FIFTH FIVE-YEAR REVIEW REPORT FOR WAUSAU GROUNDWATER CONTAMINATION SUPERFUND SITE

MARATHON COUNTY, WISCONSIN

Prepared by

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Date

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LIST OF ACRONYMS

AOC	Administrative Order by Consent
AMR	Annual Monitoring Report
ARAR	Applicable, Relevant and Appropriate Requirement
AWQC	Ambient Water Quality Criteria
C12DCE	Cis-1-2 Dichloroethane
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CD	Consent Decree
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
CLP	Contract Laboratory Program (U.S. EPA-approved contract laboratories)
COCs	Chemicals of Concern
CRA	Conestoga Rovers Associates
CVOCs	Chlorinated Volatile Organic Compounds
DCA	Dichloroethane
DCE	Dichloroethylene or Dichloroethene
DEE	Diethyl ether
EPA	United States Environmental Protection Agency
EW	Extraction Well
ES	Enforcement Standard
ESD	Explanation of Significant Differences
FCOR	Final Closeout Report - documents completion of Remedial Action
FR	Federal Register
FS	Feasibility Study
FYR	Five-Year Review
GIS	Geographic Information System
gpm	Gallons per Minute
ICs	Institutional Controls
LTS	Long-Term Stewardship
MCL	Maximum Contamination Level
MGD	Million Gallons per Day
MW	Monitoring Well
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PAL	Preventative Action Limit
PCE	Perchloroethylene or Tetrachloroethylene
ppb	Parts per billion or ug/L (water) and ug/kg (soil/sediment)
ppm	Parts per million, or mg/L (water) or mg/kg (soil/sediment)
PRPs	Potentially Responsible Parties

QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RP	Responding Party
RPM	Remedial Project Manager (U.S. EPA)
SARA	Superfund Amendments and Reauthorization Act of 1986
SDWA	Safe Drinking Water Act
SMCL	Secondary Maximum Contaminant Level
SOW	Statement of Work
TAL	Target Analyte List
TBC	To Be Considered
TCA	1,1,1-Trichloroethane or 1,1,1-TCA
TCE	Trichloroethylene
TCFM	Trichlorofluoromethane
EPA	United States Environmental Protection Agency
VC	Vinyl Chloride
VOC	Volatile Organic Chemicals
WDNR	Wisconsin Department of Natural Resources
WHPP	Well Head Protection Plan
WHPA	Well Head Protection Area

EXECUTIVE SUMMARY

This is the fifth Five-Year Review (FYR) for the Wausau Groundwater Superfund Site (the Site) conducted by the United States Environmental Protection Agency (EPA) with assistance from the Wisconsin Department of Natural Resources (WDNR). The fourth FYR was completed and signed on April 9, 2010. A protectiveness determination of the remedy for the Wausau Groundwater Site cannot be made at this time until further information is obtained. The current FYR defers any determination about whether the remedial action at the Wausau Groundwater Site is protective of human health and the environment in the short-term until EPA has investigated the existence of any vapor intrusion (VI) pathways that could result in unacceptable health risks. Although, the remedy is functioning in accordance with the RODs, available data are insufficient to determine whether there is a potential or actual VI pathway, and additional evaluations are necessary. Further information will be obtained by conducting a VI investigation. It is expected that this action will take approximately 1 year to complete, at which time a protectiveness determination will be made. Furthermore, long-term protectiveness at the Site requires follow-up actions, including modification of the decision documents to clarify the remedy, implementation of effective Institutional Control (ICs); preparation of a Long-Term Stewardship (LTS) plan, and updating the Operations and Maintenance (O&M) plan.

The Site, located in the northern section of the city of Wausau, potentially affects six of the city's production wells. The City production wells are located within the glacial outwash and alluvial sediments underlying and adjacent to the Wisconsin River. The wells provide drinking water for about 39,000 people on both sides of the Wisconsin River.

In 1982, three of the wells were found to be contaminated with high levels of volatile organic compounds (VOCs). For the purpose of evaluation, groundwater monitoring at the Site has been divided into two areas, the East Bank and the West Bank of the Wisconsin River which correspond to the two original source areas. The Wisconsin River forms a natural hydraulic division of the Site. Municipal water supply wells west of the river are known as the West Well Field, and the municipal water supply wells east of the river are known as the East Well Field.

During the investigations, it was found that a contaminant plume, composed mainly of trichloroethene (TCE), existed in the West Well Field and was migrating north under the influence of the pumping by the City's municipal wells (i.e., primarily well CW6). The source of the contamination was found to be on the Marathon Electric[1] property which includes the former Wausau landfill.

The primary chlorinated VOC found in the East Bank groundwater was tetrachloroethene (PCE). The source of contamination was located on the Wausau Chemical facility property, on the east bank of the river. Low concentrations of TCE and cis-1,2-dichloroethene (C12DCE) were also detected in the aquifer under the Wisconsin River which is a remnant of the West Bank plume that had historically migrated beneath the river to East Well Field.

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[1] Marathon Electric was acquired by Regal Beloit Corporation and is now doing business at the Wausau plant under the Regal Beloit name.

The remedy selected by the EPA was implemented as two operable units (OUs) and required removal and treatment of VOCs contamination from soils and capture and treatment of VOCs in groundwater. The remedy for the Site was documented in an interim action Record of Decision (ROD) in 1988, and a final ROD in 1989. The components of the remedy selected in the 1988 and 1989 RODs have been implemented under the terms of Consent Decrees entered in 1989 and 1991.

Contaminated soils at both areas were treated and capped. Source area remediation was accomplished by the installation of soil vapor extraction (SVE) systems at Marathon Electric (West Bank) and Wausau Chemical (East Bank) in January 1994. The SVE system at Marathon Electric operated until April 1996, when the West Bank source remediation was approved as complete. The East Bank SVE system was modified in 1996 and continued to operate until January 2001. In January 2001, the East Bank SVE system was shut down while evaluation for final closure occurred. The East Bank source remediation was approved as complete in 2007 after the EPA and the WDNR agreed the requisite requirements were met. Both SVE systems have been discontinued and dismantled.

The groundwater remedy consists of groundwater extraction and treatment, and uses existing municipal production wells (CW3 and CW6) and a remediation well (EW1). Air strippers, located at the Wausau water treatment plant, treat water from the municipal supply wells. These remedial actions ensure protectiveness of the City's drinking water supply.

Another extraction well installed at Marathon Electric (EW1) was intended to prevent the migration to the West Well Field of high concentrations of VOCs in the source area groundwater. Water pumped from EW1 was treated by passive air stripping (over riprap on the riverbank) before being discharged to the Wisconsin River. In July 2012, EW1 stopped operating because of pump failure after approximately 20 years of operation. Multiple attempts were made to rehabilitate the pump. Subsequently, EPA approved a Pilot Study to observe the plumes without operation of EW1. The Pilot Study was approved since there are no direct threats to the public from suspending operation of EW1. This Pilot Study will determine whether the groundwater containment network of pumping wells will continue to be effective even if pumping at EW1 is suspended. Current groundwater VOC concentrations near the former source area are much lower than were the concentrations five and ten years ago. Also, EW1 lies within the capture area of other extraction wells. Therefore, the continued operation of EW1 is not critical to the protection of potential receptors in the short-term. EPA is evaluating whether removing EW1 from operation improves the remedy. Increased monitoring and reporting is required under the Pilot Study. To date, the contaminant plumes continue to be captured hydraulically.

Groundwater remediation at the Wausau Site has been ongoing for over 20 years. Aquifer remediation progress is a slow process but contaminant concentrations have been reduced significantly at the Site. The aquifer has been monitored annually and shows a general downward trend of VOC concentrations. Because more time is necessary to achieve groundwater remediation cleanup goals, containment of contaminated groundwater is the primary measurable and achievable short-term objective. The FYR concludes that immediate threats to human health and the environment have been addressed at the Site, and the remedy is functioning as

contemplated by the RODs since the groundwater continues to be extracted, along with the groundwater monitoring system and the City's municipal groundwater treatment plan as an integral part of the groundwater treatment for the Site. However, the FYR defers its determination as to whether the remedy is protective in the short-term until additional information become available regarding any possible vapor intrusion pathway. Information will be obtained by conducting a VI investigation. It is expected that this action will take approximately 1 year to complete, at which time a protectiveness determination will be made. Furthermore, long-term protectiveness at the Site requires follow-up actions, including revisions of the decision documents to clarify the remedy; implementation of effective ICs; preparation of a LTS plan; and updating the O&M plan.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Wausau Ground Water Contamination		
EPA ID: WID980993521		
Region: 5	**State:** WI	**City/County:** Marathon County

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA
Author name (Federal or State Project Manager): Sheri L. Bianchin
Author affiliation: U.S. Environmental Protection Agency (EPA)
Review period: 9/1/2014 - 4/9/2015
Date of site inspection: 10/1/2014
Type of review: Policy
Review number: 5
Triggering action date: 4/9/2010
Due date *(five years after triggering action date)*: 4/9/2015

Issues and Recommendations Identified in the Five-Year Review:

OU(s): *OU1/OU2/Sitewide*	**Issue Category: Monitoring**			
	Issue: Possible vapor intrusion pathway requires more study.			
	Recommendation: PRPs shall submit a vapor intrusion study work plan for review and approval by EPA and WNDR. Once approved, the PRPs will conduct the study.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
Unknown	Yes	PRPs	EPA	1/15/2016

OU(s): *01/02/Sitewide*	**Issue Category: Institutional Controls**			
	Issue: Effective ICs must be implemented.			
	Recommendation: EPA/State complete ICs evaluation; PRPs implement any additional ICs needed.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRPs	EPA	12/30/2017

OU(s): *01/02/Sitewide*	**Issue Category: Institutional Controls**			
	Issue: Monitoring, maintenance, and enforcement of ICs is required.			
	Recommendation: A Long Term Stewardship (LTS) Plan should be developed and implemented including updates to the Operation and Maintenance (O&M) Plan.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRPs	EPA	12/30/2016

OU(s): *01/02/ Sitewide*	**Issue Category: Remedy Performance**			
	Issue: Remedy decision documents are not clear regarding several matters. The decision documents do not specifically state whether the cleanup standards will allow for unlimited use and unrestricted exposure (UU/UE), whether ICs are required to ensure long-term protectiveness, and when remedy modifications are acceptable.			
	Recommendation: Modify remedy decision documents to address these issues.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	3/31/2017

OU1/OU2/Sitewide Protectiveness Statement	
Protectiveness Determination: Protectiveness Deferred	*Addendum Due Date (if applicable):* 4/8/2016
Protectiveness Statement: A protectiveness determination of the remedy for the Wausau Groundwater Site cannot be made at this time until further information is obtained. The current FYR defers any determination about whether the remedial action at the Wausau Groundwater Site is protective of human health and the environment in the short-term until EPA has investigated the existence of any VI pathways that could result in unacceptable health risks. Although, the remedy is functioning in accordance with the RODs, available data are insufficient to determine whether there is a potential or actual VI exposure pathway; additional evaluations are necessary. It is expected that this action will take approximately 1 year to complete, at which time a protectiveness determination will be made. Furthermore, long-term protectiveness at the Site requires follow-up actions, including revisions of the decision documents to clarify the remedy; implementation of effective ICs; preparation of a LTS plan; and updating the O&M plan.	

I. INTRODUCTION

The purpose of a Five-Year Review (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 five-year review reports. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

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 Wausau Groundwater Contamination Superfund Site in Wausau, Marathon County, Wisconsin. EPA is the lead agency for developing and implementing the remedy for the Site. WDNR, as the support agency representing the State of Wisconsin, has reviewed all supporting documentation and provided input to EPA during the FYR process.

This is the fifth FYR for the Wausau Groundwater Contamination Superfund Site. The triggering action for this review is the completion 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 consists of 2 OUs, both of which are addressed in this FYR.

II. PROGRESS SINCE THE LAST REVIEW

Tables 1 and 2 provide the protectiveness statements and issues/recommended actions from the 2010 FYR.

Table 1: Protectiveness Determinations/Statements from the 2010 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	The OU I remedy is protective of human health and the environment in the short-term. However, long-term protectiveness requires follow-up actions, as indicated further below, such as implementation of ICs, preparation of a long-term stewardship plan, and an updating of the O&M plan.
2	Short-term Protective	The OU2 remedy is protective of human health and the environment in the short-term. However, long-term protectiveness requires follow-up actions, as indicated further below, such as addressing the declining pumping rate at EW1, implementation of ICs, preparation of a long-term stewardship plan, and an updating of the O&M plan.
Sitewide	Short-term Protective	The remedy is protective in the short-term as all immediate risks have been addressed. Additional work is needed to ensure long-term protectiveness. Long-term protectiveness of the groundwater requires continued operation and maintenance of the remedial components including the groundwater monitoring system and extraction well EW1 and the City's municipal groundwater treatment plant as an integral part of the groundwater treatment for the Site. The O&M plan must be reviewed to ensure that the former SVE treatment areas with residual contamination are subject to effective monitoring and maintenance procedures. The requirements for ICs for the soils area with residual contamination must be reviewed along with the requirement for ground water ICs. Since it is highly unlikely that Site groundwater cleanup standards will be met during the next five years, operation of the groundwater treatment systems should be continued for the foreseeable future. Long-term protectiveness also requires compliance with effective ICs until the attainment of the groundwater standards. The soil portion of the Wausau Groundwater Site remedy is essentially complete, and is documented in the Site

		file. However, maintenance and monitoring plans must be finalized for those areas. Additionally, long-term protectiveness requires compliance with effective ICs for the soils. Compliance with effective ICs will be ensured by implementing effective ICs which must be maintained, monitored and enforced by developing long-term stewardship procedures as well as by maintaining the Site remedy components. To that end, evaluation of the necessity and types of ICs required is underway by EPA. The EPA will then require the PRPs to conduct additional IC evaluation activities and submit an IC work plan including ensuring that effective restrictive covenants are implemented and that long-term stewardship procedures are in place to ensure effectiveness, enforceability and long-term stewardship. A review of the need for a clarification of the remedy in an Explanation of Significant Differences (ESD) for ICs will also be conducted by EPA. Last, the declining pumping rate at EW1 must be addressed by the PRPs. The PRPs must also look for remedy optimization opportunities. These steps are necessary to ensure that the remedy continues to function as intended and to ensure long-term protectiveness.

Table 2: Status of Recommendations from the 2010 FYR

OU #	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
Sitewide	The decision documents do not specifically state whether the performance standards will allow for UU/UE and whether ICs are required to ensure long-term protectiveness. This must be further	EPA will review remedy requirements in the RODs and clarify if necessary	EPA/State	EPA	1/31/2011	Ongoing	N/A

	reviewed.						
Sitewide	Effective ICs must be implemented, monitored, maintained and enforced.	The PRPs will conduct IC evaluation activities and submit an IC work plan for review and approval including long-term stewardship procedures.	PRPs	EPA/ State	12/31/2010	Ongoing	N/A
Sitewide	The O&M Plan should be reviewed and modified to include soils area and inspection procedures for wells.	PRPs will submit a modified O&M Plan to include soils area with residual contamination and inspection procedures for wells.	PRPs	EPA/ State	09/30/2010	Ongoing	Inspection checklists were prepared; however, the O&M Plan needs to be updated for the entire Site.
Sitewide	The pumping rate at EW1 has been declining.	The PRPs shall submit a work plan to rehabilitate EW1 to address the declining pumping rate.	PRPs	EPA/ State	8/31/2010	Ongoing	Several attempts were made to rehabilitate the pump; however, those actions did not last. Therefore, a Pilot Study is underway to turn off EW1.
Sitewide	Consideration should be given to enhancing and optimizing	EPA and the WDNR will review proposal submitted by PRPs to modify	PRPs	EPA/Stat e	9/30/2010	Ongoing	N/A

	remedy efficiency, such as modifying pumping rates while ensuring long-term protectiveness .	pumping rates while ensuring protectiveness and looking for optimization opportunities					

A discussion of each of the recommended actions is provided.

Recommendation 1
EPA will review remedy requirements in the RODs and clarify if necessary.

Follow-up since last FYR: Based on review of the RODs, it is recommended that the decision documents be clarified in terms of ICs, cleanup levels achieved during the remediation of the soils, and the proposed remedy modifications.

Recommendation 2
The PRPs will conduct IC evaluation activities and submit an IC work plan for review and approval including long-term-stewardship procedures.

Follow-up since last FYR: The PRPs submitted an IC evaluation work plan in 2013 and a draft IC evaluation report on March 6, 2015, which is currently being reviewed by EPA and WDNR.

Recommendation 3
PRPs will submit a modified O&M Plan to include soils area with residual contamination and inspection procedures for wells.

Follow-up since last FYR: The PRPs have updated inspection procedures to include the capped parking lot at the Wausau Chemical Site and well inspection procedures; however, those changes must still be incorporated into a modified O&M Plan. Also, procedures are needed for maintenance of the former landfill area on the West Bank. This will be done along with the preparation of the LTS plan.

Recommendation 4
The PRPs shall submit a work plan to rehabilitate EW1 to address the declining pumping rate.

Follow-up since last FYR: After the well was rehabilitated several times, it eventually ceased to operate. Because the well was no longer working, and knowing that it was not necessary to operate that well in the short-term, the PRPs, EPA, and WDNR decided to undertake a pilot study to determine the groundwater flow regimes and disposition without the extraction well in use. A work plan was submitted by the PRPs in September 2013 and subsequently approved by EPA with consultation by the WDNR. The pilot study required additional monitoring and interim reporting to ensure no adverse effects to the public would be evident and to ensure the groundwater flow regime and contamination could be adequately studied. A draft final report was received by EPA and WDNR on March 6, 2015. This report

is under review. However, it appears that the well is not needed at the current time and in fact, turning off that pump has allowed the groundwater stagnation zone to move. Keeping EW1 off may also serve to optimize the remedy. A final decision will be made by EPA with consultation with WDNR.

Recommendation 5
The EPA and the WDNR will review proposals submitted by the PRPs to modify pumping rates while ensuring protectiveness and looking for optimization opportunities.

Follow-up: See above. Those proposals were approved and additional proposed modifications are in the process of being reviewed.

Remedy Implementation Activities

From 1993 through 2000, groundwater monitoring was conducted according to the Monitoring Program Plan (CRA, 1994). The Monitoring Program Plan consisted of a complex system of monthly, quarterly, semiannual, and annual monitoring. In June 2000, the Groundwater Monitoring Plan replaced the Monitoring Program Plan as the approved groundwater monitoring program. The Groundwater Monitoring Plan consists of annual monitoring well sampling and quarterly sampling of EW1. The Groundwater Monitoring Plan requires an annual report on the activities occurring the previous calendar year.

Remedial activities which occurred in the past can be found in Appendix A and Appendix B. This review focuses on the progress and modifications made since the last FYR in 2010. Since 2010, several of the monitoring wells were abandoned and the monitoring program was modified. Starting in 2013, a pilot study was undertaken to determine if EW1 remained a necessary remedial component. Comparison of the plume maps from the past to the current maps show the decreases in the levels of total chlorinated VOCs. See Figures 3, 4 and 5 in Appendix J. For example, on the west bank levels have gone from over 41,000 ppb to approximately 10 ppb; on the east bank, levels have gone from thousands of ppb to several hundred ppb.

