time spent purging and the approximate gallons of groundwater purged from each monitoring well/piezometer prior to taking the groundwater sample. (See Well Specific Field Sheets.)

Purged groundwater from the monitoring wells and piezometers was collected in 5-gallon buckets. The purged groundwater was placed into the sump in the treatment building located at the former zinc shop site for treatment.

Unfiltered groundwater samples collected from the monitoring wells and zinc shop sump were submitted for laboratory hexavalent chromium analysis. Unfiltered groundwater from the zinc shop sump was also analyzed for cyanide. Groundwater analytical methods are included with the laboratory report. (See Laboratory Report.) The laboratory analysis has been summarized in Table 1 and Table 2. (See Table 1 – Groundwater Analytical Summary, Better Brite – Chrome Shop and Table 2 - Groundwater Analytical Summary, Better Brite – Zinc Shop.)

In general, results of the laboratory analysis were similar when compared to the recent sampling events. Groundwater enforcement standard exceedances for hexavalent chromium remain at both locations. At the former chrome shop site, the hexavalent chromium groundwater enforcement standard exceedance remains in MW-116. At the former zinc shop site, the hexavalent chromium groundwater enforcement standard was exceeded in monitoring wells MW3R and MW6, and the sump.

If you have any questions on the enclosed information, please contact me at 920/830-6141 or by email at bwayner@omnni.com.

Sincerely, OMNNI Associates, Inc.

Brian & Warner Brian D. Wayner, P.E. Environmental Manager

Attachments

www.omnni.com





Well Specific Field Sheets

 Facility Name:
 Former Better Brite - Chrome Shop

 Date:
 October 16, 2014

 Weather Condition:
 Mostly cloudy with periods of light rain, 46° - 55° F. Light and variable wind becoming west southwest 5 to 7 mph.

 Person(s) Sampling:
 Brian Wayner, Kim Sellier

 Sampling Equipment:
 Dedicated bailers, Solonist 101 water level meter.

Well Name	B101	MW104A	MW106	MW106A	MW107	MW107A	MW108	MW108A	MW110	MW110A	MW111	MW112	MW13	MW115	MW115A	MW116
Top of PVC Casing Elevation (MSL)			606.21	606.36	608.41	608.33	604.22	604.44	603,05	603.31	600.76	600.61	611.08	601.04	601.01	604.28
Depth to Bottom of Well (ft)		18.30	14.65	32.09	No. Se	39.33	15.82	33.27	14.76	23.80	14.69	15.86	15.08	14.77	23.79	19.18
Water Elevation (MSL)	_	-	-	-	-	_		_	-	-	<u> </u>	_	_	600.94	590.50	603.51
Measured Depth to Water (ft)	-	-	-	-	-	-	-	1 	-	_	-	-	· —	0.10	10.51	0.77
Time Purging Begun		-	- 2	-	_	14 <u>-</u>	-	- 4	<u></u>		_	$ u_{i}-u_{i} \leq u_{i} $		11:22 AM	11:20 AM	10:37 AM
Time Purging Completed	-	_			- 1	_		_			- 11 - 11 - 11 - 11 - 11 - 11 - 11 - 1	_	_	11:35 AM	11:46 AM	10:50 AM
Amount Purged (gal)	-	_	_	-	_	-	-	<u> </u>	the states of the second	-		1 -	222	9.5	7.5	12
Purged Dry? (Y/N)	-	-	_	_	-		_	-	-	_		-	_	N	almost	N
Color (Y/N)	<u> </u>		-	-	-		-	_	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	-		\$ <u>_1</u>	_	N	N	Yellow
Odor (Y/N)				-	8. <u>–</u> 7.	18 <u>4</u> 61		and the second		-		_		N	N	N
Turbidity (Y/N)	_	-	-	-	-	-	_		-	-	_	-	-	N	N	N
Time Sample Withdrawn	_	19 <u>- 1</u> 82	10 <u>1</u> 2	_	_		_		_	19 - 19	_	_	19 <u> </u>	11:35 AM	11:46 AM	10:50 AM
Well secured? (Y/N)	-	-	-	-	-		<u>y</u> =		-	202 - 111	-	-	-	Y	Y	Y
Cover Condition	Cover in good condition. 2 bolts secure.	Cover in good condition. One of the bolts is snapped off.	Edge damage on the cover. 2 bolts secure.	Cover in good condition. 2 bolts secure.	Cover in good condition. 2 bolts secure.	Cover in good condition. 2 bolts secure.	Cover in good condition. 2 bolts secure.	Cover in good condition. 2 bolts secure.	Cover in good condition. 2 bolts secure.	Cover in good condition. 2 bolts secure.	Cover in good condition. 2 bolts secure.	Cover in good condition. 2 bolts secure.				

Well Specific Field Sheets

Facility Name: Former Better Brite - Zinc Shop

Date:

October 16, 2014

Weather Conditions: Mostly cloudy with periods of light rain, 46° - 55° F. Light and variable wind becoming west southwest 5 to 7 mph.

Person(s) Sampling: Brian Wayner, Kim Sellier

Sampling Equipment: Dedicated bailers, Solonist 101 water level meter.

Well Name	MW3R	MW5	MW5A	MW6	MW6A	MW7	MW7A	MW8	MW8A	MW9	MW11	MW12	Zinc Sump
Top of PVC Casing Elevation (MSL)	602.88	600.81	600.81	602.33	605.19	600.60	600.51	598.18	598.59	601.66	602.41	599.65	603.99
Depth to Bottom of Well (ft)	17.03	15.60	29.72	15.75	28.81	15.86	26.73	11.41	21.73	16.62	15.62	10.04	
Water Elevation (MSL)	599.20	-	-	594.25		-	-	_	_	-		-	-
Measured Depth to Water (ft)	3.68		-	8.08	_	1997 - 1997 1997 - 1997 1997 - 1997	<u> </u>	-	<u>1</u>	6.44	- -	_	18.55
Time Purging Begun	9:32 AM	19 - - 19 - 19		9:18 AM	_	-		_	-	8:20 AM	-	_	_
Time Purging Completed	10:02 AM		_	9:40 AM		-	_	-	_	8:37 AM	-	_	_
Amount Purged (gal)	7.8	1. - 1.	—	5	_		_	_	_	6.6		14 <u>-</u> 78	····
Purged Dry? (Y/N)	almost	-	-	N	-	-	_	-	-	almost	-	-	-
Color (Y/N)	N	_	-	N		_		- 1	_	N	_	_	Yellow tint
Odor (Y/N)	N	_	<u> - 1</u>	N	- 3	_	_	-	-	N	_		N
Turbidity (Y/N)	Slight	-	<u></u>	Slight	_		_	-		Y	_	_	N
Time Sample Withdrawn	10:02 AM	_	_	9:40 AM		_	-		_	8:37 AM	- -	_	9:01 AM
Well secured? (Y/N)	Y	_		Y		and a second second				Y		-	Y
Cover Condition	Cover in good condition. One of the bolts is snapped off.	Cover in good condition. 2 bolts secure.											

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1 - 6

1								1		Detecte	d Paramete	ers (µg/L)									
Sample Location	Date	Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide	Antimony	Arsenic	Cadmium	Cyanide	Nickel	Silver	Thallium	Cobait	Vanadium	1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE	VC
R140 Preventive	Action Limit	10	10	150	125,000	NO PAL	1.2	1	0.5	40	20	10	0.4	8	6	85	0.7	0.5	40	0.5	0.02
R140 Enforcemen	nt Standard	100	100	300	250,000	NO ES	6	10	5	· 200	100	50	2	40	30	850	7	5	200	5	0.2
	Aug-94	620000	694000	NA	NA	NA										1			<u>г </u> ,		
Chrome Sump	Oct-94	300200	297000	• NA	NA	NA	1														
(Abandoned)	Apr-98	195000	192000	NA	NA	NA	1		;												
	Jul-98	132000		NA	NA	NA															
	Aug-94	25800	22000	NA	NA	NA															
French Drain	Oct-94	32000	31700	NA	NA	NA	· 1														
- renun Drain	Apr-98	1060	1010	NA	NA	NA	·														
	Jul-98	336	312	NA	NA	NA] ·														
B-101	Aug-94	. <10	<3.4	NA	NA	NA]									1. A.					
D=101	Oct-94	<10		NA	NA	NA].								•						•
	Aug-94	7	<2.8	NA	NA	NA]			•											
	DÚP.	<10	<2.8	NA	NA	NA			•												
	Oct-94	<10 J	<3.4 J	NA	NA	NA]							•							
	DUP.	_ <10 J	<3.4 J	NA	NA	NA	1.														
MW-106	Apr-98	<10	<5 ·	NA	NA	NA	1														
	DUP	<10	<5	NA	NA	NA	1	•													
	May-00	<4.2	4	NA	NA	NA	-										•				
	8/26/10	<3,9	5,4	NA	NA	NA														• .	
	6/16/11	<3.9	NA .	NA	NA	NA	1									•					
	Aug-94	<10	<2.8	NA	NA	NA	I .								•				•	•	•
	Oct-94	<10 J	<3.4 J	NA	· NA	NA	4		•		•										
MW-106A	Apr-98	<10	<5	NA	NA	NA	4														
	May-00	<4.2	9.4	NA	NA	NA	-					^	· .		•				· ·		
	8/26/10	<3.9	1.1"J"	NA	NA	NA	4		•											•	
	6/16/11	<3.9	NA	NA	NA	NA	-										•	•			
MW-106B (Abandoned)	Aug-94	<10	NA	NA	NA	NA		•													
(Abandoned)	Aug-94	<10	4.1 BJ	NA	NA	NA			•												
	Oct-94	<10 J	<3.4	NA	NA	NA NA															
	Apr-98	<10 0	<5	NA	NA	NA	1														
	May-00	<4.2	4.2	NA	NA	NA	1								-						
	Jun-01	NA	1 NA	530	50	NA	1				·										
t t	Nov-01	<4.2	26	3900	NA	1800	.			· .											
	May-02	7.8	1.2	230	NA	2300	1								•						
MW-107	DUP	100	1.9	490	· NA	2800	1														
	Nov-02	NA	NA	8200	140000	2300	1						·								
	May-03	<4.2	1.6	490	95000	1700	1	•													
	May-04	6.5	1.7	260	100000	NA	1											· •			
l l	May-05	<5.0	0.89	380	97000	NA	1		•												
1	8/26/10	<3.9	16.4	4010	16400	NA	1														
1	6/16/11	<3.9	NA	3130	83600	NA	1														
	Aug-94	<10	<2.8	NA	NA	NA	1														
· · · ·	Oct-94	<10 J	<3.4 J	NA	NA	NA	1														
MAX 1070	Apr-98	<10	<5	NA	NA	NA	1			•											
MW-107A	May-00	<4.2	16	NA	NA	NA	1												•		
1	8/26/10	<3.9	23.2	NA	NA	NA	1														
. 1	6/16/11	<3.9	NA	NA	NA	NA	Í													•	
MW-107B			1		1		1.														
(Abandoned)	Aug-94	<10	NA	NA	NA	NA											1				
			· · · · ·		• • • • • • • • • • • • • • • • • • • •		•											•			

NA - Compound not analyzed Underlined - Concentration exceeds PAL Bolded - Concentration exceeds ES