A trail was constructed along the Wisconsin River as part of the area redevelopment plans, and the River is used for recreational purposes such as kayaking. Under the WDNR voluntary cleanup program, the Wausau Chemical Company is conducting a focused site investigation study to more fully characterize residual contamination present at the Wausau Chemical portion of the Site. Once that is complete, then the potential VI pathway may be further assessed. Following assessment, additional cleanup work may be proposed so that the property can support a higher use such as residential and recreational.

Institutional Controls

ICs are required to ensure the protectiveness of the remedy. ICs are non-engineered instruments, such as administrative and/or legal controls that help minimize the potential for exposure to contamination and protect the integrity of the remedy. Compliance with ICs is required to assure long-term protectiveness for any areas which do not allow for UU/UE.

Areas that do not support UU/UE and for which ICs are required are noted in the Table below. Maps which depict the current conditions of the Site and areas which do not allow for UU/UE will be developed as part of the required IC evaluation activities and work plan.

Table 3: Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Former Loading Dock at Wausau Chemical Company Property - Area of Soil treated to industrial cleanup standards	Yes	No	Commercial/ industrial use only; prohibit residential use; prohibit well installation	Deed Restriction in-place (recorded on April 26, 2007 at the Marathon County Register of Deeds - see Appendix F) Zoned industrial
Landfill on Marathon Electric Property – two parcels Parcels 291-2907-252-0990 and 291-2907-252-0997 Area of Soil treated to industrial cleanup standards	Yes	No	Commercial/ industrial use only; prohibit residential use; prohibit well installation	Deed Restriction required per closure requirements or other ICs. Zoned industrial.
Groundwater Wausau Chemical Company Property	Yes	No	Prohibit residential use; prohibit well installation	- Wellhead Protection Ordinance - Chapter 23.54 (under review) - Wausau Municipal Code Chapter 19.30 (See Appendix F); - Deed Restriction or other ICs planned
Groundwater former landfill on Marathon Electric property	Yes	No	Prohibit residential use; prohibit well installation	- Wellhead Protection Ordinance - Chapter 23.54 (under review) - Wausau Municipal Code Chapter 19.30 (under review- See Attachment 5); - Deed Restriction or other ICs planned
Possible Vapor Intrusion Impacted Areas	Under Review	No	Under review	Under review

Groundwater Other areas where levels will not allow UU/UE	Yes	No	Prohibit well installation unless a permit is obtained	Under review
Other remedy components	Yes	Under review	Prohibit interference with remedy components	Under review

Status of ICs and Follow-up Actions Required

ROD Requirements

Although not clearly specified in the ROD[2], it is apparent that ICs are necessary to ensure long-term protectiveness. As a follow-up to this review, the decision documents will be amended to clarify the role of ICs for the remedy.

Consent Decree Requirements

The Consent Decree (CD) that was entered in January of 1991 requires that Notices of the CD be filed in the chain of title, with the Office of the Register of Deeds, Marathon County for each parcel of the Site owned by the Settling Defendants, including parcels owned by the Wausau Water and Sewerage Utilities, where physical components of the remedial action will be/are located, and those parcels where source areas of contamination are located. In general, these areas include the parcels of land owned by the City of Wausau and Marathon Electric Manufacturing Corporation. Those areas include the parcels where the former City / Marathon Electric Landfill was located; the land which comprise the Wausau Chemical Corporation property, the land upon which the interim operable unit extraction well described in the Interim ROD and RD/RA Work Plan are located; and the parcels upon which the City Wells (i.e., CW 3 and CW6) are located. The CD also states that those areas of the Facility where notices shall be filed may be freely alienated, provided that the U.S. and the State receive notice of such alienation and a copy of the CD is given to the grantee. Last, the CD states that any deed, title or other instrument of conveyance regarding a parcel of the Facility described above shall contain a notice that the parcel is the

[2] Although the RODs imply that ICs would be necessary to protect the integrity of the remedy and minimize potential for exposure, the requirement is not clear. The scope of OU 1 is limited to the contaminant plume impacting the west well field and CW6. The remedial action objectives of the ROD for Remedial Action Operable Unit 1 (Interim ROD): 1) Protection from long-term exposure to low levels of TCE from ingestion of drinking water; and 2) Protection from future increased levels of contaminants to the west well field.

The RAOs of the ROD for OU 2 (Final ROD) were to address the remaining concerns at the Site following implementation of the Interim Action: 1) Elimination of the continued sources of groundwater contamination identified as the former City landfill / Marathon Electric property and the Wausau Chemical property, and 2) Prevention of exposure to contaminants present in the two additional groundwater contaminant plumes identified.

subject of this Consent Decree, setting forth the name of the case, case number, the court having jurisdiction herein, the address of the Clerk of the Court for the court having jurisdiction herein, and a notation that a copy of the Consent Decree may be obtained by contacting the Clerk of the Court, or the City Clerk, City Hall, Wausau, Wisconsin.

EPA could not find evidence that the notices required by the CD have been filed. This requires further investigation.

Deed Restrictions (Proprietary Controls)

A deed restriction titled *Declaration of Restriction* was implemented on April 13, 2007. On April 26, 2007, a deed restriction was recorded at the Marathon County Register of Deeds office as Document #1475599, for the purpose of imposing restrictions which would make it unnecessary to conduct further soil remediation activities in the South Loading Dock area. The restrictions were put in place on two parcels at Wausau Chemical facility as a condition by WDNR to close out the source/soil remediation phase of the project on the east bank of the river. However, Wausau Chemical is currently platted as one parcel. The owner, according to the Wausau Co. surveyor, AJR Properties North LLC, may have had the two parcels combined into one parcel when they acquired the property. He also stated that there are two identical deed restrictions attached to the property. One was signed by the previous owner on April 19, 2007, and the other was signed by the current owner on April 18, 2008 (see Appendix F).

Those deed restrictions were recently re-implemented and re-recorded. A review of those instruments is underway. Also, deed restrictions are required for the source/soil remediation area in the west side of the River in accordance with the SVE closure documents.

Ordinance (Governmental Controls)

The existing Wausau Municipal Code outlines a Wellhead Protection ordinance in Chapter 23.54, and also addresses a Private Water Well ordinance in Chapter 19.30. The City has authority to deny site plan applications that include groundwater wells under Wausau's City Code. The City has authority to regulate installation of groundwater wells and to require abandonment of existing groundwater wells.

The Wausau Chemical and Marathon Electric properties are also zoned for industrial purposes.

Current Compliance: Based on inspections and interviews, EPA is not aware of current Site or media uses which are inconsistent with the stated objectives required of the ICs. The existing deed restriction also appears to be currently functioning as intended. However, in the past, the deed restriction was not complied with when the Wausau Chemical property subject to the restrictions was modified without proper approval. Even though no ICs have been implemented on the former Wausau landfill, no inconsistent uses were noted during the recent inspection or through other avenues. However, based on current site conditions, EPA has determined that additional ICs are necessary to ensure the protectiveness of the remedy along with updates to the O&M plan.

Long-Term Stewardship: Long-term protectiveness at the Site requires compliance with land and groundwater use restrictions to assure the remedy continues to function as intended. Planning for long-term stewardship is required which involves assuring effective procedures are in place to properly maintain, monitor, and enforce the ICs along with monitoring of the groundwater. Long-term stewardship will ensure effective ICs are maintained, monitored and enforced and that the remedy

continues to function as intended with regard to the ICs. Long-term stewardship involves assuring effective procedures are in place to properly maintain and monitor the Site. A LTS Plan shall be developed (or the O&M plan updated) that includes procedures to ensure long-term ICs stewardship, such as regular inspection of institutional controls at the Site and certification to EPA that the ICs are in place and are effective. Additionally, use of a communications plan and placement of the Site on WDNR's publically available on-line Geographic Information System (GIS) registry should be explored for long-term stewardship.

Follow-up Actions: Initial IC evaluation activities have revealed that additional steps must be taken to evaluate the effectiveness of the existing ICs and determine whether additional ICs are required. An IC study and work plan were requested from the PRPs and a draft study was submitted in March 2015. To ensure that effective ICs are implemented, monitored, maintained and enforced, IC evaluation activities shall be conducted to ensure effectiveness of ICs and long-term stewardship of the Site, including: preparing and recording restrictive covenants consistent with Wisconsin law, amending the decision documents to clarify the role of ICs for the remedy, ensuring detailed maps are available, preparing a LTS plan, and examining title work to determine if any inconsistencies can be identified and to determining if all ICs are in-place including notice required in the chain of title in accordance with the CD.

System Operation/Operation and Maintenance Activities

The required operation and maintenance and periodic ground water sampling required by the Wausau Groundwater Consent Decree have been completed and reported at the Site through the end of 2014. Since the last review, annual reports were submitted for the years 2010- 2014. The draft 2014 Annual Report was submitted in March 2015 and contains several recommendations which are under review. The recommendations include permanently shutting off EW1 and modifying the monitoring program.

City Production Wells have been operated throughout the time periods covered by this review. Drinking water is monitored at the City of Wausau Water Utility to ensure that the air strippers are efficiently removing the VOCs and that the water meets the performance standards. The City officials conduct water tests of the treated water as it leaves the plant. The test results can be found on the WDNR website at: http://www.dnr.state.wi.us/org/water/dwg/data.htm if Wausau Waterworks is entered for the name under public water works. See Site 200 which is for wells 6, 10, and 11 - Site 300 is for wells 3, 7, and 9 - those combinations of wells are run for a few hours before the sample is collected.

The 2014 Wausau Well Pumping Rates are depicted in Table 3.2 (see Appendix K). Although significant reductions in groundwater contamination are evident at the Site, it is expected that the treatment system at the City of Wausau's treatment plant will operate for the foreseeable future.

III. FIVE-YEAR REVIEW PROCESS

Administrative Components

The Wausau Groundwater Contamination Superfund Site FYR was led by Sheri L. Bianchin, EPA, Remedial Project Manager (RPM) for the Site and Susan Pastor, the Community Involvement Coordinator (CIC). Mae Willkom, of the WDNR, assisted in the review as the representative of the WDNR, the support agency.

The review, which began on 8/1/2014, consisted of the following components:

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

The review was conducted from August 2014 until April 2015 and the components included: community involvement, document review, data review and site inspection of the facility, monitoring network, treatment facilities and the utility.

Community Notification and Involvement

Activities to involve the community in the FYR process were initiated in August 2014 by the RPM and CIC for the Site. A notice was published in the local newspaper, the Wausau Daily Herald, on September 14, 2014. See Appendix E. That notice stated that the FYR was in progress and invited the public to submit any comments to the EPA. No comments were received by EPA. Ongoing community involvement activities at the Wausau Groundwater Site include responding to questions as needed, and communicating the information that is derived from the comprehensive sampling program currently being carried out to assure that human health and the environment continue to be protected, and that the contaminants are contained and treated by the Site remedy. The results of the review and the report will be made available at the Site information repository located at Marathon County Library, 300 N. First St., Wausau, WI and on the EPA website for public view.

Interviews

During the FYR process, no interviews were conducted. In the FYR advertisement, EPA offered to discuss the project with anyone who had questions or concerns. No one responded.

Document Review

This FYR consisted of a review of relevant documents including O&M records, annual monitoring data, and data from the pilot study. The interim ROD and Final ROD were also reviewed. EPA reviewed several other site-related documents and reports for this Site. A list of documents reviewed in preparation of this report is included in Appendix C.

Data Review

Groundwater remediation at the Wausau Site has been ongoing for over 20 years. Aquifer remediation progress is a slow process but contaminant concentrations have been reduced significantly. The aquifer has been monitored on a regular basis in accordance with approved plans, and shows a downward trend of VOC concentrations in groundwater. Because of the time necessary to achieve groundwater remediation, containment of contaminated groundwater is the primary measurable and achievable short-term objective.

The existing treatment systems continue to operate to ensure that the contamination in the groundwater will not expand or impact any receptors. The air strippers at the City of Wausau municipal utility are well maintained and monitored. As noted, the operating systems currently consist of the extraction wells and subsequent aeration, air stripping treatment systems operating at the City of Wausau water utility plant, and the groundwater monitoring systems. The remedy components are maintained and monitored according to the approved plans.

Groundwater monitoring at this Site is a combination of hydraulic and water quality monitoring designed to verify that the groundwater extraction wells are containing the contaminant plume and that groundwater quality is improving because of past source remediation of VOCs from the aquifer. The Monitoring Program Plan consisted of a complex system of monthly, quarterly, semiannual, and annual monitoring. In June 2000, the Groundwater Monitoring Plan replaced the Monitoring Program Plan as the approved groundwater-monitoring plan. The Groundwater Monitoring Plan consists of annual monitoring well sampling and quarterly sampling of EWl. The Groundwater Monitoring Plan requires an annual report on the activities occurring the previous calendar year. Since the last FYR, several modifications were made to the monitoring program, including the pilot study which was approved in September 2013 and is currently underway. As mentioned earlier, the latest Annual Report was submitted in March 2015 for 2014.

The City air strippers for CW3 and CW6 continue to treat water in the deep aquifer on both the east and west side of the river. VOC groundwater contamination above cleanup standards is still evident at both CW3 and CW6, but these levels are significantly lower than those of previous years. The EW1 groundwater extraction well on the Marathon Electric property operated at approximately 800 gpm until July 2012, when it would no longer operate after numerous attempts to rehabilitate it. EPA and WDNR approved a pilot study to determine if an extraction well is still necessary in the southern end of the west plume. That pilot study is underway and a Pilot Study Report was delivered to EPA and WDNR in March 2015.

The groundwater cleanup standards for the Site are the EPA's drinking water standards known as Maximum Contaminant Limits (MCLs). These along with Wisconsin groundwater standards (NR 140) known as Enforcement Standards (ESs) and Preventative Action Limit (PALs) are shown below.

Contaminant of Concern	**Federal MCL (µg/L or ppb)**	**Wisconsin NR 140 ESs (µg/L or ppb)**	**Wisconsin NR 140 PALs (µg/L or ppb)**
Trichloroethylene (TCE)	5	5	0.5
Tetrachloroethylene (PCE)	5	5	0.5
cis-1,2-Dichloroethylene (DCE)	70	7	0.7
Vinyl chloride	2	0.2	0.02

Although significant reductions in groundwater contamination are evident over the years, it is expected that the municipal wells CW3 and CW6 will continue to operate as extraction wells for the foreseeable future, as concentrations in portions of the deep aquifer are well above cleanup standards.

Specific details regarding data and interpretation of the data can be found in the Annual Monitoring Reports (AMR).

Specific EW1 Shutdown Pilot Study Monitoring

As proposed in the EW1 Shutdown Pilot Study Work Plan (dated September 2013), which was approved by EPA with modifications on November 5, 2013, the following monitoring tasks are required on a quarterly basis:

- Collect groundwater samples from East Bank wells CW3, E21 and IWD for analysis of volatile organic compounds (VOCs);
- Collect groundwater samples from West Bank wells CW6, EW1, R2D, R3D, W53A, and W55 for VOC analysis;
- Collect water samples from operating West Well Field water supply wells other than CW6. At the time of sampling, this included CW10 and CW11;
- Measure water levels at all East Bank and West Bank monitoring wells;
- Obtain copies of City Treatment Plant analytical data for post-treatment VOC samples;
- Obtain City well pumping rate summaries.

Well locations are presented on the Site Plan, which is provided as Figure 1 and the water contour map in Figure 2.1 (See Appendix J.)

Current Water Flow Maps/ Hydraulic Control Assessments

The water table contour map depicting groundwater flows during the 2014 annual monitoring event is presented on Figure 2.1 in Appendix J. The East Bank contours are consistent with flow patterns observed in previous years. The East Bank flow patterns are controlled by the operation of CW3. Since the shutdown of EW1, the West Bank contours depict a large cone of influence created by CW6. Under normal pumping conditions, CW10 and CW11 would also show significant drawdown and would augment the cone of influence created by the West Well Field. Under natural conditions, groundwater would flow toward and discharge to the Wisconsin River. Under existing conditions however, groundwater flows toward the City supply wells.

The data from the 2014 annual report indicate that, in general, the plumes are stable or decreasing in size and concentration. Total chlorinated VOC data are presented in Figure 4.1 in Appendix J, which illustrates the plume configuration based on the 2014 data.

While only CW3 and CW6 are part of the remediation system, data for all City wells are presented, consistent with previous reports. City wells CW3 and CW6 operated on alternate schedules at rates that occasionally exceeded the operating requirements established by the EPA approval letter dated August 4, 1995.[3] Thus, the hydraulic containment provided by CW6 during the third quarter was very close to the requirements of EPA's August 4, 1995 letter. CW6 is scheduled for routine maintenance in 2015,

[3] For example, during the 3rd quarter of 2014, CW3 operated for an average of 77.5 hours per week with an average pumping rate of 1,616 gpm, exceeding the requirements of 65 hours per week at 1,200 gpm. CW6 operated for an average of 86.8 hours per week with an average pumping rate of 1,313 gpm. The average pumping rate was less than the requirement of 1,400 gpm, however the total gallons pumped during the second quarter (89,000,000 gallons) was only slightly below the requirement of 92,820,000 gallons (85 hours per week at 1,400 gpm for 13 weeks).

which should increase the pumping rate and the total weekly discharge.

Under the City's current pumping scenario, supply wells CW6, CW10, and CW11, which are all part of the West Well Field, are utilized on weekdays, and CW3, CW7, and CW9 are used to supply water over the weekends. CW3 is the only supply well on the east side of the river. Groundwater extracted by CW6 is pumped via force main to the City's Water Treatment plant on the east side of the river. The water from CW6 is treated by an air stripper prior to blending with the water from CW10 and CW11. The blended water is then aerated further and treated for iron and manganese in a clarifier for four hours prior to distribution to the water supply system. Groundwater pumped by CW3 is also treated by the air stripper prior to blending with the water from CW7 and CW9.

City Treatment Plant Analytical Data

The Wausau City Treatment Plant collects samples of the City water supply on a quarterly basis. The samples are collected at two exit points where the treated water leaves the plant. The only VOCs detected were chloroform and bromodichloromethane. Neither of these compounds are associated with the Site groundwater contamination and they are common drinking water disinfection byproducts.

Hydraulic Capture of Contaminant Plumes

The weight of the evidence demonstrates that hydraulic capture of the contaminant plumes continues to be achieved. This evidence is shown by the water table contours illustrated in the attached Figure 2.1 in Appendix J which is based on 2014 data. At nested well locations, the water table elevations for shallow and deep wells were similar, indicating horizontal flow and hydraulic containment of the shallow and deeper portions of the aquifer. However, groundwater elevation levels cannot be the only line of evidence that supports this conclusion. Review of the contaminant concentration also supports the conclusion and will be further reviewed.