						12.00				Detecte	d Paramet	ers (µg/L)									
	Date	Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide			Cadmium	Cyanide	Nickel	Silver	Thallium	Cobalt			1,1-DCE	PCE	1,1,1-TCA	TCE	VC
		10	10	150	125,000	NO PAL	1.2	1	0.5				0.4	-	6						
IR140 Enforcemen	nt Standard	100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.2
	Aug-94	<10	<2.8	NA	NA	NA															
	Oct-94	<10	<3.4 J	NA	NA	NA															
	Apr-98	<10	NA	NA	NA	NA															
MIN/-108	DUP	<10	<5	NA	NA	NA															
10100-100	Jul-09	NA	16.0	NA	NA	NA															
10.00	8/26/10	<3.9	4.6"J"	NA	NA	NA															
in the second second	6/16/11	<3.9	NA	NA	NA	NA	1.1.1														
	12/5/13	<3.4	NA	NA	NA	NA															
	Aug-94	<10	3.0 BJ	NA	NA	NA	Anna an														
1.200 2.11	Oct-94	<10	<3.4 J	NA	NA	NA															
	Apr-98	<10	<5	NA	NA	NA															
MIN 108A	May-00	<4.2	55	NA	NA	NA															
IVIV-TOOA	Jul-09	NA	NA	NA	NA	NA															
	8/26/10	<3.9	1.3"J"	NA	NA	NA															
	6/16/11	<3.9	1.3"J"	NA	NA	NA	1.640														
	12/5/13	<8.6	NA	NA	NA	NA															
MW-108B (Abandoned)	Aug-94	<10	NA	NA	NA	NA															
	Aug-94	6780	9570	NA	NA	NA															
	Oct-94	2400	1980	NA	NA	NA	1														
	DUP.	3100	1700	NA	NA	NA	1														
(Abandoned)	Apr-98	16500	18600	NA	NA	NA	1										1.1				
Chromium Chromium Iron Sulfate Sulfate Sulfate Sulfate Sulfate Nickel Silver Thallum Cobal Vanadum 1,1-CA PCE 1,1.1-TA TCE VC NR140 Ereventive Action Limit 10 10 150 125,000 NO PAL 1.2 1 0.5 40 20 10 0.4 8 6 85 0.7 0.5 40 0.5 0.02 Aug-94 <10																					
	Aug-94	<10	<2.8	NA	NA	NA	1.00														
MW-109A		<10	1.3 B	NA	NA	NA	1														
(Abandoned)	Apr-98	<10	<5	NA	NA	NA															
an second	Jul-98	<10	7	NA	NA	NA	1														
MW-109B	Aug-94	<10	NA	NA	NA	NA	1000														
(Abandoned)		<10	NA	NA	NA	NA	1														
	Aug-94	<10	3.6 BJ	NA	NA	NA															
		<10	<3.4 J	NA	NA	NA															
	Apr-98	<10	<5	NA	NA	NA															
	May-00	<4.2	37	NA	NA	NA															
1. 1. S. 1. S.		<2.5	11	3400	230000	NA															
A. 12.13		<5.0	0.89	82	70000	NA															
MW-110		<6.8	1.8	NA	NA	NA															
		NA	7.4	NA	NA	NA															
				NA	NA	NA	1														
					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.75	<0.57	<0.45	<0.9	<0.48	<0.1
1.										111	,			1							
							1														
2					-		1														

1. 1. 1. 1. 1. 1.				No.				-		Detecte	ed Paramet	ters (µg/L)	1. A. A.	9		a contra	6.25	-			
Sample Location	Date	Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide	Antimony				Nickel	Silver	Thallium	Cobalt	Vanadium		1,1-DCE	PCE	1,1,1-TCA	TCE	VC
R140 Preventive		10	10	150	125,000	NO PAL	1.2	1	0.5	40	20	10	0.4	8	6	85	0.7	0.5	40	0.5	0.02
R140 Enforcemen	nt Standard	100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.2
	Aug-94	<10	<2.8	NA	NA	NA															
	Oct-94	<10	<3.4 J	NA	NA	NA															
	Apr-98	<10	<5	NA	NA	NA															
	May-00	<4.2	25	NA	NA	NA															
MW-110A	Oct-06	<6.8	4.2	NA	NA	NA															
	8/21/07	NA	1.9	NA	NA	NA					244										
	7/21/09	NA	1.3	NA	NA	NA			1.5.5		94.1			199			1.21H N.		1.818		
	8/26/10	<3.9	1.8 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.75	<0.57	<0.45	<0.9	<0.48	<0.18
	6/16/11	<3.9	NA	NA	NA	NA										The seal				Stra 3	
	Aug-94	<10	<3.4	NA	NA	NA												1			
	DUP.	<10	<3.4	NA	NA	NA															
14.5	Oct-94	<10	<0.70	NA	NA	NA															
1000	Apr-98	226	<5	NA	NA	NA															
	Jul-98	22	27	NA	NA	NA															
and the second	Nov-98	<0.5	<0.5	NA	NA	NA															
98° L 2007	May-00	<4.2	36	NA	NA	NA															
Salara	Nov-02	<4.2	43	4400	<u>130000</u>	2600															
	DUP	<4.2	38	3400	100000	280															
	May-03	5.2	33	2700	98000	1400															
MW-111	May-04	50	150	5000	93000	NA															
	May-05	250	260	200	87000	NA															
and the second	Nov-05	<5.0	39	12000	98000	NA															
	DUP	<5.0	55	21000	96000	NA															
and the second second	Oct-06	<6.8	16	NA	NA	NA															
	8/21/07	NA	25	NA	NA	NA															
A. S. S. S. S.	7/21/09	NA	23.6	NA	NA	NA															
	8/26/10	<3.9	19.8	NA	NA	NA															
A State State	6/16/11	<3.9	NA	NA	NA	NA															
	10/24/11	<3.9	NA	NA	NA	NA															
	10/24/12	<3.9	NA	NA	NA	NA															
	12/5/13	<3.4	NA	NA	NA	NA															
The state of the	Oct-94	<10	<0.70	NA	NA	NA															
A TOP STORES	Nov-94	<10	<2.5	NA	NA	NA															
MW-112	Apr-98	<10	<5	NA	NA	NA															
	May-00	<4.2	4.1	NA	NA	NA															
Service 16	8/26/10	<3.9	3.9	NA	NA	NA															
	6/16/11	<3.9	NA	NA	NA	NA															
	Aug-94	140	<u>99.7</u>	NA	NA	NA															
C. 7. 1988	Oct-94	<10 J	8.6 B	NA	NA	NA															
ALC: NOT	May-95	43	20.3	NA	NA	NA															
MW-113	Apr-98	<10	<5	NA	NA	NA															
MIN-110	Jul-98	<10	12	NA	NA	NA															
CONTRACTS	May-00	<4.2	22	NA	NA	NA															
1	8/26/10	<3.9	24.3	NA	NA	NA															
	6/16/11	<3.9	NA	NA	NA	NA															