Evaluation of Groundwater Data

The objectives of groundwater monitoring at the Site are to monitor the containment of the contaminant plumes and the long-term improvement in groundwater quality. Groundwater monitoring at this Site is a combination of hydraulic and water quality monitoring. Water table elevations and VOC concentrations are monitored annually to track VOC trends and to confirm containment of contaminated groundwater. Groundwater monitoring at the Site has been divided into two areas, the East Bank and the West Bank of the Wisconsin River, corresponding to the two original source areas. Water levels are monitored at 25 wells on the East Bank and at 38 wells on the West Bank. Samples for VOC analysis are collected from 13 wells on the East Bank, including municipal well CW3, and from 14 wells on the West Bank, including EW1 and CW6.

Table 4.1 (Appendix K) presents the laboratory results for monitoring well samples collected in October 2014. The data indicate that, in general, the VOC concentrations are stable or decreasing. For comparison purposes, Table 4.1 includes data reported previously during 2014 for the EW1 Shutdown Pilot Study. Figure 4.1 (Appendix J) presents the total chlorinated VOC (TCVOC) data and TCVOC concentration contours that illustrate the plume configuration based on the November 2014 data.

West Bank Results

In the West Bank area, groundwater concentrations of TCE and its daughter products near the former landfill were over 2,000 µg/L, and concentrations near CW6 were over 4,000 µg/L (1987). The extent of the plume, based on 1987 laboratory data, is shown on the attached Figure 2.1 in Appendix J (from Warzyn, 1989). In 2000, the highest level of total VOCs was in well R3D at 41, 800 ppb. The West Bank municipal supply wells, EW1, and Site monitoring well locations are shown on the Site Plan.

Figure 1.2 in Appendix J. EW1 was installed to remove contaminants from the south end of the plume and to create a hydraulic flow barrier between the source area and City Well CW-6.

Based on recent information, the primary chlorinated VOC found in the West Bank groundwater is TCE, which was detected at 10 of the 12 West Bank monitoring wells, plus EW1 and City well CW6. The degradation product, C12DCE was detected at various locations. All were less than 1.5 µg/L. Vinyl chloride was not detected on the West Bank. Several monitoring wells had TCE concentrations greater than the MCL of 5 µg/l. The TCE concentration at CW6 (4.0 µg/L) was below the MCL (see Table 4.1 in Appendix J). No VOCs were detected in samples collected from CW10 and CW11 in May and August 2014. However, it is also important to note that the detection limit of 1.0 ppb is above the State ES of 0.2. The detection limit will be reviewed in the updates to the O&M plan.

In the portion of the plume north of EW1, CVOCs are typically located in the deeper portion of the aquifer. Several wells north of EW1 exceeded the MCL for TCE. However, concentrations increased to levels that are slightly greater than 5 µg/L after EW1 stopped operating. This increase indicates that a portion of the impacted groundwater from the old landfill source area is migrating north to CW6 and the West Well Field. Prior to the shutdown of EW1, this portion of the groundwater plume would have been captured by EW1.

In the southern portion of the plume, in the vicinity of the old landfill, CVOCs are more prevalent in the shallower portion of the aquifer. Several monitoring wells south of EW1 exceeded the MCL for TCE near the old landfill source area, and TCE concentrations have fluctuated between 5 µg/L to 40 µg/L over the last 20 years. Since 2011, concentrations have increased to concentrations ranging between 54 µg/L to 88 µg/L. This corresponds to the shutdown of EW1 and is likely due to a reduced groundwater flow velocity in the vicinity of the well, due to the reduced gradient since EW1 was shut down. Thus, the increased concentrations observed since 2011 are not likely due to changes within the source area, such as a new source point within the landfill, but are a result of less groundwater flux through the area.

VOC concentrations at W54 continued to show a sharp increase through 2014. With the change in groundwater flow patterns since EW1 stopped pumping, the higher concentrations at W54 indicate that the impacted groundwater in the area of the old landfill is migrating east and/or discharging to the river depending upon river stage. The groundwater in that area may be influenced by both CW3 and CW6.

As described in previous Annual Monitoring Reports, historically there has been a remnant of higher TCE concentrations in the area of monitoring wells R2D and R3D. In general, the 2014 data indicate continued decline of VOC concentrations at R3D and increased concentrations at R2D on the West Bank. This suggests that the remnant of higher concentrations is moving north to CW6. The historical data for R2D, R3D, and R4D are presented below.

Table 6-Summary of Total Chlorinated VOCs (µg/L) in select wells in West Bank Area

Year	*R2D*	*R3D*	*R4D*
1996	1600	2	540
1997	720	5	65
1998	320	580	55
1999	110	1200	33
2000	45	41800	58
2001	17	11500	13
2002	15	1200	36
2003	10	980	38
2004	11	899	51
2005	7.5	400	756.5
2006	8.2	490	42
2007	9.9	280	1.3
2008	6.5	180	13
2009	7.3	92	22.9
2010	6.2	195.7	25.7
2011	11	203.1	27.6
2012	6.4	20.7	4.9
Nov 2013	20	4.8 6	16.6
March 2014	18.2	73.7	NA
May 2014	19.1	4.7	7.89
August 2014	33.2	2.9	NA
Nov 2014	47.2	2.6	1.8

The TCE concentration in a well in the former landfill source area (W53A) showed a slight decline after trending upward over the last few sampling events. Groundwater in the former landfill source area may fluctuate seasonally depending on changes in precipitation and infiltration. After a large increase at R3D from November 2013 to March 2014, the May and August 2014 results returned to low concentrations (4.7 µg/L and 2.9 µg/L respectively). This variation is likely due to a higher concentration plume remnant, previously south of R3D, which is now migrating north to CW6 and the West Well field.

East Bank VOC Results

East Bank wells that have been sampled included monitoring wells IWD and E21, and City production well CW3. See Figure 1 and Figure 4.1 in Appendix J. The primary chlorinated VOC found in the East Bank groundwater plume is PCE, which was detected at CW3 with a concentration of 1.6 µg/L.

The total chlorinated VOC trend at CW3 is depicted in the chart presented below. Low concentrations of TCE and C12DCE were detected at the island well (IWD) within the river and are considered remnants of the West Bank plume that had historically migrated beneath the river to CW3. No VOCs were detected in the E21 sample, which is consistent with previous results and indicates that the West Bank plume does not currently extend all the way across the river. There were no significant changes in VOC concentrations in the East Bank wells.

East Bank VOC data are presented in Table 4.1 in Appendix K. While PCE was the original contaminant on the East Bank, the presence of TCE, C12DCE, and vinyl chloride at concentrations that exceed the PCE concentration in many wells indicates an active natural biodegradation process. PCE, or one of the daughter products, was detected at 10 of the 12 East Bank monitoring wells and at City well CW3 in 2014. Six of the monitoring wells had concentrations that exceeded the MCL of at least one VOC. The areal extent of the East Bank contaminant plume remained steady compared to 2013 (see Figure 4.1 in Appendix J).

Total CVOC concentrations from 2008 through 2014 for key East Bank wells are shown below:

Table 7- Total Chlorinated VOCs (µg/L) from select wells in East Bank Area.

well	2008	2009	2010	2011	2012	2013	2014
WC3B	1.5	1,460/565	1.24	2.26	3.47	0.26	6.31
WC5A	2.8	12.1	9.86	4.6	1.3	7.3	14.93
E24AR	1.0	13	20	1.4	3.86	22	222.5
E22A	ND	231.9	5.03	3.2	25.4	104.9	12.5
E37A	460	77.35	7.0	140.19	68.06	4.67	3.73
WW6	12	29.97	46.34	17.6	45.48	45.8	51.9
CW3	6.4	4.48	4.36	4.03	3.58	2.62	3.03
IWD	4.4	7.3	4.67	5.7	NA	3.3	72.8

In general on the East Bank, the CVOC concentration decreased significantly at E22A, while E24AR increased considerably. The TCVOC concentration at E24AR was 222.5 µg/L in 2014, which is the highest concentration reported for that location since routine monitoring began in 1993. Since 2000, concentrations at E24AR have ranged from 1 to 22 µg/L. Although it is possible that the result is a labeling or reporting error, review of field notes and discussions with field personnel did not suggest a potential mix-up. It is also possible that the results are an anomaly and that future samples will retreat to historical levels. Historically, monitoring wells E22A and E37A have exhibited similar concentration fluctuations. These fluctuations can be attributed to higher concentration parts of the plume that are flowing from the source area to CW3 where the East Bank groundwater is extracted and treated. Another possible cause of the fluctuation is that the adjacent Wausau Energy Site may also be a source of contamination that has not been fully identified. These possibilities will be further reviewed.

In any case, more study is needed to determine the fate and transport of the VOCs and the effect on possible vapor intrusion.

Proposed Conclusions and Recommendations of the Pilot Study and Annual Monitoring

Pilot Study Findings

The Pilot Study was designed to provide data to detect or confirm aquifer conditions in six principal areas:

1. **Plume Containment**: Water level data collected since EW1 was shut down in mid-2012, indicate that the VOC plumes on both sides of the river are contained by the pumping of the City water supply wells in the West Well Field and at CW3 on the East Bank. The five quarters of water level data collected during the pilot study confirm that the capture zones created by the City wells are consistent and effective at containment and removal of the contaminant plumes. Groundwater contour figures for each quarter during the pilot study have been generated.
2. **No Groundwater Receptors**: No private wells have been identified in the area of groundwater contamination and there are City ordinances that will prevent the installation of wells in the areas near the Superfund Site.
3. **Safe City Water Supply**: Groundwater pumped by the municipal wells is treated by air stripping and is also blended with un-impacted groundwater to ensure a safe water supply. Current influent concentrations at CW3 and CW6 (prior to treatment) are below the Wisconsin and Federal drinking water standards. In addition to the groundwater monitoring conducted for the Superfund Site, the City monitors the post-treatment water supply by performing quarterly sampling and analyses.
4. **Remediation of R3D Stagnation Area**: The aquifer in the R3D area was near the flow divide between EW1 and CW6 (see Figure 4.1 in Appendix J). Over the remediation history, aquifer flushing of VOCs in the R3D area has been slower than other areas because this area was in a stagnation zone. Data collected from over the last five quarters are consistent with plume migration to the north toward CW6. VOC concentrations have declined at R3D while increasing at R2D. Groundwater elevations and contours suggest that the flow divide between CW6 and CW3 is south of R3D in the approximate area of R4D, which is approximately 500 to 700 feet south from where the flow divide was when EW1 was operating. Thus, groundwater north of the R4D area will be captured by CW6.
5. **Continued Remediation of EW1 Area**: The West Bank aquifer south of EW1 appears to be in the capture zone of CW3. Groundwater flow from this area will likely be to the east-southeast beneath the river and eventually to CW3 where it will be removed and treated by the City Water Treatment Plant. Since it is near the flow divide between CW3 and CW6, a portion of the aquifer in this area may be captured by CW6 and flow north.

In the vicinity of the old landfill, CVOCs are more prevalent in the shallower portion of the aquifer. W53A is in the old landfill source area and TCE concentrations have increased slightly since the shutdown of EW1. This is likely due to a decreased groundwater flow velocity. This may be a temporary increase, but it suggests that a portion of the impacted groundwater from the old landfill source area is migrating north EW1 has accomplished its performance goal, which was to prevent the migration of high concentrations of VOCs in the source area groundwater to the West Well Field.

The Pilot Study summarizes the findings as follow:

1. The potential for higher VOC concentrations to migrate from west side source areas to the West Well Field has been eliminated by more than 20 years of EW1 operation and SVE remediation of the former municipal landfill.

2. City Treatment Plant sample results do not indicate potential impact due to contaminated groundwater. The west side plume is captured by CW6 and CW3. CW6 creates a hydraulic barrier to protect the other West Well Field supply wells.
3. ICs maintained by the City of Wausau restrict the installation of private wells and can require abandonment of existing wells. Well surveys indicate that there are no private wells near the Site.

Through a combination of more than 20 years of groundwater remediation, source area remediation, ICs, and continued hydraulic control and treatment of the remaining plume by CW6 and CW3, the shut-down EW1 has not created additional exposure risk to human health or the environment. Given that the current groundwater VOC concentrations near the former source area are much lower, and that EW1 lies within the capture area of other extraction wells, continued operation of EW1 is not critical relative to the protection of potential groundwater receptors. Therefore, the Pilot Study concludes that continued operation of EW1 is not believed to be necessary and permanent shut down of EW1 has been requested by the PRPs. EPA and WDNR are currently evaluating the results and recommendations of the Pilot Study.

Summary- Results of Groundwater Monitoring

Annual monitoring and performance reports prepared by the PRPs indicate that levels of groundwater contamination continue to decrease in general:

- City production well CW3 operated within the requirements established by EPA with few exceptions.
- Total gallons pumped by City production well CW6 was slightly below the EPA requirement.
- CW6 is scheduled for maintenance during 2015 and pumping volumes are anticipated to increase.
- CW3 and CW6 continue to contain and remove the chlorinated VOC plume as demonstrated by the hydraulic data and groundwater contours.
- The West Bank plume does not extend all the way to CW3 on the East Bank.
- Elevated TCE concentrations at former landfill shows some decline.

Proposed Recommendations Relative to Future Groundwater Monitoring

The PRPs recommended that the groundwater monitoring plan be modified based on a review of the current Site conditions and that EW1 is no longer a necessary remedy component. EPA and WDNR will decide whether EW1 is still a necessary component of this remedy and will consider modifications to the groundwater monitoring program.

FYR Site Inspection

The inspection of the Site was conducted on 10/1/2014. In attendance were Sheri L. Bianchin, RPM, U.S. EPA; Mae Willkom, WDNR; Chuck Ahrens and Ron Frehner of CRA; Kevin Fabel of the City of Wausau and the plant operator from Wausau Water Works. The purpose of the inspection was to assess the protectiveness of the remedy.

IV. TECHNICAL ASSESSMENT

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

Implementation of Institutional Controls and Other Measures:
The 1988 and 1989 Wausau RODs required utilizing the City of Wausau's existing municipal wells and treatment plant and an additional treatment plant to meet the cleanup goals. Although not clearly included in the RODs, ICs are needed to ensure that no one is exposed to contamination.

The Wausau Municipal Code outlines a Wellhead Protection ordinance in Chapter 23.54, and also addresses a Private Water Well ordinance in Chapter 19.30. These controls remain in place with the City of Wausau in order to protect the remedy and restrict groundwater use. The effectiveness of these governmental control ICs is currently under review.

A property deed restriction was implemented on the Wausau Chemical facility property to address the completion of the soil remedy on the property. The restriction included ensuring no inappropriate uses occur at the Wausau Chemical property to ensure protection of human health and the environment, and to protect the remedy. This instrument is under review. Additionally, ICs are needed for the former landfill at the Marathon Electric facility.

Remedial Action Performance:
The remedial action components included in the 1988 and 1989 RODs have been implemented. Construction and operation of a treatment system for the municipal groundwater system, installation of a groundwater extraction well located in the west bank contaminant plume, and construction and operation of a SVE system have all been completed in accordance with approved work plans. The Preliminary Close-Out Report signifying construction completion was finalized in March 1994.

System Operations/O&M:
The City of Wausau's treatment plant with air strippers regularly operates as an integral part of the City's municipal groundwater system. The extraction well on the west bank (EW1) operated and discharged into the Wisconsin River under an approved permit until it ceased to operate in 2012. It originally operated at 1600 gpm, but was later reduced to 800 gpm based on groundwater modeling. A pilot study is under way to determine if that well is still necessary in order to meet the Remedial Action Objectives (RAOs). The SVE systems began operating in January 1994. The west bank SVE system was shut down in April 1996. The east bank SVE system was shut down in January 2001. However, effective ICs are required for the East Bank and West Bank areas and a maintenance plan should be formalized for the areas.

Cost of System Operations/O&M:
Current annual O&M costs at the Wausau Groundwater Site are primarily for operation, maintenance, reporting and management of the Site groundwater treatment systems.

The table below presents the estimated costs for the Wausau Superfund Site from 2010 through 2014.

	EW1, CW3 & CW6 O&M	Site O&M, Monitoring, and Reporting	Total
2010	$29,000	$44,000	$73,000
2011	$91,000	$37,000	$128,000
2012	$23,500	$42,000	$65,500
2013	$22,500	$65,000	$87,500
2014	$20,000	$92,000	$112,000
Total	**$186,000**	**$280,000**	**$466,000**

Other costs involve EPA and WDNR project manager time and travel related to the Site.

Opportunities for Optimization:
The groundwater monitoring program was modified and optimized which created a reduction in the number of wells and constituents being sampled. Also, shutdown of EW1 may serve to optimize the remedy.

Early Indicators of Potential Remedy Issues:
There have been no indicators of significant potential remedy issues in relation to the Site since the last FYR in 2010. The Site groundwater treatment system should operate for the foreseeable future since contaminant levels are still above remedial action cleanup standards.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of remedy selection still valid? Yes.

Changes in Standards and To Be Considered:
The following standards were identified as applicable or relevant and appropriate requirements (ARARs) in the ROD and previous FYRs for the Site, and were reviewed for changes that could affect protectiveness:
- Safe Drinking Water Act MCLs;
-Resource Conservation and Recovery Act (RCRA) hazardous and solid waste disposal and storage regulations;
- Clean Water Act (CWA);
- Department of Transportation (DOT) hazardous materials rules;
- State of Wisconsin requirements for soil, groundwater, surface water and air compliance;
- City of Wausau Municipal Code requirements

Standards outlined in the 1988 and 1989 RODs and 1989 and 1991 Consent Decrees are still valid at the Site.

Changes in Exposure Pathways:
Based on EPA's recent guidance, it is recommended that the potential VI pathway be formally evaluated. See: http://www.epa.gov/superfund/cleanup/postconstruction/pdfs/VI_FYR_Guidance-Final-11-14-12.pdf.

Vapor intrusion is the general term given to migration of hazardous vapors from any subsurface contaminant source, such as contaminated soil or groundwater, through the vadose zone and into the indoor air, usually of overlying buildings through openings in the building foundation (e.g., through cracks in the slab, gaps around utility lines, or elevator shafts). Contaminants that may result in vapor intrusion include VOCs and other vapor-forming chemicals, such as some semivolatile organic compounds, elemental mercury, and radionuclides. VOCs typically pose the most common vapor intrusion concerns.

In the West Bank area the residential area is north of Randolph Street. Based on data from 1994 through 2000, the shallow aquifer is relatively unaffected between Randolph Street and CW6. The VOC plume is in the deeper aquifer, thus based on known Site conditions, clean water should be found between the contaminants and the vadose zone, which should prevent potential vapor issues in that area. However, since residences are found in the area, a formal VI study shall be undertaken including resampling shallow wells in the area.

In the East Bank area, the plume is generally in the shallow portion of the aquifer until it gets closer to CW3. During the most recent groundwater sampling event, results from one of the wells, E24AR, demonstrated VOCs at approximately 220 ppb. The reported concentration at E24AR is not consistent with historical data from that well. From 2008 through 2013 total VOC concentrations ranged from 1 to 22 ug/L and it was the highest reported level since 2000. However, the residential area is less than 100 feet away from that well. Also, the buildings at Wausau Chemical are about 100 feet away as well.