				1000	C. Service State	1	1. A. A. A.		4.25.5	Detecter	d Paramete	ers (µg/L)		1	No. Sector	10.000					
Sample Location	Date	Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide	Antimony	Arsenic	Cadmium	Cyanide	Nickel	Silver	Thallium	Cobalt	Vanadium	1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE	VC
R140 Preventive	Action Limit	10	10	150	125,000	NO PAL	1.2	1	0.5	40	20	10	0.4	8	6	85	0.7	0.5	40	0.5	0.02
R140 Enforceme	nt Standard	100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.2
1000	Mar-95	<10 J	<2.9	NA	NA	NA		1	1000		100	1.00	104 24	1.000	1 Barris					31-1-1-1	1.5.1
	DUP.	<10 J	<2.9	NA	NA	NA															
MW-114	May-95	<10 J	<1.0	NA	NA	NA															
(Abandoned)	DUP.	<10 J	<1.0	NA	NA	NA										1					
1.1.1	Apr-98	<10	<5	NA	NA	NA	1									1					
	May-00	<4.2	6.0	NA	NA	NA															
	Jun-01	<4.2	<0.52	160	92	NA	1														
	Nov-01	<4.2	12	1100	NA	3000		1													
	DUP	<4.2	10	3300	NA	3300															
6.11	May-02	<4.2	38	19000	NA	2800															
	Nov-02	<4.2	38	7000	130000	3100															
	May-03	<4.2	260	9700	90000	1400															
1.1.1.1.1.1.1.1	DUP	<4.2	56	3600	89000	1400															
	May-04	<2.5	1.3	130	34000	NA															
MW-115	May-05	<5.0	1.1	320	44000	NA															
	Oct-06	<6.8	2.6	NA	NA	NA															
	8/21/07	NA	10	NA	NA	NA								5-		1.000					
	7/21/09	NA	5.8	NA	NA	NA															
	8/26/10	<3.9	1.6 J	3530	24800	NA															
	6/16/11	<3.9	NA	4460	10000	NA															
	10/24/11	<3.9	NA	NA	NA	NA	1														
	10/24/12	<3.9	NA	NA	NA	NA		1.													
	12/5/13	<5.7	NA	NA	NA	NA		1													
	10/16/14	<3.9	NA	NA	NA	NA		1													
	May-00	<4.2	12.0	NA	NA	NA	1														
	Oct-06	<6.8	4.6	NA	NA	NA	1	1													
	8/21/07	NA	2.7	NA	NA	NA	1	1													
	7/21/09	NA	2.9	NA	NA	NA															
MW-115A	8/26/10	<3.9	1.4 J	NA	NA	NA															
Tool Street	6/16/11	<3.9	NA	NA	NA	NA	194														
	10/24/12	<3.9	NA	NA	NA	NA		1									2				
	12/5/13	<8.6	NA	NA	NA	NA															
	10/16/14		NA	NA	NA	NA	1														

					1.	- 4.			10. SU 1	Detecte	d Paramete	ers (µg/L)	(1.1							
Sample Location	Date	Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide	Antimony	Arsenic	Cadmium	Cyanide	Nickel	Silver	Thallium	Cobalt	Vanadium	1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE	VC
IR140 Preventive	Action Limit	10	10	150	125,000	NO PAL	1.2	1	0.5	40	20	10	0.4	8	6	85	0.7	0.5	40	0.5	0.02
IR140 Enforcemen	nt Standard	100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.2
	May-00	1600	470	NA	NA	NA	1	-	A. 23.								119.52	1	ALC: NOT	1.0	
	DUP.	1500	460	NA	NA	NA	1.5														
	Nov-00	37	23	NA	NA	NA															
	DUP	46	24	NA	NA	NA															
	Jun-01	4400	2300	840	2100	NA															
	Nov-01	3300	2100	690	NA	2400															
	May-02	12000	7300	530	NA	2500															
	Nov-02	5100	3200	720	20000	2900															
	May-03	8900	6000	410	2700000	1700															
	May-04	28000	22000	43	19000	NA															
	DUP	28000	22000	280	24000	NA															
	May-05	52000	52000	950	1900000	NA															
	DUP	54000	53000	710	1800000	NA															
MW-116	Nov-05	50000	61000	840	1800000	NA	232.00														
	Oct-06	39000	36000	900	1800000	NA															
15.57	DUP	42000	36000	NA	NA	NA															
	8/21/07	NA	39,000	NA	NA	NA															
	7/21/09	NA	25,500	NA	NA	NA															
	8/26/10	21,300	19,200	478	1330000	NA	162	2.4 J	0.43 J	NA	10.3	<0.46	<2.2	NA	NA	30.9	22.1	3.2	76.9	1.1	0.21 J
	8/26/10 LF	20,200	17,700	NA	NA	NA													1 1		1
	4/25/11	34,600	NA	NA	1030000	NA															
	6/16/11	13,800	NA	240	1660000	NA	3.4 "J"	NA	NA	NA	NA	NA	NA	NA	NA	28.1	25.9	1.2	84.1	2.2	<0.18
	10/24/11	18,300	NA	NA	NA	NA									1000	-			1		
	10/24/12	22,300	NA	NA	NA	NA															
	12/5/13	17,600	NA	NA	NA	NA															
	DUP	17,500	NA	NA	NA	NA															
	10/16/14	13,300	NA	NA	NA	NA															
CSTW1	4/25/11	<3.9	NA	NA	1,180,000	NA															
CSTW2	4/25/11	<3.9	NA	NA	2,840,000	NA															
CSTW3	4/25/11	1,000	NA	NA	2,010,000	NA															
CSTW4	4/25/11	<3.9	NA	NA	426,000	NA	1														
CSTW5	4/25/11	4.9 "J"	NA	NA	592,000	NA															
CSTW6	4/25/11	<3.9	NA	NA	608000	NA															