Pursuant to the WDNR voluntary cleanup initiative, Wausau Chemical Company proposed a focused site investigation to better understand the residual contamination at the Site including any vapor intrusion and for possible redevelopment of the Site. A report is due in April 2015. Once that is submitted, more thorough VI study can be prepared.

Based on recent groundwater data and other information, a preliminary screening assessment has been performed by EPA. The assessment shows that VOC levels in the groundwater may result in vapor intrusion concerns at the ground surface which may impact buildings. Therefore, formal VI studies were recommended and will be completed.

Changes in Toxicity and Other Contaminant Characteristics:
Toxicity and other factors for contaminants of concern have not changed since the last FYR.

Changes in Risk Assessment Methodologies:
Although the toxicity value for TCE is under review by EPA and the scientific community, risk assessment methodologies used at the Wausau Groundwater Site since the last FYR have not changed, and do not call into question the protectiveness of the remedy.

Expected progress towards meeting RAOs:
The remedy performance is progressing as expected, and it is anticipated to continue to do so. Groundwater monitoring is following the procedures contained in the approved monitoring plan.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy? No.

Levels of VOC contamination in groundwater suggest that vapor intrusion might be a pathway of concern. A VI investigation is recommended and will be undertaken. No other information has become available that might call into question the remedy for Wausau Groundwater Site.

V. TECHNICAL ASSESSMENT SUMMARY

According to the data reviewed and the results of the Site inspection, the remedy is functioning as intended by the Site RODs. There have been no changes in the physical conditions of the site that would impact the protectiveness of the remedies. EPA defers its determination as to whether the remedy is protective in the short-term until additional information becomes available regarding any possible VI pathways. EPA determined in the FYR that effective ICs may not be in place at the Site, which impacts long-term protectiveness of the remedy. While progress has been made in this regard, there is more work to be done in the next year. LTS plans must be finalized and the O&M plans must be updated. Last, EPA will consider whether a remedy revision is necessary since the remedy decision documents are not clear regarding several matters. The decision documents do not specifically state whether the cleanup standards will allow for unlimited use and unrestricted exposure (UU/UE), whether ICs are required to ensure long-term protectiveness, and when remedy modifications are acceptable.

VI. ISSUES/RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 4: Issues and Recommendations/Follow-up Actions

OU #	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
						Current	Future
01/02/ Sitewide	Potential vapor intrusion pathway requires assessment.	Complete a vapor intrusion assessment.	PRPs	EPA	1/15/2016	Unknown	Yes
01/02/ Sitewide	Effective ICs must be implemented.	EPA/State complete ICs evaluation; PRPs implement any additional ICs needed.	PRPs	EPA	12/30/2017	No	Yes
01/02/ Sitewide	O&M Plan must be updated and monitoring, maintenance, and enforcement of ICs is required.	A LTS Plan must be developed and implemented. The O&M plan must be updated.	PRPs	EPA	12/30/2016	No	Yes

OU #	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
						Current	Future
01/02/ Sitewide	Remedy decision documents are not clear regarding several matters. The decision documents do not specifically state whether the cleanup standards will allow for UU/UE, whether ICs are required to ensure long-term protectiveness, and when remedy modifications are acceptable.	Modify remedy decision documents to address these issues.	EPA	EPA	3/31/2017	No	Yes

OU1/OU2/Sitewide Protectiveness Statement	
Protectiveness Determination: Protectiveness Deferred	*Addendum Due Date (if applicable):* 4/8/2016
Protectiveness Statement: A protectiveness determination of the remedy for the Wausau Groundwater Site cannot be made at this time until further information is obtained. The current FYR defers any determination about whether the remedial action at the Site is protective of human health and the environment in the short-term until EPA has investigated the existence of any VI pathways that could result in unacceptable health risks. Although, the remedy is functioning in accordance with the RODs, available data are insufficient to determine whether there is a potential or actual VI exposure pathway; additional evaluations are necessary. It is expected that this action will take approximately 1 year to complete, at which time a protectiveness determination will be made. Furthermore, long-term protectiveness at the Site requires follow-up actions, including revisions of the decision documents to clarify the remedy; implementation of effective ICs; preparation of a LTS plan; and updating the O&M plan.	

VII. NEXT REVIEW

The next FYR report for the Wausau Groundwater Contamination Superfund Site is required five years from the completion date of this review. Prior to that next FYR, an addendum will be completed within 1 year of this review.

FIFTH FIVE-YEAR REVIEW REPORT FOR WAUSAU GROUNDWATER CONTAMINATION SUPERFUND SITE

APPENDICES

APPENDIX A – EXISTING SITE INFORMATION

A. SITE CHRONOLOGY

Table 5: Site Chronology

Event	Date
Initial discovery of problem or contamination	1982
Removal actions	1984
Pre-NPL responses- Treatment system installed by Wisconsin	1985
Proposed NPL listing	1985
Final NPL listing	1986
Remedial Investigation/Feasibility Study initiated	1987
Remedial Investigation/Feasibility Study completed	1989
Interim ROD signature	1988
Final ROD signature	1989
RD/RA CD for Interim ROD	1989
RD/RA CD for Final ROD	1991
Remedial design start	1990
RA Construction completion	1994
Remedy Construction completion date	1994
West side SVE system shut down	1996
First Five-Year Review	1996
EPA approves discontinuation of SVE (West Side)	1996
EPA approves discontinuation of SVE (East Side)	1997
Second Five-Year Review	2000
Third Five-Year Review	2005
Fourth Five-Year Review	2010
Pilot Study Begins	2013
Fifth Five-Year Review	2015

B. BACKGROUND

Physical Characteristics

Wausau, Wisconsin is located in the north central portion of the state along both sides of the Wisconsin River. The Wausau Groundwater Contamination Site encompasses an area in the northern section of the city which includes the well field (and all the production wells). The extent of the area of concern for the Site includes both industrial and residential areas. The City of Wausau provides drinking water for approximately 39,000 people. Several Site location maps are shown on Figures 1, 1.1, 1.2, and 1.3 in Appendix J.

Land and Resource Use

Historically, there were two areas of concern which are associated with the Wausau Groundwater Site. The first area is a Marathon Electric Corporation property along the west bank of the Wisconsin River, which includes a closed former municipal landfill. The second area is the Wausau Chemical facility property located along the East Bank of the river. A Site plan is presented on Figure 1.2 in Appendix J. A Site schematic is shown on Figure 1.3 in Appendix J.

Site Geology and Hydrology

The Site is underlain by glacial outwash and alluvial sediments that have filled in the pre-glacial stream valley in which the Wisconsin River now flows. This alluvial aquifer ranges from 0 to 160 feet thick and has an irregular base and lateral boundaries. The relatively impermeable bedrock that underlies the aquifer and forms its lateral boundaries within the pre-glacial valley defines the boundaries of the aquifer. Six production wells in the Site area provide drinking water for the City of Wausau. These wells are screened in the glacial outwash and alluvial sand and gravel deposits that underlie and are adjacent to the Wisconsin River.

Under natural conditions, groundwater would flow toward and discharge to the Wisconsin River and its tributary, Bos Creek. Under remedial pumping conditions, however, groundwater flowed toward EW1 and the production wells. The operation of EW1 created groundwater flow divides between the west and east City well fields and isolated the former landfill source of contaminated groundwater from the production wells. Since the pilot shutdown of EW1 in July, 2012, however, groundwater flows toward the City production wells.

History of Contamination

In 1982, three of Wausau's deep aquifer water production wells (CW3, CW4 & CW6) were found to be contaminated with VOCs. The primary contaminants were PCE, TCE and 1,2- DCE. EPA awarded the City of Wausau a federal grant in 1983 for design and installation of packed-tower VOC air strippers for water supply treatment. However, as high VOC levels persisted, EPA's emergency response team was called in 1984 to install a granular activated carbon (GAC) treatment system at CW6 until the air strippers for CW3 and CW6 were completed later that year. At that point, CW4 was used only occasionally during peak periods until 1989, and then decommissioned when new production well CW10 went on-line.

As described below, EPA issued two RODs to remediate the sources of contamination and ensure that human health and the environment are protected.

Initial Response

A groundwater extraction system with air stripping treatment (required by the State of Wisconsin) began operating at the Wausau Chemical facility in 1985. The system consisted of a series of extraction wells in the shallow portion of the aquifer at the south end of the Wausau Chemical property. The Wausau Chemical groundwater system operated until 1996, when it was shut down and abandoned.

Basis for Taking Action

Remedial planning began at Wausau Groundwater as the Site was proposed for the National Priorities List (NPL) on April 10, 1985. The Site became a final NPL listing on June 10, 1986. A two phase remedial investigation (RI) was carried out from August 1987 to September 1988. The significant results of the RI, documented in a 1989 report, included:

The City's production wells were located in a wedge shaped aquifer composed of glacial outwash materials deposited within the pre-glacial bedrock river valley of the Wisconsin River. The aquifer was the sole-source of potable water for the City of Wausau.

Two separate sources of contamination were identified within the zone of influence of the City's production wells. The first source was a former municipal landfill located south of CW6 on the Marathon Electric property in the west study area. The second source was the Wausau Chemical facility located between CW3 and CW4 in the east study area.

Three plumes of contamination were found within the zone of influence of the City's production wells. The first was composed primarily of TCE and was emanating from the former municipal landfill. This plume was found to split at the boundary of the source area, with one leg migrating north to CW6 and the second leg migrating under the river to CW3. The second plume originated from the southern boundary of the Wausau Chemical property and impacted both CW3 and CW4. This plume was comprised primarily of PCE, but contained other VOCs as well. The third plume originated from the northern boundary of the Wausau Chemical property and was impacting CW3. This contamination in the plume was comprised primarily of PCE.

Soils at both source areas were contaminated with VOCs. The soils in the vicinity of the former municipal landfill were contaminated primarily with TCE. Soils on the Wausau Chemical property were contaminated primarily with PCE, along with other VOCs.

During the RI/FS, several important potential exposure pathways were found for the Site. Potential health risks were evaluated for the following exposure pathways and potentially exposed population: 1) Residents using municipal water exposed to contaminant concentrations equal to the laboratory detection limits of 0.5 *ug/l* for PCE and TCE, and 1.0 *ug/l* for DCE; 2) Hypothetical users of private well water assuming a private well is installed within the contaminated aquifer in the future. It was assumed that a user would be exposed to the highest concentrations found in groundwater, approximately 4300 *ug/l,* to obtain the worst case scenario for this. FS reports that evaluated remedial alternatives based on the findings of the two phases of the RI were completed in September 1988 and August 1989. EPA issued an interim ROD in December 1988 that called for a groundwater pump and treatment system to address the contaminant plume emanating from the former municipal landfill. A final ROD, which incorporated the interim ROD with remedy objectives for the Wausau Chemical source areas and plumes, was signed in September 1989.

C. REMEDIAL ACTIONS

Remedy Selection

The Site was managed under 2 RODs.

Following are the RAOs of the 1988 ROD for OU 1 (Interim Action ROD):

1) Prevent exposure to contaminated drinking water from groundwater supply wells located within the contaminant plume threatening West Well Field; and

2) Protect the West Well Field from future increased levels of contamination.

The response actions outlined for the Wausau Groundwater Site in the December 1988 interim ROD included the following remedial components:

1) Construction and operation of a treatment system for removal of contaminants.

2) Installation of a groundwater extraction well located in the southern portion of the west contaminant plume.

3) Discharge of treated water to the Wisconsin River.

4) Installation of additional wells, as necessary, and

5) Preparation of an operation and maintenance monitoring program.

6) The selected remedy established cleanup levels for the contaminants of concern in groundwater based on the Safe Drinking Water Levels (MCLs) and the Wisconsin Administrative Rule chapter NR 140 for groundwater protection.

The RAOs of the 1989 ROD for OU 2 (Final ROD) were to address the remaining concerns at the Site following implementation of the Interim Action and included:

1) Elimination of the continued sources of groundwater contamination identified as the former City landfill / Marathon Electric property and the Wausau Chemical property, and

2) Prevention of exposure to contaminants present in the two additional groundwater contaminant plumes identified.

The response actions outlined for the Wausau Groundwater Site in the September 1989 final ROD include the following additional components:

1) Construction and operation of SVE systems to remove volatile contaminants from soils at each of the identified source areas.

2) Treatment of off-gases from the SVE system operation using vapor phase carbon units, which would be regenerated off-site.

3) Groundwater remediation utilizing the City municipal wells and existing air strippers for removal of contaminants from plumes affecting the wells, and

4) Monitoring of groundwater and soil. The soils were cleaned up with the goal of protecting groundwater.

Remedy Implementation

Interim Action

A CD addressing the December 1988 interim ROD was entered in U.S. District Court in September 1989. The contractor representing the responsible parties (Wausau PRP Group) completed the remedial design (RD) in March 1990.

On-site construction began in June 1990, with the installation of a 16-inch diameter extraction well screened over the bottom 40 feet of the aquifer. The extraction well is located at the north boundary of the former municipal landfill and was originally pumped at 1600 gallons per minute (gpm). The pumping rate was later reduced to 850 gpm following a determination that the higher rate created a groundwater zone of influence too far to the south. A pump house with associated main and piping was installed to facilitate treatment and discharge of the extracted groundwater. The groundwater was pumped from the well to the pump house, and was discharged to a manhole storm sewer leading to a fenced rip rap outfall structure designed to enhance volatilization prior to final discharge into the Wisconsin River. The discharge was required to meet the substantive requirements of the Wisconsin Pollution Discharge Elimination System (WPDES) permit issued by the WDNR. A final inspection for the interim remedy was completed by EPA in October 1990.

Additional groundwater remediation was provided by an extraction system operated by Wausau Chemical between 1985 and 1996 as an interim remediation measure. The extraction system at Wausau Chemical consisted of a series of shallow wells at the south end of the Wausau Chemical property. Groundwater was treated by air stripping. This system was not part of the ROD or the CD. Operation of the system ceased in 1996.

Final Remedial Action

The final remedial action at the Site consisted of two SVE systems to address the source areas and groundwater extraction and treatment utilizing existing municipal production wells and an extraction well. A CD addressing the September 1989 final ROD was entered in U.S. District Court in January 1991. The contractor for the Wausau PRP group completed the RD in June 1993.

Source Area Remediation

Contaminated soil and groundwater leachate were addressed by the former SVE systems, one at the east bank and one at the west bank. Soil remedial objectives included the following: 1) elimination of any excess groundwater leachate, 2) prevention of direct contact, and 3) prevention of ingestion and inhalation human health risks by treatment of contaminated soils. Soil clean up levels for the Site were determined using a groundwater leachate model in order to eliminate additional risks for groundwater contamination.

Source area remediation was accomplished by the installation of SVE systems at Marathon Electric (West Bank) and Wausau Chemical (East Bank) in January 1994. Off-gas treatment was provided by vapor phase carbon. Construction for the final Site remedy began in October 1993 with the installation of the two separate SVE systems. One system was located in the vicinity of the closed landfill on the west side of the Wisconsin River, and included two extraction wells. The second SVE system was located on Wausau Chemical property on the east side of the river, and originally included four wells. Two additional extraction wells were later added to the east side SVE system. As discussed below in more detail, EPA and WDNR approved the completion of the soil remedy for both areas at the Wausau Groundwater Site. The SVE wells were screened from five feet below grade to the water table and the off-gas systems consisted of two activated carbon canisters with a sampling port in between.

Soil Remediation at Wausau Chemical-East Bank

The SVE system at the south loading dock (aka drum storage area) on the Wausau Chemical property is also known as the East Bank system. It operated from 1994 to 2001. The SVE system was necessary to remediate the source area contamination that was contributing to a VOC plume in the groundwater. The PRPs submitted a Mid-Point of Operations Report for the SVE systems in October 1995. After confirmatory soil samples were taken to assure soil clean up levels were achieved, EPA approved in April 1996 a shutdown of the SVE system on the west side of the Wisconsin River, and the two northern SVE wells on the east side of the river. Operation of four SVE wells in the southern portion of the system on the east side of the river continued at that time, although volatile organic soil contamination had decreased substantially in that area. In 1997, a draft SVE System closure report was submitted by the PRPs. However, EPA and WDNR expressed concern that these several areas had elevated levels relative to the area as a whole. The system continued to operate until 2001. The PRPs sent a letter requesting permanent shut down of the SVE system in March 2002. EPA and WDNR requested confirmation soil and groundwater sampling by the contractor, which was completed and reported in March 2004. After discussions between the WDNR and EPA, it was decided that final closure of the SVE system would be granted once a deed restriction was implemented and recorded against the Wausau Chemical property imposing industrial property controls. The WDNR issued a closure letter in April 1996 stating the conditions required for final closure, including maintenance of the concrete barrier and implementation and recording of a deed restriction advising of the presence of residual contamination. On April 26, 2007, Marathon County recorded a deed restriction for the Wausau Chemical property. On August 29, 2007, the PRPs requested final closure of the SVE system and completion of the source area remediation. The EPA and WDNR approved final closure of the East Bank source remediation system in September 2007. EPA approved the request in the letter dated September 26, 2007. A requirement of the closure plan was an annual inspection of the paved areas surrounding the Wausau Chemical property, as described in the Pavement Cover and Building Maintenance Plan.

The purpose of the inspection is to inspect the integrity of the paved areas of the property and make recommendations as needed to minimize rainwater infiltration and prevent direct human contact with soils. In September 2008, the SVE wells and soil gas probes that had composed the soil gas extraction and monitoring system for the East Bank SVE system were abandoned according to WDNR requirements. At the same time, the fifteen shallow groundwater extraction wells at the south side of the Wausau Chemical property were also abandoned. The recorded deed restrictions and Pavement Cover and Building Maintenance Plan still must be reviewed by EPA and WDNR. Copies of the abandonment forms for the SVE wells, gas probes and groundwater extraction wells can be found in the annual reports.

Soil Remediation at the former Wausau City Landfill West Bank

The SVE system operated from 1994 to 1996 on the former Wausau City Landfill at the Marathon Electric property is known as the West Bank system. The SVE system at Marathon Electric operated until April 1996, when the West Bank source remediation was approved as complete. After confirmatory soil samples were taken to assure soil clean up levels were achieved, EPA approved shut down in April 1996 of the SVE system on the west side of the Wisconsin River, and the two northern SVE wells on the east side of the river. Operation of four SVE wells in the southern portion of the system on the east side of the river continued at that time, although volatile soil contamination had decreased substantially in that area. The East Bank SVE system was modified in 1996 and continued to operate. In January 2001, the East Bank system was shut down while evaluation for final closure occurred. The East Bank source remediation was approved by EPA as complete in 2007. The SVE system at Marathon Electric operated until April 1996, when the West Bank source remediation was approved as complete. WDNR approved the closure of the West Bank SVE system in 2006.

Groundwater and Surface Water Remediation and Monitoring

This information is discussed in the FYR report.