			W-CLARED.	S. Sauk		2480-191-19		AN AND	2	Detecter	d Paramete	ers (µg/L)	5-4-	9. P 1 - 61	61-400.00	1. 1. 1. 1.	A Martin P	0180			
Sample Location	Date	Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide	Antimony	Arsenic	Cadmium	Cyanide	Nickel	Silver	Thallium	Cobalt	Vanadium	1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE	VC
R140 Preventive	Action Limit	10	10	150	125,000	NO PAL	1.2	1	0.5	40	20	10	0.4	8	6	85	0.7	0.5	40	0.5	0.02
R140 Enforcemen	nt Standard	100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.2
	May-00	<4.2	7.6	NA	NA	NA		1						1312						122-182	14.1
	Jun-01	<4.2	7.1	NA	NA	NA															
PF-MW-2	Nov-01	<4.2	10	NA	NA	NA	1225-03														
(Not located)	May-02	<4.2	< 0.52	NA	NA	NA															
	Nov-02	<4.2	2.4	NA	NA	NA															
	May-03	<4.2	<u>49</u>	NA	NA	NA															
	May-00	230	330	NA	NA	NA															
and the second second	Nov-00	50	130	NA	NA	NA															
	Jun-01	3500	2200	NA	NA	NA															
	Nov-01	38	1700	NA	NA	NA	1														
	May-02	<4.2	220	NA	NA	NA				- 19											
a the second	Nov-02	<4.2	18	NA	NA	NA															
	May-03	110	55	NA	NA	NA	1.5.2.2														
	Dup	83	49	NA	NA	NA	ASP -														
MW-3/MW3R	May-04	89	190	NA	NA	NA															
1.5.5	May-05	<5.0	17	NA	NA	NA															
	7/21/09	NA	717	NA	NA	NA	1.00														
	8/24/10	660	552	NA	NA	NA	Carlos 1														
	6/28/11	2800	NA	NA	NA	NA															
1.00	10/24/11	2200	NA	NA	NA	NA															
	10/23/12	560	NA	NA	NA	NA															
	12/5/13	140	NA	NA	NA	NA															
	10/16/14	190	NA	NA	NA	NA															
	Aug-94	<10	<3.4	NA	NA	NA]														
	DUP	<10	<3.4	NA	NA	NA]														
	Oct-94	<10 J	<3.4 J	NA	NA	NA															
	DUP	<10 J	<3.4 J	NA	NA	NA															
S. 2	Apr-98	<10	<5	NA	NA	NA															
	May-00	<4.2	4.6	NA	NA	NA															
MW-4	Nov-00	<4.2	2.4	NA	NA	NA	1.0														
(Abandoned)	Jun-01	<4.2	12	NA	NA	NA															
(Abandoned)	Nov-01	<4.2	7.4	NA	NA	NA															
	May-02	<4.2	1.4	NA	NA	NA															
1. S.	Nov-02	<4.2	15	NA	NA	NA															
a second second	May-03	<4.2	27	NA	NA	NA	122														
	May-04	<2.5	1.8	NA	NA	NA	1000					20124									
	May-05	<5.0	9	NA	NA	NA															
CONCERNS OF	Nov-05	<5.0	12	NA	NA	NA	1														

				1.1						Detecte	d Paramete	ers (µg/L)		1			0.55			1000	-
ample Location	Date	Hexavalent	Chromium	Iron	Sulfate	Sulfide	Antimony	Arsenic	Cadmium	Cyanide	Nickel	Silver	Thallium	Cobalt	Vanadium	1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE	VC
140 Preventive	Action Limit	10	10	150	125,000	NO PAL	1.2	1	0.5	40	20	10	0.4	8	6	85	0.7	0.5	40	0.5	0.0
R140 Enforceme	ent Standard	100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.
	Aug-94	<10	<3.4	NA	NA	NA		1991				1.00	*			11.4.8	1999			122.00	
	Oct-94	<10 J	6.0 B	NA	NA	NA															
	Apr-98	<10	<5	NA	NA	NA]														
	May-00	<4.2	8.7	NA	NA	NA															
	Nov-00	<4.2	3.7	NA	NA	NA															
MW-4A	Jun-01	<4.2	3.7	NA	NA	NA															
Abandoned)	Nov-01	<4.2	13	NA	NA	NA															
Abundoneu)	May-02	<4.2	38	NA	NA	NA															
	Nov-02	<4.2	28	NA	NA	NA															
	May-03	<4.2	32	NA	NA	NA															
	May-04	<2.5	0.75	NA	NA	NA															
	May-05	<5.0	2	NA	NA	NA															
	Nov-05	<5.0	2.8	NA	NA	NA															
MW-4B	Oct-94	<10	<0.70	NA	NA	NA															
Abandoned)	Nov-94	<10	<2.5	NA	NA	NA															
	Aug-94	1590	827	NA	NA	NA															
	Oct-94	460 J	299 J	NA	NA	NA															
	DUP	510 J	763 J	NA	NA	NA															
	Apr-98	212	631	NA	NA	NA															
	DUP	207	667	NA	NA	NA															
	Jul-98	1420	1230	NA	NA	NA	74.1														
	May-00	120	190	NA	NA	NA	12.00														
	Nov-00	<4.2	6.6	NA	NA	NA															
	Jun-01	590	450	NA	NA	NA															
	Nov-02	2200	2200	NA	NA	NA															
MW-5	DUP	2200	2200	NA	NA	NA															
MIT O	May-03	4900	3600	NA	NA	NA															
	May-04	4700	3100	NA	NA	NA															
	May-05	4000	3200	NA	NA	NA															
	Oct-06	4900	4000	NA	NA	NA															
	8/21/07	NA	2,700	NA	NA	NA															
	7/21/09	NA	2,210	NA	NA	NA															
	8/24/10	1,300	1,180	NA	NA	NA															
	6/28/11	970	NA	NA	NA	NA															
	10/24/11	1,100	NA	NA	NA	NA															
	10/23/12	970	NA	NA	NA	NA															
	12/5/13	1000	NA	NA	NA	NA															

				1			Martin I.	1 State		Detected	d Paramete	ers (µg/L)				1				11091	14
Sample Location	Date	Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide	Antimony	Arsenic	Cadmium	Cyanide	Nickel	Silver	Thallium	Cobalt	Vanadium	1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE	VC
R140 Preventive	Action Limit	10	10	150	125,000	NO PAL	1.2	1	0.5	40	20	10	0.4	8	6	85	0.7	0.5	40	0.5	0.0
R140 Enforceme		100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.1
	Aug-94	<10	<3.4	NA	NA	NA			1.1.1.1		1		1 7						1 1	1.0	
	Oct-94	<10	<3.4 J	NA	NA	NA	a the														
	Apr-98	<10	<5	NA	NA	NA	1														
	May-00	<4.2	6.5	NA	NA	NA	A North														
	Nov-00	340	380	NA	NA	NA															
	Jun-01	<4.2	3.9	NA	NA	NA	調用な														
MW-5A	Nov-02	<4.2	34	NA	NA	NA	100														
	May-03	<4.2	22	NA	NA	NA															
	DUP	<4.2	49	NA	NA	NA															
	May-04	<2.5	2.7	NA	NA	NA	And and														
	May-05	<5.0	7.6	NA	NA	NA											-				
	8/24/10	<3.9	2.5"J"	NA	NA	NA	Sector Sector														
	6/28/11	<3.9	NA	NA	NA	NA															
MW-5B	Aug-94	NA	NA	NA	NA	NA															
(Abandoned)	Oct-94	<10	<5	NA	NA	NA	1.1.1														
	Aug-94	15900	39200	NA	NA	NA															
	Oct-94	47000	41,900 J	NA	NA	NA	5-24														
	Apr-98	7650	4560	NA	NA	NA															
	May-00	23000	26000	NA	NA	NA															
	Nov-00	26000	23000	NA	NA	NA	19								1.11						
	Jun-01	14000	15000	NA	NA	NA															
	Nov-01	25000	29000	NA	NA	NA															
	May-02	13000	13000	NA	NA	NA															
	Nov-02	21000	22000	NA	NA	NA															
	May-03	11000	9300	NA	NA	NA															
	May-04	13000	15000	NA	NA	NA															
MW-6	May-05	12000	11000	NA	NA	NA															
	DUP	12000	11000	NA	NA	NA	19-11														
	Oct-06	12000	12000	NA	NA	NA															
	DUP	14000	12000	NA	NA	NA															
	8/21/07	NA	8,900	NA	NA	NA	1 2 2 .														
	7/21/09	NA	10,400	NA	NA	NA															
	8/24/10	8400	7,540	NA	NA	NA	-														
	6/28/11	5200	NA	NA	NA	NA															
	10/24/11	6,500	NA	NA	NA	NA															
	10/23/12	7,300	NA	NA	NA	NA	1011														
	12/5/13	6,100	NA	NA	NA	NA															
	10/16/14	3,300	NA	NA	NA	NA	1.1.1														

						14 19 19	C 110 2 1	1. 7. 2.		Detecte	d Paramete	ers (µq/L)		-	11111						-
		Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide	Antimony	Arsenic	Cadmium	Cyanide	Nickel	Silver	Thallium	Cobalt	Vanadium	1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE	VC
							1.2	1			20	10	0.4	8	6	85	0.7	0.5	40	0.5	
140 Enforceme	ent Standard	100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.2
	Aug-94	<10	4.9 B	NA	NA	NA															
	Oct-94	<10	<3.4 J	NA	NA	NA															
Image: constant Image: constant Nume Num																					
	May-00	6.6	22																		
	Nov-00	<4.2	13	NA		NA															
	6/01	<4.2	11	NA	NA	NA															
MM/-64	Nov-01	<4.2	7.1	NA	NA	NA															
NIN-OA	May-02	<4.2	51	NA	NA	NA															
	Nov-02	<4.2	83		NA	NA															
	May-03	<4.2	59	NA	NA	NA															
	May-04	<2.5	3.4	NA	NA	NA	1.78														
	May-05	<5.0	12	NA	NA	NA															
	8/24/10	<3.9	1.7"J"	NA	NA	NA															
	6/28/11	<3.9	NA	NA	NA	NA															
	Aug-94	<10	NA	NA	NA	NA															
Binghe Lock Direction One Unite Control Openant Control Ster Table Control Lock Loc																					
Bandle Location Date Heaviert Commun Ford State Anteror Paratic Colation Col																					
Barnel Location Date Tereman Non- Status Ammore Location Carbonal Carbonal Total Does Total Color Poil 1,17,27 Alt Tot O S0 Color Color Vision Poil S0 Color Color Vision Color Co																					
			the second se	NA	NA	NA	1														
	DUP	<10	<5	NA	NA	NA	1														
				NA	NA	NA	1														
				NA	NA	NA	1														
	Jun-01	<4.2	2.7			NA	1														
MAN 7	Nov-01	<4.2	9.7	NA	NA	NA	1														
IVIVV-7	May-02	<4.2	3.2	NA	NA	NA	1														
			1.9	NA	NA	NA	1														
	May-03	<4.2	0.91	NA	NA	NA															
	May-04	<2.5	0.88	NA	NA	NA	1														
	May-05	<5.0	32	NA	NA	NA	1														
	8/21/07	NA	4.4	NA	NA	NA	1														
	7/21/09	NA	9	NA	NA	NA	1														
	8/24/10	<3.9	3.7"J"	NA	NA	NA	1														
	6/28/11	<3.9	NA	NA	NA	NA															
	Aug-94	<10	<2.8	NA	NA	NA															
	Oct-94	<10 J	<3.4 J	NA	NA	NA															
	Apr-98	<10	<5	NA	NA	NA	1														
	May-00	<4.2	4.7	NA	NA	NA	1														
		7.9	5		NA	NA	1														
				NA	NA	NA															
1414/ 74					NA																
WW-7A	May-02			NA	NA	NA															
				NA	NA	NA															
							1														
							1														
MW-68 Mov2 4-2 11 NA NA MW-64 4-2 51 NA NA NA MW-62 4-2 51 NA NA NA MW-62 4-2 52 NA NA NA MW-61 4-2 52 NA NA NA MW-62 4-2 52 NA NA NA MW-61 4-2 52 NA NA NA MW-61 4-2 34 NA NA MW-61 A-2 NA NA NA App64 10 6.52.1 NA NA App64 10 6.28.1 NA NA App64 10 82.8 NA NA App64 10 92.8 NA NA App64 10 82.8 NA NA App64 10 82.9 NA NA App64 10<																					
							1														
							1														