Appendix C

List of Reviewed Documents

Documents Reviewed in preparation of this Fifth Five-Year Review for the Wausau Groundwater Contamination Site include the following:

1. Five-year Review Reports: 7/10/00, 6/13/05, 4/9/10; U.S. EPA
2. RD/ RA Consent Decrees: January 1991 & September 1989; U.S. EPA
3. Record of Decisions: September 1989 & December 1988; U.S. EPA
4. Wausau Groundwater Site file, and Operation & Maintenance documents, various

Reports Submitted Since Previous Five-Year Review Report

1. First Quarter 2010 Report, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., April 15, 2010.

2. Second Quarter 2010 Report, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., July 14, 2010.

3. Request for Reduced Pumping Rate at EW1, Wausau Water Supply NPL Site, CRA Inc., September 7, 2010.

4. Third Quarter 2010 Report, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., October 13, 2010.

5. Fourth Quarter 2010 Report, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., January 27, 2011.

6. 2010 Annual Monitoring Report, Wausau Water Supply NPL Site, Wausau, Wisconsin, CRA Inc., March 2011.

7. First and Second Quarter 2011 Reports, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., July 22, 2011.

8. Third Quarter 2011 Report, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., October 18, 2011.

9. Fourth Quarter 2011 Report, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., January 10, 2012.

10. First Quarter 2012 Report, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., April 5, 2012.

11. 2011 Annual Monitoring Report, Wausau Water Supply NPL Site, Wausau, Wisconsin, CRA Inc., April 2012.

12. Second Quarter 2012 Report, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., July 10, 2012.

13. E24/E24A Well Abandonment and Replacement Procedures, Wausau Water Supply NPL Site, CRA Inc., July 24, 2012.

14. E24/E24A Well Abandonment and Monitoring Well Replacement Documentation, Wausau Water Supply NPL Site, Wausau, Wisconsin, CRA Inc., September 19, 2012.

15. Third Quarter 2012 Report, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., October 17, 2012.

16. Fourth Quarter 2012 Report, EW1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., January 30, 2013.

17. 2012 Annual Monitoring Report, Wausau Water Supply NPL Site, Wausau, Wisconsin, CRA Inc., April 2013.

18. First Quarter 2013 Report, EW-1 Treatment and Discharge, Wausau Water Supply NPL Site, CRA Inc., April 24, 2013.

19. EW1 Shutdown Pilot Study Work Plan, Wausau Water Supply NPL Site, Wausau, Wisconsin, CRA Inc., September 2013.

20. Final Report, 2013 Annual Monitoring Report, Wausau Water Supply NPL Site, Wausau, Wisconsin, CRA Inc., February 2014.

21. EW1 Shutdown Pilot Study, 1st Quarter 2014 Results, Wausau Water Supply NPL Site, CRA Inc., May 1, 2014.

22. E23A Well Abandonment Proposal, Wausau Water Supply NPL Site, CRA Inc., July 25, 2014.

23. EW1 Shutdown Pilot Study, 2nd Quarter 2014 Results, Wausau Water Supply NPL Site, CRA Inc., July28, 2014.

24. E23A Well Abandonment Proposal – Revised, Wausau Water Supply NPL Site, CRA Inc., September 18, 2014.

25. E23A Well Abandonment Report, Wausau Water Supply NPL Site, CRA Inc., October 21, 2014.

26. EW1 Shutdown Pilot Study, 3rd Quarter 2014 Monitoring Results, Wausau Water Supply NPL Site, CRA Inc., October 24, 2014.

27. Draft 2014 Annual Report including Results from EW-1 Pilot Study and IC Study

Appendix D

List of Participants on Five-year Review Inspection

Wausau Five-Year Inspection
10-1-14

Name	Affiliation	Email / Phone
Sheri Bianchin	U.S.EPA, RPM	bianchin.sheri@epa.gov 312-886-4745
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[illegible]	Wausau Water	715-261-7286

Appendix E

Newspaper Advertisement Announcing Five-year Review Start

Wisconsin facilities performed fewer abortions in 2013

Associated Press

MADISON — Wisconsin medical facilities performed nearly 7 percent fewer abortions last year, continuing a five-year decline, according to a state report released Wednesday.

The Department of Health Services' annual report on induced abortions, defined in state law as a physician ending a woman's pregnancy, found that number of abortions that occurred in the state fell from 6,927 in 2012 to 6,462 last year. That figure has declined in each year since 2009, when 8,542 abortions were performed.

According to the report, 6,251 abortion were performed in the state on Wisconsin residents; 115 on Michigan residents; 70 on Illinois residents, six on Minnesota residents, one on an Iowa resident; 18 on residents from other states; and one on a resident of another country.

Of the Wisconsin residents, 215 were minors. The report said 186 minors had written consent from an adult, including 167 who had parental consent; 12 were emancipated minors; and 17 had court permission to waive consent.

STATE NOTES

Walker: No number in mind for vouchers

MIDDLETON — Gov. Scott Walker says he doesn't have a number in mind for how much he wants to grow the private-school voucher program, should he be elected to a second term.

Walker said Wednesday after touring a sensor manufacturer in Middleton that he wants to grow the program in stages, so there is capacity for all the students who wish to participate.

The program allows for students to use a taxpayer subsidy to attend a private school. The program currently has a statewide enrollment cap of 1,000 students outside of Milwaukee and Racine.

Walker's opponent for re-election Democrat Mary Burke opposes the statewide voucher program.

Burke says she would eliminate the statewide voucher program if elected, but allow it to continue in Milwaukee and Racine.

Girl in stabbing attack back in school

WAUKESHA — The 12-year-old girl who nearly died after she was stabbed 19 times in Waukesha is back in school.

A spokesman for the girl's family says it has been a summer of doctor's appointments, surgeries, specialists and recovery. Stephen Lyons says the girl has been eager to go back to school. She started the 7th grade on Tuesday.

Lyons told WITI-TV that the girl and her family continue to attend therapy sessions to deal with the emotional scars of the ordeal.

Court documents say two classmates plotted for months to kill the girl to curry favor with a fictional Slender Man character they read about online. One of two preteens accused in the stabbing has been ordered to receive treatment rather than stand trial.

Attendance rises at historical sites

MADISON — More people have been visiting Wisconsin's historic sites and museums this year.

The Wisconsin Historical Society says attendance this year through mid-August is up 4.8 percent over the same period last year. Attendance was up at 10 of 11 historical sites and museums.

Society officials say good weather and a number of events, including an opportunity to ride historic bikes at Old World Wisconsin, the celebration of the 200th anniversary of the Battle of Prairie du Chien at Villa Louis and new exhibits at the Wisconsin Historical Museum helped boost attendance.

The only site that saw a decline was the first Capitol near Belmont. Attendance there dropped 11.6 percent.

— Associated Press

Movies

Continued from Page 4A

Hassan under her wing. 117 minutes. ★★★ (Campus, Cedar Creek, Cosmo, Marshfield, Wisconsin Rapids)

"THE IDENTICAL"

(PG) — Twin brothers are unknowingly separated at birth; one of them becomes an iconic rock 'n' roll star, while the other struggles to balance his love for music and pleasing his father. 108 minutes. No review available. (Cedar Creek, Marshfield, Stevens Point, Wisconsin Rapids)

"IF I STAY"

(PG-13) — Life changes in an instant for young Mia Hall after a car accident puts her in a coma. During an out-of-body experience, she must decide whether to wake up and live a life far different than she had imagined. 106 minutes. ★★★ (Cedar Creek, Cosmo, Marshfield, Stevens Point, Wisconsin Rapids)

"LET'S BE COPS"

(R) — Two struggling pals dress as police officers for a costume party and become neighborhood sensations. But when these newly-minted "heroes" get tangled in a real life web of mobsters and dirty detectives, they must put their fake badges on the line. 104 minutes. ★★ (Campus, Cedar Creek, Marshfield)

"THE NOVEMBER MAN"

(R) — An ex-CIA operative is brought back in on a very personal mission and finds himself pitted against his former pupil in a deadly game involving high-level CIA officials and the Russian president-elect. 108 minutes. No review available. (Cedar Creek, Marshfield, Stevens Point, Wisconsin Rapids)

"TEENAGE MUTANT NINJA TURTLES"

(PG-13) — Darkness has settled over New York City as Shredder and his evil Foot Clan have an iron grip on everything from the police to the politicians. The future is grim until four unlikely outcast brothers rise from the sewers and discover their destiny as Teenage Mutant Ninja Turtles. The Turtles must work with fearless reporter April O'Neil and her cameraman Vern Fenwick to save the city and unravel Shredder's diabolical plan. 100 minutes. (Shown in 3D) No review available. (Cedar Creek, Marshfield, Stevens Point, Wisconsin Rapids)

"WHEN THE GAME STANDS TALL"

(PG) — The journey of legendary football coach Bob Ladouceur, who took the De La Salle High School Spartans from obscurity to a 151-game winning streak that shattered all records for any American sport. 115 minutes. No review available. (Cedar Creek, Cosmo, Marshfield, Stevens Point, Wisconsin Rapids)

"WIZARD OF OZ"

(G) — Dorothy Gale is swept away to a magical land in a tornado and embarks on a quest to see the Wizard who can help her return home. 112 minutes. No review available. (Cedar Creek)

Appendix F

Deed Restrictions Implemented on Wausau Chemical Property

STATE OF WISCONSIN - MARATHON COUNTY
RECORDED
04/26/2007 2:24:45 PM
MICHAEL J. SYDOW, REGISTER OF DEEDS

DOC# 1475599

Document Number | DEED RESTRICTION

Michael J. Sydow

Declaration of Restriction

In Re:
James E. Cherwinka Trust

Parcel 1:

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, County of Marathon, State of Wisconsin, described as follows:

Beginning at a point on the South line of Wausau Avenue 227.75 feet West of the West line of Second Street; thence South perpendicular to the South line of Wausau Avenue, 70 feet; thence West, parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet Northwesterly of railroad siding track; thence Southwesterly on a curve parallel to and 15 feet distant Northwesterly from the center line of said railroad siding track, to a point 458 feet West of the West line of Second Street; thence North to the South line of Wausau Avenue at a point which is 458 feet West of the West line of Second Street; thence East along the South line of Wausau Avenue 230.25 feet, more or less, to the point of beginning.

Recording Area

Name and Return Address Parcel 25-one

James E. Cherwinka Trust
c/o Attorney James E. Wiederhoeft
Fowler and Wiederhoeft LLP
702 North Blackhawk Avenue
Madison, Wisconsin 53705-5326
and
Wausau Chemical Corp.
2001 North River Drive
Wausau, Wisconsin 54401

291-2907-252-0990 NW NW
291-2907-252-0997 NW NW
Parcel Identification Numbers (PIN)

COPY

Parcel 2:

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, Marathon County, State of Wisconsin, described as follows:

Commencing at a point on the South line of Wausau Avenue, 227.75 feet West of the West line of Second Street; thence South perpendicular to South line of Wausau Avenue, 70 feet; thence West parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet NW'ly of railroad siding track, thence SW'ly on a curve parallel to and 15 feet NW'ly from the center line of said railroad siding track

to a point, said point being 131 feet South of the South line of Wausau Avenue; thence at an azimuth of 180°, 23.05 feet to a point, said point being the P.C. of a reverse curve to the right; thence SW'ly 224.05 feet along a curve having the following data, radius 675.11 feet, tangents 112.97 feet, I angle 19°, long chord 222.85 feet, curve length 224.05 feet, degree of curvature 8° 28.8', to a point said point being the point of reverse curvature; thence SW'ly 166.90 feet along a curve to the left having the following data, radius 615.11 feet, tangents 120.77 feet, long chord 237.02 feet, curve length 238.5 feet, curvature 9° 18.6', I angle 22° 13' to a point, which point is the point of beginning of the excepted parcel hereafter described; thence at an azimuth of 87° 06' a distance of 273.95 feet to a point, said point being 50 feet perpendicular to and West of the center line of the main line track of the C. M. St. P. & P. R. R.; thence at an azimuth of 10° 40' a distance of 532.32 feet parallel with and 50 feet West of the center line of said railroad tracks to a point, said point being on the South line of Wausau Avenue and 155.60 feet West of the West line of Second Street; thence West along the South line of Wausau Avenue 72.15 feet to the point of beginning; excepting therefrom the following parcel; beginning at the point designated in the foregoing description as the point of beginning of the excepted parcel; thence N 83° 46' 30" E, 99.6 feet; thence NE'ly, parallel with the centerline of the railroad siding track of the Chicago, Milwaukee, St. Paul & Pacific Railroad, 181.1 feet; thence Northwesterly, at a right angle, 89.6 feet; thence SW'ly, along the East boundary of River Drive, and along the West line of the parcel conveyed in the foregoing description, 197 feet, more or less, to the point of beginning.

130916

The above Parcels 1 and 2 are part of Parcel 1 of Certified Survey Map No. 12726 recorded in the office of the Register of Deeds for Marathon County, Wisconsin, in Volume 55 of Certified Survey Maps on page 44, a copy of which is attached hereto as Exhibit A. The above Parcels 1 and 2 are also identified as PIN 291-2907-252-0990.

And

Wausau Chemical Corporation

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, Marathon County, State of Wisconsin, designated as the excepted parcel, described as follows:

Commencing at a point on the South line of Wausau Avenue, 227.75 feet West of the West line of Second Street; thence South perpendicular to South line of Wausau Avenue, 70 feet; thence West parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet NW'ly of railroad siding track, thence SW'ly on a curve parallel to and 15 feet NW'ly from the center line of said railroad siding track to a point, said point being 131 feet South of the South line of Wausau Avenue; thence at an azimuth of 180°, 23.05 feet to a point, said point being the P.C. of a reverse curve to the right; thence SW'ly 224.05 feet along a curve having the following data, radius 675.11 feet, tangents 112.97 feet, I angle

19°, long chord 222.85 feet, curve length 224.05 feet, degree of curvature 8° 28.8', to a point said point being the point of reverse curvature; thence SW'ly 166.90 feet along a curve to the left having the following data, radius 615.11 feet, tangents 120.77 feet, long chord 237.02 feet, curve length 238.5 feet, curvature 9° 18.6', I angle 22° 13' to a point, which point is the point of beginning of the excepted parcel hereafter described; thence at an azimuth of 87° 06' a distance of 273.95 feet to a point, said point being 50 feet perpendicular to and West of the center line of the main line track of the C. M. St. P. & P. R. R.; thence at an azimuth of 10° 40' a distance of 532.32 feet parallel with and 50 feet West of the center line of said railroad tracks to a point, said point being on the South line of Wausau Avenue and 155.60 feet West of the West line of Second Street; thence West along the South line of Wausau Avenue 72.15 feet to the point of beginning; excepting therefrom the following parcel; beginning at the point designated in the foregoing description as the point of beginning of the excepted parcel; thence N 83° 46' 30" E, 99.6 feet; thence NE'ly, parallel with the centerline of the railroad siding track of the Chicago, Milwaukee, St. Paul & Pacific Railroad, 181.1 feet; thence Northwesterly, at a right angle, 89.6 feet; thence SW'ly, along the East Boundary of River Drive, and along the West line of the parcel conveyed in the foregoing description, 197 feet, more or less, to the point of beginning.

The above description is a part of Parcel 1 of Certified Survey Map No. 12726 recorded in the office of the Register of Deeds for Marathon County, Wisconsin, in Volume 55 of Certified Survey Maps on page 44. See Exhibit A. This parcel is also identified as PIN 291-2907-252-0997.

STATE OF WISCONSIN)
)ss
COUNTY OF MARATHON)

WHEREAS, the James E. Cherwinka Trust and Wausau Chemical Corporation are the owners of the above-described property.

WHEREAS, James E. Cherwinka died on October 18, 2005. The James E. Cherwinka Trust is the successor in interest to James E. Cherwinka in connection with said above-described property.

WHEREAS, one or more historical tetrachloroethylene discharges have occurred on this property, and as of November 7, 2001, soil samples collected on this property contained tetrachloroethylene at concentrations of 1.0 mg/kg at grid point 19-4 at a depth of eight feet and 0.67 mg/kg at grid point 35-7 at a depth of four feet, trichloroethylene at a concentration of 0.43 mg/kg at grid point 35-7 at a depth of four feet and cis-1,2-dichloroethylene at a concentration of 0.13 mg/kg at grid point 35-7 at a depth of four feet, all as shown on Figure 1.

WHEREAS, the existing building and pavement on the property provide a partial barrier, minimizing infiltration, and the depth of the remaining contaminants prevents direct contact with the residual soil contamination.

WHEREAS, sampling data on and about the property has demonstrated soil cleanup adequately protective of groundwater quality; however, residual soil contamination remains on the property.

WHEREAS, it is the desire and intention of the property owners to impose on the property restrictions that will make it unnecessary to conduct further soil remediation activities on the property at the present time.

NOW THEREFORE, the owners hereby declare that all of the property described above is held and shall be held, conveyed or encumbered, leased, rented, used, occupied and improved subject to the following limitation and restrictions:

1. Construction or installation of any water supply well on the property is prohibited pursuant to this deed restriction.

2. Plowing or cultivation of agricultural crops on the property is prohibited pursuant to this deed restriction.

3. The existing Wausau Chemical Corporation building shown on Exhibit B makes complete remediation of soils beneath the building impractical. If the existing building is removed or modified, the property owner shall conduct an investigation to determine the degree and extent of soil contamination beneath the building. To the extent that soil contamination is found at that time, the Wisconsin Department of Natural Resources shall be immediately notified and the soil contamination shall be managed in accordance with applicable statutes and rules. If currently inaccessible soil contamination near or beneath the building is excavated in the future, the soil must be sampled and analyzed, may be considered solid or hazardous waste if residual contamination remains and must be stored, treated and disposed in compliance with applicable statues and rules.

4. The existing pavement forms a barrier that will be maintained in accordance with the maintenance plan entitled "Pavement Cover and Building Barrier Maintenance Plan, Wausau Chemical Corporation", dated October 17, 2006. The existing pavement will minimize the infiltration of water which prevents additional groundwater contamination. The existing pavement shall be maintained on the property in the locations shown on Exhibit B. Such existing pavement shall not be removed without the approval of the Wisconsin Department of Natural Resources.

5. If construction or installation of buildings, structures or other improvements occur on grid points 19-4 or 35-7 shown on Exhibit B, then the affected soils at grid points 19-4 or 35-7 shall be sampled and managed in accordance with applicable statutes and rules.

6. The property shall be used only for industrial purposes.

This restriction is hereby declared to be a covenant running with the land and shall be fully binding upon all persons acquiring the above-described property whether by descent, devise, purchase, or otherwise. This restriction inures to the benefit of and is enforceable by the Wisconsin Department of Natural Resources, its successors or assigns. The Department, its successors or assigns, may initiate proceedings at law or in equity against any person or persons

DOC # 1475599

who violate or are proposing to violate this covenant, to prevent the proposed violation or to recover damages for such violation.