Sample Location	Date	Detected Parameters (µg/L)																			
		Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide	Antimony	Arsenic	Cadmium	Cyanide	Nickel	Silver	Thallium	Cobalt	Vanadium	1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE	VC
IR140 Preventive Action Limit		10	10	150	125,000	NO PAL	1.2	1	0.5	40	20	10	0.4	8	6	85	0.7	0.5	40	0.5	0.02
IR140 Enforcement Standard		100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.2
	Oct-94	<10	<0.70	NA	NA	NA	12102		1			1945	1.1.1.1.1.1.1				STAR-LAS			116.15	
	Nov-94	<10	<2.5	NA	NA	NA															
	DUP.	<10	<2.5	NA	NA	NA															
[Apr-98	<10	<5	NA	NA	NA															
	May-00	<4.2	15	NA	NA	NA															
	Nov-00	<u>13</u>	13	NA	NA	NA															
	Jun-01	5.3	2	NA	NA	NA	14.														
	Nov-01	<4.2	2.3	NA	NA	NA															
MW-8	DUP	<4.2	6.7	NA	NA	NA	1														
	May-02	<4.2	4	NA	NA	NA								1							
	Nov-02	<4.2	23	NA	NA	NA	1.1														
	May-03	<4.2	2.2	NA	NA	NA								11							
	May-04	<2.5	1.7	NA	NA	NA	1.1.1														
	May-05	<5.0	1.1	NA	NA	NA	19.100							1							
	8/21/07	NA	2.3	NA	NA	NA								11 .							
	8/24/10	<3.9	96	NA	NA	NA	10														
	6/28/11	<3.9	NA	NA	NA	NA															
	Oct-94	<10	<0.70	NA	NA	NA															
	Nov-94	<10	<2.5	NA	NA	NA									ð.						
	Apr-98	<10	<5	NA	NA	NA															
	May-00	<4.2	16	NA	NA	NA															
	Nov-00	<4.2	34	NA	NA	NA	1000							•							
	Jun-01	<4.2	3.7	NA	NA	NA															
	Nov-01	<4.2	14	NA	NA	NA															
MW-8A	May-02	<4.2	2.5	NA	NA	NA	1								1						
	DUP	<4.2	11	NA	NA	NA	2														
	Nov-02	<4.2	20	NA	NA	NA	1.0							1							
	May-03	<4.2	13	NA	NA	NA	-														
	May-04	3.9	0.59	NA	NA	NA															
	May-05	<5.0	2.6	NA	NA	NA															
1	8/21/07	NA	0.92	NA	NA	NA															
	8/24/10	<3.9	1.7"J"	NA	NA	NA															
	6/28/11	<3.9	NA	NA	NA	NA															

NA - Compound not analyzed Underlined - Concentration exceeds preventive action limit Bolded - Concentration exceeds enforcement standard