Any person who is or becomes owner of the property described above may request that the Wisconsin Department of Natural Resources or its successor issue a determination that one or more of the restrictions set forth in this covenant is no longer required. Upon the receipt of such a request, the Wisconsin Department of Natural Resources shall determine whether or not the restrictions contained herein can be extinguished. If the Department determines that the restrictions can be extinguished, an affidavit, attached to a copy of the Department's written determination, may be recorded by the property owner or other interested party to give notice that this deed restriction, or portions of this deed restriction, are no longer binding.

By signing this document, Rhona Vogel asserts that he or she is duly authorized to sign this document as a Trustee of the James E. Cherwinka Trust.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restrictions, this 13 day of April, 2007.

Signature: Rhona Vogel
Printed Name: Rhona Vogel
Trustee, James E. Cherwinka Trust

Subscribed and sworn to before me
this 13 day of April, 2007

Notary Public, State of Wisconsin
My commission expires 7/22/07

By signing this document, Jeff Cherwinka asserts that he or she is duly authorized to sign this document as an officer of Wausau Chemical Corporation.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restrictions, this 19 day of April, 2007.

Signature:
Printed Name: Jeff Cherwinka
Officer of Wausau Chemical Corporation

DOC# 1475599

Subscribed and sworn to before me
this 24th day of April, 2007

Notary Public, State of Wisconsin
My commission 08-05-07

This document was drafted by Michael Best & Friedrich LLP and Conestoga-Rovers and Associates, Inc.

X:\CLIENTB\094167\0001\A1844250.1

DOC# 1475509

12726

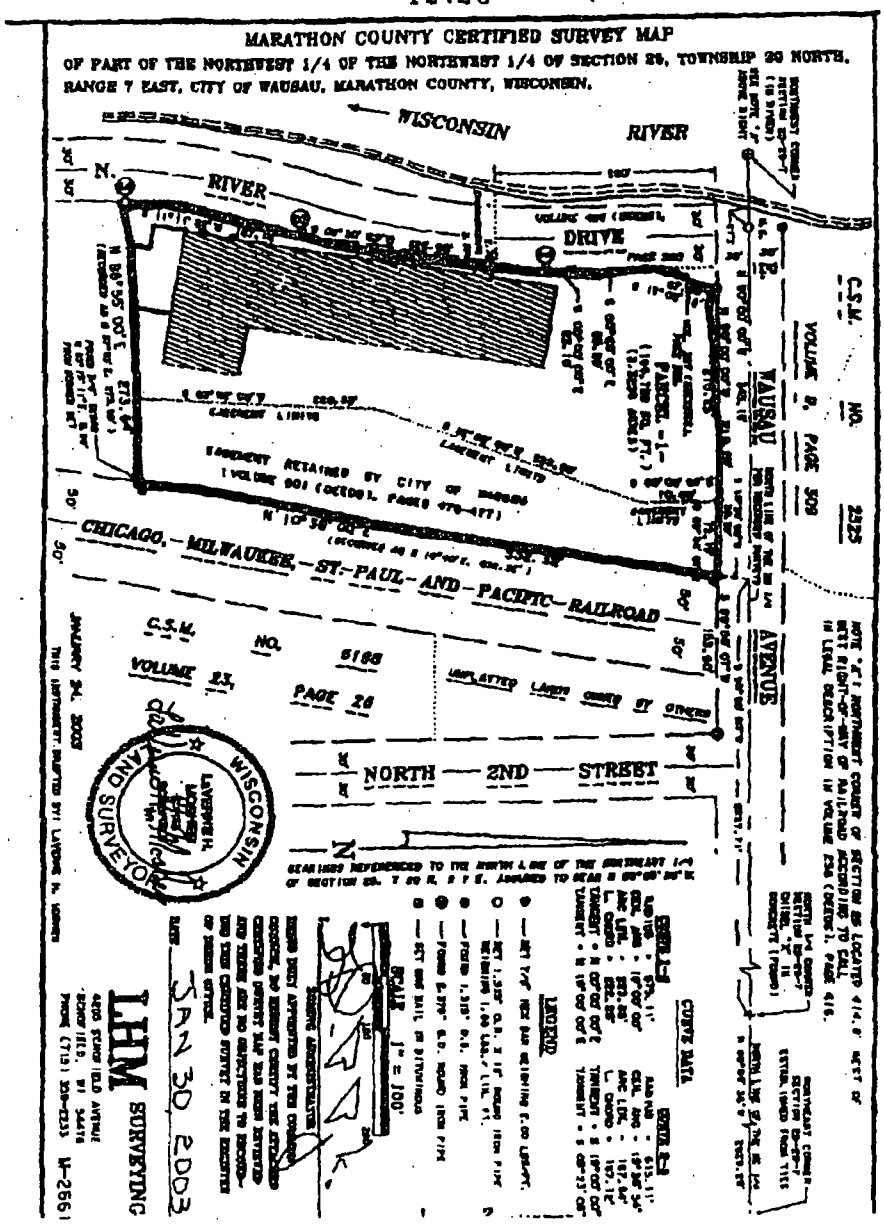

EXHIBIT A

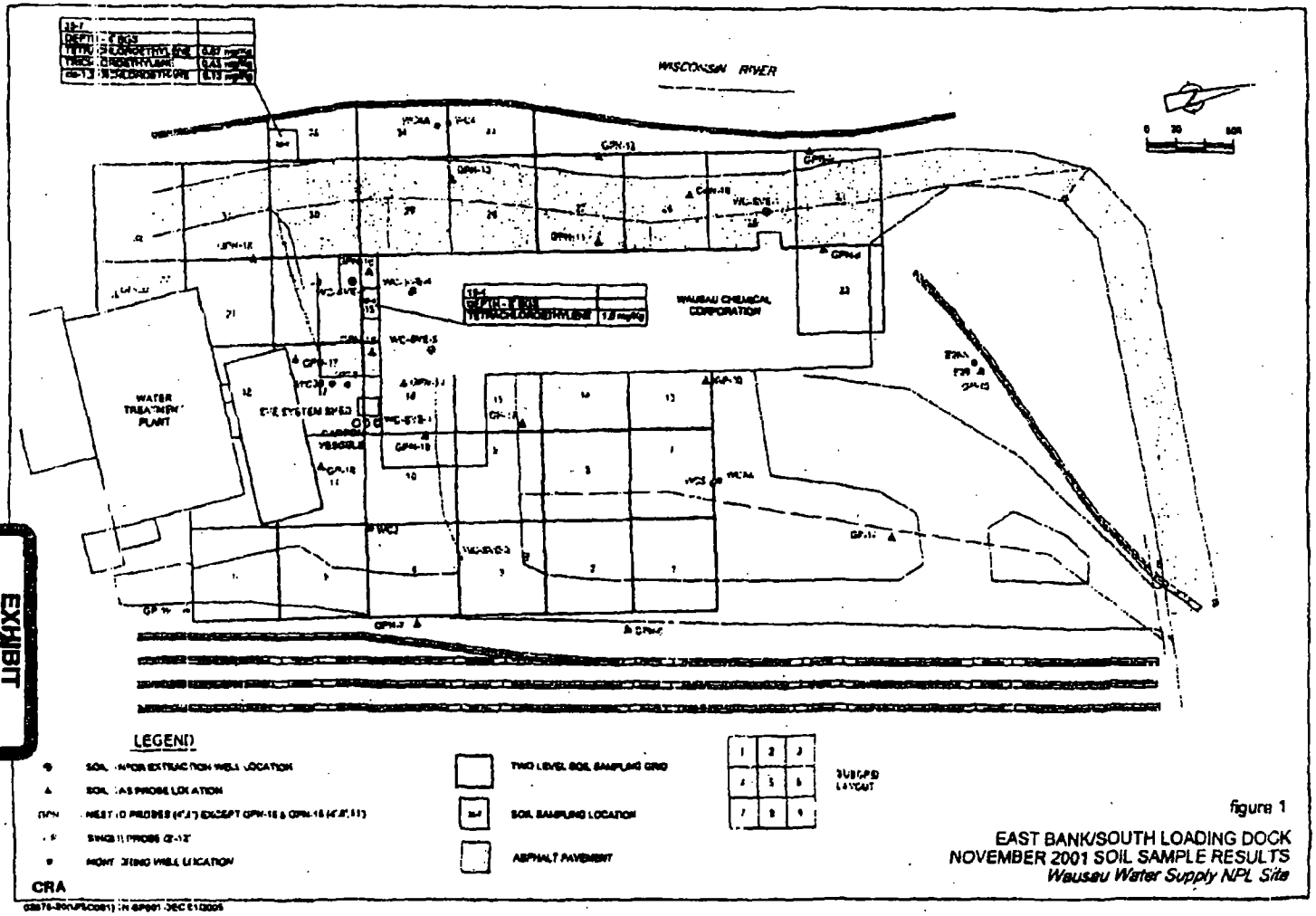
WISCONSIN RIVER
WAUSAU CHEMICAL CORPORATION
WATER TREATMENT PLANT
EAST BANK/SOUTH LOADING DOCK
NOVEMBER 2001 SOIL SAMPLE RESULTS
Wausau Water Supply NPL Site
figure 1
LEGEND
CRA

EXHIBIT
B

STATE OF WISCONSIN - MARATHON COUNTY
RECORDED
04/24/2008 8:22:57 AM
MICHAEL J. SYDOW, REGISTER OF DEEDS

DOC# 1507947

Document Number | DEED RESTRICTION

Declaration of Restriction

In Re:
James E. Cherwinka Trust

Michael J. Sydow

Recording Area

Name and Return Address

James E. Cherwinka Trust
c/o Thomas A. Strandberg, Esq.
McNally, Maloney & Peterson, S.C.
2600 N. Mayfair Road, Suite 1080
Milwaukee, WI 53226
and
Wausau Chemical Corp.
2001 North River Drive
Wausau, Wisconsin 54401

Chg Rates 25.00

291-2907-252-0990 NWNW
291-2907-252-0997 NWNW
Parcel Identification Numbers (PIN)

Parcel 1:

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, County of Marathon, State of Wisconsin, described as follows:

Beginning at a point on the South line of Wausau Avenue 227.75 feet West of the West line of Second Street; thence South perpendicular to the South line of Wausau Avenue, 70 feet; thence West, parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet Northwesterly of railroad siding track; thence Southwesterly on a curve parallel to and 15 feet distant Northwesterly from the center line of said railroad siding track, to a point 458 feet West of the West line of Second Street; thence North to the South line of Wausau Avenue at a point which is 458 feet West of the West line of Second Street; thence East along the South line of Wausau Avenue 230.25 feet, more or less, to the point of beginning; EXCEPTING that part thereof described in Deed recorded in the office of the Register of Deeds for Marathon County, Wisconsin, in Volume 257 of Micro-Records on page 356.

Parcel 2:

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, Marathon County, State of Wisconsin, described as follows:

Commencing at a point on the South line of Wausau Avenue, 227.75 feet West of the West line of Second Street; thence South perpendicular to South line of Wausau Avenue, 70 feet; thence West parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet Northwesterly of railroad siding track, thence Southwesterly

on a curve parallel to and 15 feet Northwesterly from the center line of said railroad siding track to a point, said point being 131 feet South of the South line of Wausau Avenue; thence at an azimuth of 180°, 23.05 feet to a point, said point being the P.C. of a reverse curve to the right; thence Southwesterly 224.05 feet along a curve having the following data, radius 675.11 feet, tangents 112.97 feet, I angle 19°, long chord 222.85 feet, curve length 224.05 feet, degree of curvature 8° 28.8', to a point said point being the point of reverse curvature; thence Southwesterly 166.90 feet along a curve to the left having the following data, radius 615.11 feet, tangents 120.77 feet, long chord 237.02 feet, curve length 238.5 feet, curvature 9° 18.6', I angle 22° 13' to a point, which point is the point of beginning of the excepted parcel hereafter described; thence at an azimuth of 87° 06' a distance of 273.95 feet to a point, said point being 50 feet perpendicular to and West of the center line of the main line track of the C. M. St. P. & P. R. R.; thence at an azimuth of 10° 40' a distance of 532.32 feet parallel with and 50 feet West of the center line of said railroad tracks to a point, said point being on the South line of Wausau Avenue and 155.60 feet West of the West line of Second Street; thence West along the South line of Wausau Avenue 72.15 feet to the point of beginning; EXCEPTING therefrom the following parcel; beginning at the point designated in the foregoing description as the point of beginning of the excepted parcel; thence North 83° 46' 30" East, 99.6 feet; thence Northeasterly, parallel with the centerline of the railroad siding track of the Chicago, Milwaukee, St. Paul & Pacific Railroad, 181.1 feet; thence Northwesterly, at a right angle, 89.6 feet; thence Southwesterly, along the East boundary of River Drive, and along the West line of the parcel conveyed in the foregoing description, 197 feet, more or less, to the point of beginning.

The above Parcels 1 and 2 are part of Parcel 1 of Certified Survey Map No. 12726 recorded in the office of the Register of Deeds for Marathon County, Wisconsin, in Volume 55 of Certified Survey Maps on page 44, a copy of which is attached hereto as Exhibit A. The above Parcels 1 and 2 are also identified as PIN 291-2907-252-0990.

And

Wausau Chemical Corporation

Part of the Northwest quarter (NW1/4) of the Northwest quarter (NW1/4) of Section twenty-five (25), Township twenty-nine (29) North, Range seven (7) East, in the City of Wausau, Marathon County, State of Wisconsin, designated as the excepted parcel, described as follows:

Commencing at a point on the South line of Wausau Avenue, 227.75 feet West of the West line of Second Street; thence South perpendicular to South line of Wausau Avenue, 70 feet; thence West parallel with and 70 feet South of the South line of Wausau Avenue, 147.60 feet, more or less, to a point which is 15 feet Northwesterly of railroad siding track, thence Southwesterly on a curve parallel to and 15 feet Northwesterly from the center line of said railroad siding track to a point, said point being 131 feet South of the South line of Wausau Avenue; thence at an azimuth of 180°, 23.05 feet to a point,

said point being the P.C. of a reverse curve to the right; thence Southwesterly 224.05 feet along a curve having the following data, radius 675.11 feet, tangents 112.97 feet, I angle 19°, long chord 222.85 feet, curve length 224.05 feet, degree of curvature 8° 28.8', to a point, said point being the point of reverse curvature; thence Southwesterly 166.90 feet along a curve to the left having the following data, radius 615.11 feet, tangents 120.77 feet, long chord 237.02 feet, curve length 238.5 feet, curvature 9° 18.6', I angle 22° 13' to a point, which point is the point of beginning of the excepted parcel hereafter described; thence at an azimuth of 87° 06' a distance of 273.95 feet to a point, said point being 50 feet perpendicular to and West of the center line of the main line track of the C. M. St. P. & P. R. R.; thence at an azimuth of 10° 40' a distance of 532.32 feet parallel with and 50 feet West of the center line of said railroad tracks to a point, said point being on the South line of Wausau Avenue and 155.60 feet West of the West line of Second Street; thence West along the South line of Wausau Avenue 72.15 feet to the point of beginning; excepting therefrom the following parcel; beginning at the point designated in the foregoing description as the point of beginning of the excepted parcel; thence N 83° 46' 30" E, 99.6 feet; thence Northeasterly, parallel with the centerline of the railroad siding track of the Chicago, Milwaukee, St. Paul & Pacific Railroad, 181.1 feet; thence Northwesterly, at a right angle, 89.6 feet; thence Southwesterly, along the East Boundary of River Drive, and along the West line of the parcel conveyed in the foregoing description, 197 feet, more or less, to the point of beginning.

The above description is a part of Parcel 1 of Certified Survey Map No. 12726 recorded in the office of the Register of Deeds for Marathon County, Wisconsin, in Volume 55 of Certified Survey Maps on page 44. See Exhibit A. This parcel is also identified as PIN 291-2907-252-0997.

STATE OF WISCONSIN)
)ss
COUNTY OF MARATHON)

WHEREAS, the James E. Cherwinka Trust and Wausau Chemical Corporation are the owners of the above-described property.

WHEREAS, James E. Cherwinka died on October 18, 2005. The James E. Cherwinka Trust is the successor in interest to James E. Cherwinka in connection with said above-described property.

WHEREAS, one or more historical tetrachloroethylene discharges have occurred on this property, and as of November 7, 2001, soil samples collected on this property contained tetrachloroethylene at concentrations of 1.0 mg/kg at grid point 19-4 at a depth of eight feet and 0.67 mg/kg at grid point 35-7 at a depth of four feet, trichloroethylene at a concentration of 0.43 mg/kg at grid point 35-7 at a depth of four feet and cis-1,2-dichloroethylene at a concentration of 0.13 mg/kg at grid point 35-7 at a depth of four feet, all as shown on Figure 1.

WHEREAS, the existing building and pavement on the property provide a partial barrier, minimizing infiltration, and the depth of the remaining contaminants prevents direct contact with the residual soil contamination.

WHEREAS, sampling data on and about the property has demonstrated soil cleanup adequately protective of groundwater quality; however, residual soil contamination remains on the property.

WHEREAS, it is the desire and intention of the property owners to impose on the property restrictions that will make it unnecessary to conduct further soil remediation activities on the property at the present time.

NOW THEREFORE, the owners hereby declare that all of the property described above is held and shall be held, conveyed or encumbered, leased, rented, used, occupied and improved subject to the following limitation and restrictions:

1. Construction or installation of any water supply well on the property is prohibited pursuant to this deed restriction.

2. Plowing or cultivation of agricultural crops on the property is prohibited pursuant to this deed restriction.

3. The existing Wausau Chemical Corporation building shown on Exhibit B makes complete remediation of soils beneath the building impractical. If the existing building is removed or modified, the property owner shall conduct an investigation to determine the degree and extent of soil contamination beneath the building. To the extent that soil contamination is found at that time, the Wisconsin Department of Natural Resources shall be immediately notified and the soil contamination shall be managed in accordance with applicable statutes and rules. If currently inaccessible soil contamination near or beneath the building is excavated in the future, the soil must be sampled and analyzed, may be considered solid or hazardous waste if residual contamination remains and must be stored, treated and disposed in compliance with applicable statues and rules.

4. The existing pavement forms a barrier that will be maintained in accordance with the maintenance plan entitled "Pavement Cover and Building Barrier Maintenance Plan, Wausau Chemical Corporation", dated October 17, 2006. The existing pavement will minimize the infiltration of water which prevents additional groundwater contamination. The existing pavement shall be maintained on the property in the locations shown on Exhibit B. Such existing pavement shall not be removed without the approval of the Wisconsin Department of Natural Resources.

5. If construction or installation of buildings, structures or other improvements occur on grid points 19-4 or 35-7 shown on Exhibit B, then the affected soils at grid points 19-4 or 35-7 shall be sampled and managed in accordance with applicable statutes and rules.

6. The property shall be used only for industrial purposes.

This restriction is hereby declared to be a covenant running with the land and shall be fully binding upon all persons acquiring the above-described property whether by descent, devise,

purchase, or otherwise. This restriction inures to the benefit of and is enforceable by the Wisconsin Department of Natural Resources, its successors or assigns. The Department, its successors or assigns, may initiate proceedings at law or in equity against any person or persons who violate or are proposing to violate this covenant, to prevent the proposed violation or to recover damages for such violation.

Any person who is or becomes owner of the property described above may request that the Wisconsin Department of Natural Resources or its successor issue a determination that one or more of the restrictions set forth in this covenant is no longer required. Upon the receipt of such a request, the Wisconsin Department of Natural Resources shall determine whether or not the restrictions contained herein can be extinguished. If the Department determines that the restrictions can be extinguished, an affidavit, attached to a copy of the Department's written determination, may be recorded by the property owner or other interested party to give notice that this deed restriction, or portions of this deed restriction, are no longer binding.

By signing this document, Rhona E. Vogel asserts that he or she is duly authorized to sign this document as a Trustee of the James E. Cherwinka Trust.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restrictions, this 8th day of Jan, 2008.

Signature: Rhona E Vogel
Printed Name: Rhona E. Vogel
Trustee, James E. Cherwinka Trust

Subscribed and sworn to before me
this 8 day of JANUARY, 2008

Thomas A Strandberg
Notary Public, State of WISCONSIN
My commission PERMANENT

NOTARY PUBLIC THOMAS A. STRANDBERG STATE OF WISCONSIN

By signing this document, John Bocka asserts that he or she is duly authorized to sign this document as an officer of Wausau Chemical Corporation.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restrictions, this 18 day of April, 2008

Signature: John Bocka
Printed Name: John Bocka
Officer of Wausau Chemical Corporation

Subscribed and sworn to before me
this 15th day of April, 2005.

Notary Public, State of Wisconsin
My commission is Permanent

This document was drafted by Michael Best & Friedrich LLP; Conestoga-Rovers and Associates, Inc.; and McNally, Maloney & Peterson, S.C.

X:\CLIENTB\094167\0001\A1844250.1

DOC# 1507947

12726

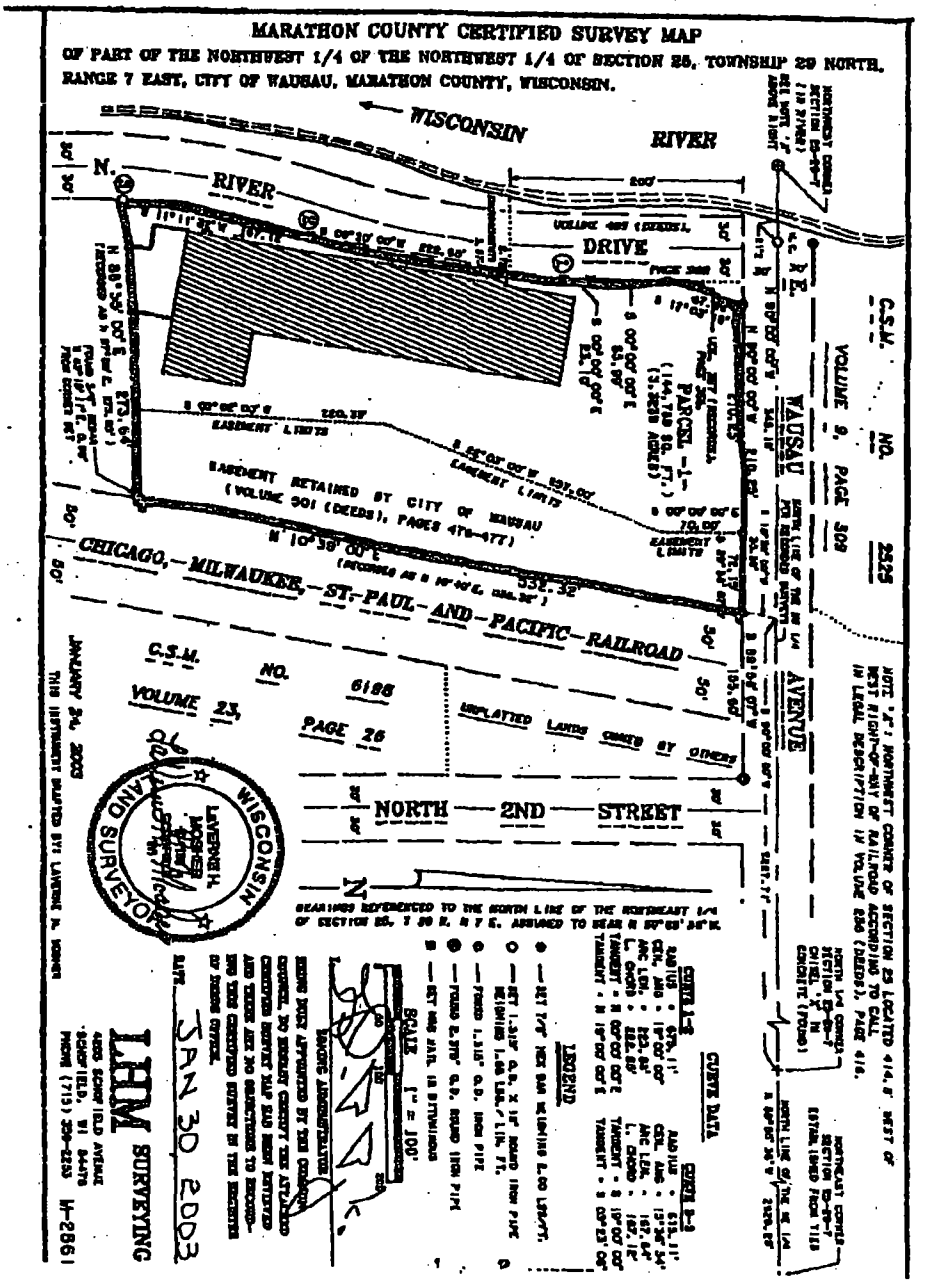

EXHIBIT
A

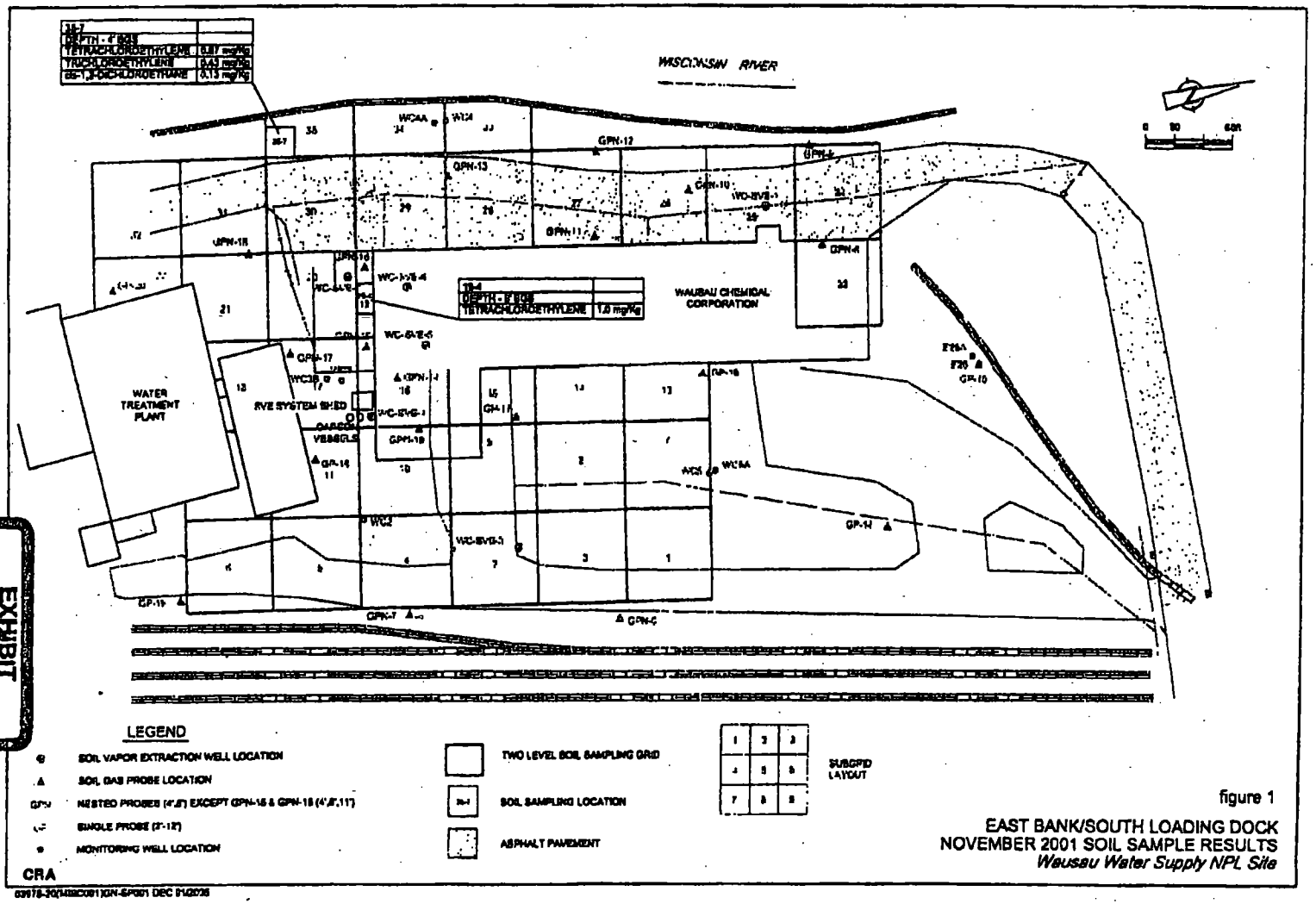

figure 1

EAST BANK/SOUTH LOADING DOCK
NOVEMBER 2001 SOIL SAMPLE RESULTS
Wausau Water Supply NPL Site

EXHIBIT 2

DOC # 1507947

Appendix G

Excerpts from Wausau Municipal Code Regarding Wells and Groundwater Usage

~~ATTACHMENT 5~~

Title 19

PLUMBING

Chapters:

Chapter 19.04

STATE CODE—STATE LICENSE

Sections:

19.04.010 State plumbing code adopted. Chapter 145 of the Wisconsin Statutes and all future amendments thereto and Comm 25 and Comm 81–87 of the Wisconsin Administrative Code (WAC), and all future amendments and official bulletins thereto are adopted and, by reference, made a part of this title with the same force and effect as though set out in full in this title. Failure to comply with any of the provisions of the statutes or administrative rules, regulations and bulletins constitutes a violation of this title, subject to the forfeitures provided herein. Copies of the statutes and administrative rules, regulations and bulletins adopted in this title shall be kept on file in the office of the plumbing inspector in the city hall. (Ord 61.5113 §1, 2001, File No. 01-0518; Ord. 61-4380 §1(part), 1978.)

19.04.020 State license required. No person shall engage in or work at plumbing as defined in Chapter 145 of the Wisconsin Statutes without complying with that chapter. (Ord. 61-4380 §1(part), 1978.)

19.04.030 Conflict of provisions. Where a conflict exists between this title and the WAC, Revisions or Official Bulletins, the provisions of WAC, its Revisions or Official Bulletins shall prevail, except where an ordinance has been adopted after the effective date of the conflicting WAC provision. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.08

PLUMBING INSPECTOR

Sections:

19.08.010 Inspector. There shall be one or more plumbing inspectors. (Ord. 61-4380 §1(part), 1978.)

19.08.020 Permits. The inspector or authorized agent shall take applications and issue permits to qualified applicants. (Ord. 61-4380 §1(part), 1978.)

19.08.030 Registration of plumbers. (a) The plumbing inspector shall keep on file a registration of all master, journeyman and apprentice plumbers engaged in the plumbing trade in the city.

(b) The registration shall include the name, address, license number, and current receipt number. In addition, apprentices shall state year of apprenticeship and the shop to which indentured. Master and journeyman registration shall state "contracting plumber or maintenance plumber" and place of employment. (Ord. 61-4380 §1(part), 1978.)

19.08.040 Manufactured products. When requested by the manufacturer or another municipality, the inspector is authorized to make inspections of plumbing installations manufactured for shipment out of the city. (Ord. 61-4380 §1(part), 1978.)

19.08.050 Records. The inspector shall prepare suitable applications, keep a daily log of all office transactions, and file with the common council a monthly report of such transactions. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.12

PERMITS

Sections:

19.12.010 Installation permit. No person shall install or cause to be installed any plumbing or drainage unless a permit therefor has been issued by the plumbing inspector, and no plumbing shall be used until it has been inspected and approved by the inspector. No permit fee shall be refunded and no permit shall be transferable. (Ord. 61-4380 §1(part), 1978.)

19.12.020 When required. A permit shall be obtained:

(a) To perform any clearwater drainage or plumbing work as defined in Chapter 145 of the Wisconsin Statutes, the Wisconsin Administrative Code (WAC), or this title;

(b) To abandon a water or sewer system before a wrecking or moving permit shall be issued by the city;

(c) For the installation, replacement, or relocation of any water conditioning unit. Only the original installation of exchange regeneration service type units require a permit;

(d) For the installation, replacement, or relocation of any domestic water heating unit;

(e) For construction of any water distribution system from a source other than city water mains;

(f) For the connection of any dispensing unit to water and/or waste pipes;

(g) For the connection of any injection equipment intended to inject or otherwise insert any chemical, soap, or other material of any kind whatsoever into any water distribution pipe;

(h) For the water and/or waste connection for each water-cooled air conditioner or water-cooled motor of humidifier;

(i) For the installation of all inside roof leaders or downspouts;

(j) For new or reconstructed sanitary sewer lateral or storm drains;

(k) For new or reconstructed water service extension from water main to curb stop or to building;

(l) For the installation of any sump pump or ejector;

(m) For the discharge point of any subsoil or footing drain. The storm sewer or catch basin or sump will not require an additional permit at the discharge point;

(n) When inspection is requested, except for inspection of plumbing work to be shipped out of the city;

(o) A permit will be required for the replacement of all plumbing fixtures;

(p) The requirements of section 19.48.010 of this title shall not apply to licensed and registered maintenance plumbers obtaining permits for plumbing work within the complex of their employer's business enterprises. Section 19.48.010 shall apply to any work performed in a public right-of-way;

(q) Permits may be applied for by licensed master plumbers and qualified home owners pursuant to Chapter 145 of the Wisconsin Statutes, either or both of whom may be prosecuted for the failure to obtain the permit prior to the commencement of the job. (Ord. 61-4654 §(part), 1988; Ord. 61-4380 §1(part), 1978.)

19.12.030 Fees. (a) The following permit and inspection fees shall be paid at the time a permit is issued:

New or reconstructed water service extension from curb stop two inches or less, each one hundred feet or fraction thereof	$11.00
For each additional inch in diameter	$7.25
New or reconstructed sanitary building sewer extension from main, curb or lot line, any size, each one hundred feet or fraction thereof	$11.00
New or reconstructed building or area storm sewer extension from main, curb or lot line, any size, each one hundred feet or fraction thereof	$11.00
New or reconstructed sanitary or storm building drains, any size, each one hundred feet or fraction thereof	$11.00
For each fixture or fixture connection	$7.25
Private sewer and water mains, any size, each one hundred feet or fraction thereof	$11.00
Water conditioners, replacement or relocation	$10.50
Water heaters, replacement or relocation	$10.50

Dispensing equipment connection, replacement or relocation	$10.50
Water distribution system from source other than city water mains	$10.50
Fire protection sprinkler system	$10.50
Below surface lawn sprinkler system	$10.50
Sumps or catch basins (sanitary and clearwater)	$7.25
Sump pump or ejectors (sanitary and clearwater)	$7.25
Inside roof leaders or downspouts (each roof terminal)	$7.25
Subsoil drain discharge point	$7.25
Private water well (five-year permit—issued by Wausau Water Works	$60.00
Private sewage disposal system	$37.00
Swimming pool	$37.00
Reconstruction of any part of the building drain, soil waste and vent pipe, downspouts, or water distribution piping. No permit will be required where permit is issued for additional fixtures, connected appliances and appurtenances or the relocation or replacement of existing units	$10.50
Water distribution and drain piping for manufacturing processes, each one hundred fee or fraction thereof	$11.00
To abandon water or sewer system when wrecking or moving a building	$37.00
To abandon a private well and/or septic system	$37.00
Inspect and attest to plumbing installed for shipment out of the city	$37.00
Minimum fee charged for all permits	$37.00
Reinspection fee	$55.00
Failure to obtain permit prior to commencement of work	double fees

(b) Fixtures, appliances and appurtenances shall include but not be limited to: water closets, wash basins, bathtubs, shower stalls, urinals, service sinks, sinks, dishwashers, garbage grinders, disposals, laundry tubs, floor drains, site drains, drinking fountains, bar connections, soda fountains, water-cooled refrigerators, ice cube machines, dental cuspidors, all type water heaters, water-cooled motor connections, all water conditioning units, sumps, drain tile receivers, footing or subsoil drain discharge point, inside roof drains, catch basins, yard drains, grease and oil separators, pumps and ejectors, water or waste connection to machines, water or waste connection

to any appliance, buried lawn sprinklers, drink dispensers, swimming pools, water-cooled air conditioner and connections, mobile home connections, fire protection installation, private sewage disposal, water wells and injection equipment. (Ord. 61-5353 §4, 2007, File No. 00-1134; Ord. 61-5314 §4, 2006, File No. 00-1134; Ord. 61-5276 §4, 2005, File No. 00-1134; Ord. 61-5243 §1(part), 2004, File No. 00-1134; Ord. 61-5218 §1(part), 2003, File No. 00-1134; Ord. 61-5159 §1(part), 2002, File No. 02-0131; Ord. 61-5094 §1, 2000, File No.00-1134; Ord. 61-5066 §1, 2000; Ord. 61-5020 §1, 1999; Ord. 61-5018 §1(part), 1998; Ord. 61-4962 §1(part), 1996; Ord. 61-4875 §1(part), 1994; Ord. 61-4726 §2(part), 1990; Ord. 61-4654 §1(part), 1988; Ord. 61-4599 §1, 1986; Ord. 61-4380 §1(part). 1978.)

19.12.040 Application. (a) An application for a permit shall be made to the plumbing inspector or a designee before any work is started.

(b) The application shall state the property owner's name, address, and the land description where the work is to be done. It shall include the size and material of the water and sewer service pipes to the building and the kind and number of fixtures, appliances and appurtenances to be installed together with a statement that the owner and applicant will be bound by and subject to the rules and regulations of this chapter. Diagrams and notarized statements that may be considered necessary to ensure a complete and legal plumbing installation may be required as part of the application. (Ord. 61-4380 §1(part), 1978.)

19.12.050 Restrictions on issuance.* (a) No plumbing or sewer permit, with the exception of water and sewer laterals for street improvements, shall be granted until a building permit has been issued by the building inspector.

(b) No plumbing, clearwater drainage, or sewer permit will be issued to any person who is in noncompliance with an order of the electrical, building, or plumbing inspector.

(c) If any work is commenced without a permit first having been obtained therefor, the permit fee shall be twice the usual fee. Payment of any fee required by this chapter shall not relieve any person of the forfeitures that may be imposed for violation of this title. (Ord. 61-4380 §1(part), 1978.)