			Detected Parameters (µg/L)														-				
Sample Location	Date	Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide	Antimony	Arsenic	Cadmium	Cyanide	Nickel	Silver	Thallium	Cobalt	Vanadium	1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE	VC
IR140 Preventive Action Limit		10	10	150	125,000	NO PAL	1.2	1	0.5	40	20	10	0.4	8	6	85	0.7	0.5	40	0.5	0.02
R140 Enforcement Standard		100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.2
	Aug-94	400	697	NA	NA	NA				18-212	1.		211 20		19 19 2	N Same	1.16 6.1	1			
	Oct-94	470 J	442 J	NA	NA	NA															
	Apr-98	209	<5	NA	NA	NA]														
	Jul-98	60	75	NA	NA	NA															
	Nov-00	13	15	NA	NA	NA	1														
1040 FLAN	DUP	<u>19</u>	51	NA	NA	NA	100														
	Jun-01	28	180	NA	NA	NA															
	Nov-01	35	76	NA	NA	NA															
	May-02	75	72	NA	NA	NA															
	Nov-02	67	80	NA	NA	NA	1														
MW-9	May-03	32	53	NA	NA	NA															
10100-9	May-04	54	63	NA	NA	NA															
1. 1. 1.	Dup	50	46	NA	NA	NA	1														
1.1.	May-05	28	41	NA	NA	NA															
	Oct-06	17	34	NA	NA	NA													×.		
	8/21/07	NA	52	NA	NA	NA	1												1		
	7/21/09	NA	33.3	NA	NA	NA	1														
	8/24/10	27	30.3	NA	NA	NA	1														
	6/28/11	14	NA	NA	NA	NA	1														
	10/23/12	18 J	NA	NA	NA	NA	1														
	12/5/13	<3.4	NA	NA	NA	NA	1														
	10/16/14	<3.9	NA	NA	NA	NA	1														4
	Aug-94	60300	53100	NA	NA	NA															1
	Oct-94	60800 J	43,500 J	NA	NA	NA	1														
	Nov-00	20000	18000	NA	NA	NA	1														
	Jun-01	<4.2	20	NA	NA	NA	1														
MW-10	Nov-02	35000	38000	NA	NA	NA	1														
(Not located)	May-03	38000	37000	NA	NA	NA	1														
	May-04	25000	22000	NA	NA	NA	1														
	Nov-05	13000	13000	NA	NA	NA	1														
	Oct-06	14000	13000	NA	NA	NA	1														
	8/21/07	NA	17,000	NA	NA	NA	1														
	May-95	<10	<1.0	NA	NA	NA															
	Apr-98	<10	<5	NA	NA	NA															
	May-00	<4.2	7.0	NA	NA	NA															
	Nov-00	<4.2	4.1	NA	NA	NA	1														
	Jun-01	<4.2	3.6	NA	NA	NA															
	Nov-01	<4.2	7.8	NA	NA	NA	1														
MW-11	May-02	17	<20	NA	NA	NA	1														
	Nov-02	<4.2	27	NA	NA	NA	1														
	May-03	<4.2	12	NA	NA	NA	1														
	May-04	<2.5	2.3	NA	NA	NA	1														
	May-05	<5.0	2.8	NA	NA	NA	1														
	8/24/10	<3.9	8.9	NA	NA	NA	1														
			NA				1														
	8/24/10 6/28/11	<3.9 <3.9		NA NA	NA NA	NA NA															

							1.1.1	1	1.11	Detecte	d Paramete	ers (µg/L)				1.5.8.5.5	Car NA				
Sample Location		Hexavalent Chromium	Chromium	Iron	Sulfate	Sulfide	Antimony	Arsenic	Cadmium	Cyanide	Nickel	Silver	Thallium	Cobalt		1,1-DCA	1,1-DCE	PCE	1,1,1-TCA	TCE	VC
R140 Preventive		10	10	150	125,000	NO PAL	1.2	1	0.5	40	20	10	0.4	8	6	85	0.7	0.5	40	0.5	0.02
R140 Enforceme	ent Standard	100	100	300	250,000	NO ES	6	10	5	200	100	50	2	40	30	850	7	5	200	5	0.2
	Mar-95	<10 J	<2.9	NA	NA	NA															
	May-95	<10	<1.0	NA	NA	NA															
	Apr-98	<10	<5	NA	NA	NA															
	May-00	<4.2	4.8	NA	NA	NA															
	Nov-00	<4.2	6	NA	NA	NA															
	jun-01	<4.2	6.4	NA	NA	NA															
MW-12	Nov-01	<4.2	<0.52	NA	NA	NA	A har to														
	May-02	<4.2	4.8	NA	NA	NA	-														
	Nov-02	<4.2	1.3	NA	NA	NA															
	May-03	<4.2	1.3	NA	NA	NA															
	May-04	<2.5	1.8	NA	NA	NA	1.57														
	May-05	<5.0	8.1	NA	NA	NA															
	8/24/10	<3.9	6.5	NA	NA	NA															
	6/28/11	<3.9	NA	NA	NA	NA															
MW-13	Mar-95	<10 J	<2.9	NA	NA	NA														Second	
	May-95	<10	<1.0	NA	NA	NA															
	Aug-94	89000	209000	NA	NA	NA															
	Oct-94	144900	277000	NA	NA	NA	1 2 3 4 1														
	Apr-98	66000	38300	NA	NA	NA															
	Jul-98	131000	131000	NA	NA	NA															
	May-00	1800	1700	NA	NA	NA															
	Nov-00	41000	27000	NA	NA	NA															
	Jun-01	40000	110000	NA	NA	NA	1														
	Nov-01	23000	56000	NA	NA	NA	1														
	May-02	43000	14000	NA	NA	NA															
	Nov-03	23000	30000	NA	NA	NA															
Zine Curren	May-03	8400	6800	NA	NA	NA				4											
Zinc Sump	May-04	24000	6400	NA	NA	NA	1														
	May-05	15000	13000	NA	NA	NA															
	Oct-06	7500	5900	NA	NA	NA															
	8/21/07	NA	20,000	NA	NA	NA	1 1 1 1														
	7/21/09	NA	14,800	NA	NA	NA															
	8/24/10	12,100	11,300	NA	NA	NA	90.6	NA	NA	40	NA	NA	<2.2	2.5 J	4.7 J	<0.75	<0.57	<0.45	1.5	<0.48	<0.18
	6/28/11	4100	NA	NA	NA	NA	6.6	NA	NA	250	NA	NA	<2.2	2.5 J	4.7 J	1.2	2.8	0.84	38.9	<0.48	<0.18
	10/24/11	3,700	NA	NA	NA	NA	6.0 "J"	NA	NA	220	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/23/12	110	NA	NA	NA	NA	NA	NA	NA	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/5/13	5,100	NA	NA	NA	NA	NA	NA	NA	340	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/16/14	9,600	NA	NA	NA	NA	NA	NA	NA	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Private	Aug-94	<10	<10	NA	NA	NA															
	Aug-94	<10	<10	NA	NA	NA	1														
	DUP.	<10	<10	NA	NA	NA	1														
Municipal	Oct-94	<10	<10	NA	NA	NA															
	DUP.	<10	<10	NA	NA	NA	-														
11000		<10	0.75 B	NA	NA	NA	-														
USGS	Oct-94																				













