19.12.060 Expiration. Permits will automatically expire:

(a) When work ceases for a period of sixty days without good and reasonable cause;

(b) Upon cancellation or expiration of insurance required by section 19.48.010 of this title;

(c) Expire on completion of work for which it was issued. (Ord. 61-4380 §1(part), 1978.)

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* For other restrictions see also sections 19.28.030, 19.32.010, 19.32.020, 19.36.020(b) and 19.44.040(a) of this title.

Chapter 19.16

INSPECTIONS

Sections:

19.16.010 When required. The plumbing inspector's jurisdiction includes but is not limited to:

(a) The entire building sanitary sewer and storm drainage, before backfilling, form the main sewer or other disposal terminal to the building; including connections at point of discharge; private sewage disposal systems; water wells and water service from curb box or approved well installation into the building;

(b) The building drain, and branches thereof under tests as prescribed. Such inspection shall be made before any part of the drain is covered;

(c) The soil waste vent pipes and the water distribution piping known as "roughing in" shall be inspected under test before it is enclosed or covered;

(d) All clearwater drains, interior downspouts, or roof leaders, subsoil or footing drain connection points, water-cooled air conditioners and connections, area and parking lot drainage;

(e) All devices of any kind connected to the water distribution pipe shall be inspected;

(f) Plumbing installations after fixtures, appliances and appurtenances have been tested and the installation is ready for use. The final inspection shall be made with the water supply serving the system turned on. (Ord. 61-4380 §1(part), 1978.)

19.16.020 Notice for inspection. (a) It shall be the responsibility of the person in whose name the permit is issued, to notify the inspector's office in person, by telephone or in writing when work is ready for test and inspection. If the inspection is not made the next full working day after the notice is given, the work may be covered and continued.

(b) Notice must be given before 2 p.m. to trigger the next full working day rule. (Ord. 61-4380 §1(part), 1978.)

19.16.030 Covering the work. (a) No part of any plumbing or clearwater drainage system shall be covered until it has been inspected and approved. If any part is covered before being inspected and approved, it shall be uncovered at the direction of the inspector.

(b) When the inspector approves of work, a tag shall be attached to either the building permit or to the work itself, and no plumbing or clearwater drainage work shall be covered until such tag is in place.

(c) Upon request, the owner or plumber shall be furnished with a certificate or letter indicating that an inspection has been made and showing whether the installation has been approved or disapproved. Violations or condemnation notice shall be issued by letter stating the reason. (Ord. 61-4380 §1(part), 1978.)

19.16.040 Report of existing unsanitary conditions. Reports that plumbing in any building is contrary to this chapter or is of faulty construction, liable to breed disease or sickness, or is a menace to health shall be made to the county health officer. (Ord. 61-4380 §1(part), 1978.)

19.16.050 Violation. The plumbing inspector or designee shall investigate all reports of improper or defective plumbing or drainage. If such investigation discloses violation of this title, the inspector shall notify the owner or tenant of such premises by registered mail or personal service to correct any such improper or defective installation within thirty days. Any person failing to comply with such notice shall be subject to the penalty provided in Chapter 19.52 of this title. (Ord. 61-4380 §1 (part), 1978.)

19.16.060 Certificate of occupancy. Upon completion of the plumbing work pursuant to the permit, the person doing the work shall notify the plumbing inspector, who shall inspect the work. If approved, the inspector shall issue a certificate of occupancy which shall contain the date of such inspection and a resume of the inspection. No such certificate shall be issued unless the plumbing work is in strict conformity with the rules and regulations set forth in this title. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.20

SEWERS

Sections:

19.20.010 Separate drains for each building. Every building shall have a separate and independent connection with a public main sanitary sewer, private sewage disposal system, or private main sanitary sewer. A private main sanitary sewer shall conform to standard specifications of the city for public sewers and shall be approved by the plumbing inspector and city engineer. Manholes shall be located not less than twenty-five feet from any building. (Ord. 61-4380 §1(part), 1978.)

19.20.020 Material, joints and connections. All building sanitary and storm sewer piping extending from a public sewer or other disposal terminal to within three to five feet of the outside foundation walls shall be of material, joints and connections approved in the Wisconsin Administrative Code (WAC). The disposal terminal shall be described as the end of the sewer service lateral or private sewage disposal system; in the event no lateral has been installed, it shall be the city sewer main. A building sanitary or storm sewer connection to a private or public main sanitary or storm sewer shall conform to sections 19.20.050 and 19.20.070 of this chapter. (Ord. 61-4380 §1(part), 1978.)

19.20.030 Size. The size of building sewers shall be determined by the provisions of WAC. (Ord. 61-4380 §1(part), 1978.)

19.20.040 Draining of waters into sanitary sewers. The downspout or roof drain of any building, any air conditioner, or other clearwater cooling device, any cistern overflow, or any groundwater drain shall not be connected to any sanitary sewer, nor shall rain or surface water be drained directly or indirectly into any sanitary sewer.

(a) Disconnection. The owner of any building or land wherein there is a violation of the provisions of this section shall cause the violation to be corrected within six months after being notified in writing by the plumbing inspector, whose duty it shall be to enforce this section.

(b) Drainage. All drainage of waters enumerated in this section shall be made either directly into a storm sewer or into a public street or alley beyond the curb line, subject to the approval of the plumbing inspector. No person shall permit the drainage of water across any sidewalk or public area so as to cause or tend to cause any hazard or danger to pedestrians or users thereof. (Ord. 61-4380 §1(part), 1978.)

19.20.050 Connection to sewer mains. No person shall make a connection of any kind to a public sanitary or storm sewer, or replace or reconstruct any sanitary or storm sewer lateral without a permit from the plumbing inspector. Connections to any sanitary or storm sewer main pipe shall be done by city employees or their designees. Connections to manholes shall be performed privately with inspection by city employees. (Ord. 61-4778 §1(part), 1992; Ord. 61-4428 §1, 1979; Ord. 61-4380 §1(part), 1978.)

19.20.060 Location. The plumbing inspector, with the cooperation of the water and sewerage utilities, shall keep a proper sewer connection record in a book, card index, or plat provided for that purpose showing the location of the lot, the master plumber proposing to lay the sewer or drain, and of the exact location of the public sewer to each drain or sewer so laid. Information concerning the sizes, location and depth of public and private sewers or drains and the position of the branch, junction and appurtenances will be furnished by the water and sewerage utilities. All reasonable care will be taken to ensure the correctness of such information, but such correctness will not be guaranteed under any circumstances. When in accordance with the measurements furnished, the junction is not found within three feet of the point designated, an approved Y or T fitting shall be used and such connection shall be made under the direction of the plumbing inspector or designee in accordance with 19.20.050 of this Chapter. (When sewer laterals are not in the same trench as the water lateral, the installer of the lateral shall report to the utility the location of the lateral referenced from permanent points, i.e., property corners, manholes, hydrants, etc. In all cases, when the lateral is installed for future use a two-inch by four-inch board shall be placed at the end of the lateral to reach the ground surface, clearly marking the location of the pipe.) (Ord. 61-4778 §1(part), 1992; Ord. 61-4380 §1(part), 1978.)

19.20.070 Connection requirements. (a) Size. The connection shall be of the saddle type. The fitting used in the connection shall be made in such a manner as to ensure that no protrusion of the fitting into the main sewer pipe will result. The connector shall fit perfectly the contour of the inside of the sewer and shall be sufficiently designed to fit the particular size main sewer pipe into which the connection is made. The hole shall be of such size to provide one-eighth inch clearance between the outside of the fitting and the hole. The space so provided shall be completely filled with cement grout. The space between the shoulder of the fitting and the face of the main sewer pipe shall be one-eighth inch thick and this space shall be completely filled with cement grout. The connection shall be encased in concrete.

(b) Fitting. The fitting shall be of cast iron, concrete, vitrified clay, asbestos cement, plastic, bituminous fibre pipe, or other approved materials, and shall be capable of receiving the type of pipe used for the building sewer lateral.

(c) Fees. All taps will be billed on time and material basis. In cases, whereby the utility is inspecting the installation a flat fee of twenty-five dollars will be assessed in addition to the normal permit fees. (Ord. 61-4778 §1(part), 1992; Ord. 61-4428 §§2, 3, 4, 1979; Ord. 61-4380 §1(part), 1978.)

19.20.080 Drain ends protected. The ends of all sanitary sewer pipes not immediately connected shall be securely closed with a plug so as to prevent the introduction of sand, earth or drainage from an excavation. The ends of all sewer laterals installed for future use shall be sealed with a plug or cap of the same material as the lateral. (Ord. 61-4380 §1(part), 1978.)

19.20.090 Prohibited location. No water or sewer lateral, water service, or building sewer shall extend over or through any property description except the property served. Access shall be through a public right-of-way. (Ord. 61-4380 §1(part), 1978.)

19.20.100 Defective or inferior pipe prohibited. No person shall connect with any public sewer any pipe that is cracked, damaged, or of any inferior make or quality. Should any person furnish pipe of an inferior make or quality to connect with a public sewer, the master plumber shall refuse to install the same and shall immediately notify the plumbing inspector, who shall require that necessary change be made so as to conform with this chapter. (Ord. 61-4380 §1(part), 1978.)

19.20.110 Old pipe or drain. Whenever necessary to disturb a drain or sewer in actual use, the same shall not be obstructed nor discontinued without special permission of the plumbing inspector; and it is unlawful to make any new connections with or extensions to any old drain without permission of the plumbing inspector. (Ord. 61-4380 §1 (part), 1978.)

19.20.120 Use of sewers. No person shall deposit in any sewer or drain, garbage, gasoline, tar, grease, waste oil, rags, or other substances likely to cause obstruction, nuisance, or explosion therein, or to do any act which may cause injury thereto. Any person who violates any provisions of this section shall, in addition to the penalty prescribed in this chapter, be liable to the city for the cost of removing such obstruction and of repairing injury resulting therefrom. This section is in addition to and shall be read with Chapter 13.62 of this code. (Ord. 61-4380 §1(part), 1978.)

19.20.125 External Grease Interceptors. External grease interceptors shall be installed and maintained for all new restaurants, large kitchen operations, fast food establishments, etc. Existing businesses under extensive remodeling and where grease problems have been documented, the plumbing inspector may require installation of exterior grease interceptors as a condition of a plumbing permit. (Ord. 61-5121 §1, 2001, File No. 01-0615.)

19.20.130 Shoring of trenches. Whenever there is danger of caving, the sides of all trenches shall be supported with adequate sheeting and braces to comply with Industrial Commission Regulations, Ind. 6.01-6.02-6.03-6.06-6.12-6.21, WAC, a copy of which shall be on file in the city clerk's office. (Ord. 61-4380 §1(part), 1978.)

19.20.140 Backfilling (a) The backfilling of all trenches to a depth of twelve inches over the pipe shall comply with WAC, and shall be the direct responsibility of the plumbing inspector.

(b) The remainder of the backfilling of that portion of trenches within the public right-of-way, to the property side of the sidewalk line, shall be the responsibility of the excavating contractor and shall be as follows:

(1) The remainder of the backfilling, after foundations are prepared, with proper procedures as detailed in WAC, may consist of clay type soils with proper moisture content for maximum compaction, drying or wetting soils as needed and with mechanical compaction at time of back-filling. Backfilling shall be mechanically compacted in layers not to exceed eight inches in depth. The contractor shall have a vibratory-type compactor on the job site, in operating condition, before starting to backfill with clay type soils. Other backfill materials shall be limited to granular soil materials or rocky substances not exceeding one cubic foot in volume. Rocks shall be entirely enveloped by fine material. Compaction shall be to a minimum of ninety-five percent Proctor Density. Sandy soil shall have optimum moisture when mechanically compacted.

(2) Backfilling for pipe sewers may be done immediately after the placing by hand of fine backfill. Such backfilling may be carried on from the top of the trench by mechanical means, or by dumping directly from trucks, or by hand. The backfill in no case shall be dropped from such height or in such volume that its impact upon the sewer structure will cause damage.

(3) Trenches, where excavated material is sandy or granular, or where, at the option of the inspector, sandy or granular material is specially imported for backfill purposes, compaction may be obtained by jetting. Sandy or granular material shall pass a four-inch square sieve and shall not contain more than five percent of material which will pass a #200 sieve. It shall be of such character as to readily compact with water and shall permit excess water to pass through it quickly. Soils jetted shall be compacted to a minimum of ninety-five percent Proctor Density;

(A) The hose shall have a minimum diameter of two inches, and the pipe nozzle a minimum diameter of one and one-half inches and a minimum length of four feet. A hydrant regulating valve shall be provided by the contractor so that the hydrant, if one is used, can be fully opened while jetting is proceeding.

(B) During the jetting operations, the nozzles shall be inserted as deeply into the backfill as is possible without damaging the sewer structure or its foundation. The insertions shall be made at intervals of five feet or less and maintained unless the backfilling is saturated. Depressions caused by flooding shall be backfilled until there is no further settlement. Where city water is not available, mechanical compaction shall be used.

(Ord. 61-4380 §1(part), 1978.)

19.20.150 Maintenance. No person shall file any claim against the city for costs or damages for any repairs, replacements, or interrupted service of any sewer lateral. It shall be the responsibility of the owner of the property being served by any sewer lateral to maintain the entire lateral from a point including the connection to the sewer main and extending through the entire public right-of-way to the property line. (Ord. 61-4380 §1 (part), 1978.)

Chapter 19.24

CONNECTION TO WATER MAIN[2]

Sections:

19.24.010 Permit required. No connection to any public water main shall be made without a permit from the plumbing inspector. All such work shall be executed in compliance with city ordinances, laws and regulations of the state, or by any agency thereof. (Ord. 61-4380 §1 (part), 1978.)

19.24.020 Separate water service. Every building shall have a separate and independent connection with a public water main where provided in a public right-of-way abutting the property. (Ord. 61-4380 §1(part), 1978.)

19.24.030 Material. The underground water service pipe from the curb stop or a private water supply system to any building shall be of type "K" copper water tube or ductile iron water main. On a case by case basis, the plumbing inspector may consider other types of piping for underground water service pipe. Thawing of this type of piping will solely be the responsibility of the property owner or tenant. (Ord. 61-5119 §1, 2001, File No. 01-0613; Ord. 61-4380 §1(part), 1978.)

19.24.040 Size. The water service or building supply pipe to any building shall be sized in accordance with Wausau water utility regulations. (See 13.16.070 of this code.) The minimum size shall be one inch.

Water services accommodating future uses on existing vacant property shall be sized for the maximum land use of the property. The land use is to be determined by the Wausau municipal zoning ordinance in effect at the time of the installation of the water services. (Ord. 61-4380 §1(part), 1978.)

19.24.050 Valve controls. Service controls equal in size to the service piping shall include a valve shutoff at the main, a curb stop or valve at the curb, or privately-owned pump, and a gate, ball, or plug valve inside the foundation wall of each building where the meter is installed. A gate, ball, or plug valve equal to or larger than the meter size shall be provided on the outlet side of the

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[2] For compulsory connection, see Chapter 13.16 of this code.

meter. Service piping of one and one-half inches or over shall have a full size bypass around meter. (Ord. 61-4380 §1 (part), 1978.)

19.24.060 Authority to control water service. No plumber shall turn on, or leave turned on, any water service curb stop after the completion and trial of his work, which for any reason has been turned off by the water department. No unauthorized individual shall turn water on or off after it has been turned on or off from the given service. (Ord. 61-4380 §1(part), 1978.)

19.24.070 Compulsory connection to water. When notified, the owner of any building intended for human habitation or occupancy abutting on any street, alley, or other thoroughfare in which a public water main has been extended and is available for service, shall cause to be made a water supply connection thereto, and shall abandon any existing source of water except as may be permitted by special permit signed by the plumbing inspector. In all cases connection to public water supply will occur within one year after public water becomes available. If abandonment of private wells are an explicit condition of DNR approval for new construction of sanitary sewers per Wisconsin Administrative Code requirements, the Wausau sewerage utility will ensure the proper abandonment of private wells at no expense to the property owner. This will only apply to private wells within fifty feet of sixteen-inch or larger sanitary sewers which are constructed in the future. In these cases the property owner will be required to make immediate connection to the public water supply at his own expense as defined per this section in order to permit the timely abandonment of the private wells. Property owners affected by this provision will be notified no less than ninety days prior to this requirement. (See also Chapter 13.16 of this code.) (Ord. 61-4544 §4, 1984; Ord. 61-4380 §1(part), 1978.)

Chapter 19.30

PRIVATE WATER WELLS

Sections:

19.30.010 Purpose. This chapter regulates the construction and continued use of private wells within the city where public water service is provided. This chapter is also intended to prevent contamination of groundwater and to protect public health, safety and welfare by assuring that unused, unsafe or noncomplying wells or wells which may serve as conduits for contamination or wells which may be illegally cross-connected to the public water system are properly abandoned. (Ord. 61-4738 §1(part), 1991.)

19.30.020 Definitions. For the purpose of this chapter:

(a) "Municipal water system" means Wausau Water Works.

(b) "Noncomplying" means a well or pump installation which does not comply with the provisions of Chapter NR 812, Wisconsin Administrative Code, in effect at the time the well was constructed, a potential contamination source was installed, the pump was installed or work was done on either the well or pump installation.

(c) "Pump installation" means the pump and related equipment used for withdrawing water from a well including the discharge piping, the underground connections, pitless adapters, pressure tanks, pits, sampling faucets and well seals or caps.

(d) "Unsafe" means a well or pump installation which produces water which is bacteriologically contaminated or contaminated with substances exceeding the standards of Chs. NR 109 or 140, Wisconsin Administrative Code, or for which a health advisory has been issued by the Department of Natural Resources.

(e) "Unused" means a well or pump installation which is not in use or does not have a functional pumping system.

(f) "Well" means an excavation or opening into the ground made by digging, boring, drilling, driving, or other methods for the purpose of obtaining groundwater for consumption or other use.

(g) "Well abandonment" means the filling and sealing of a well according to the provisions of Ch. NR 812, Wisconsin Administrative Code. (Ord. 61-5126 §1(part), 2001, File No. 01-0833; Ord. 61-4738 §1(part), 1991.)

19.30.030 Private well permit. The plumbing inspector may grant a permit to a private well owner to operate a well for a period not to exceed five years, providing conditions of this code and other applicable state and health requirements are met. An owner may request an initial or renewal of a private well permit on an application form provided by Wausau Water Works. The permit request must clearly state the purpose of the well and ensure the following conditions have been met:

(a) The well and pump installation meet or are upgraded to meet the requirements of Ch. NR 812, Wisconsin Administrative Code;

(b) The well has been tested and verified bacteriologically safe as required by Wisconsin Administrative Code NR 811.10(2). The lab reports shall be attached to the permit application in cases of renewals;

(c) There are no cross-connections between the well and pump system and the municipal water system;

(d) The permit application for existing wells shall be reviewed by the utility director or environmental engineer prior to the permit issuance by the plumbing inspector. Requests for permits for new private water supply wells to be constructed within the city limits should be reviewed by the commission. (Ord. 61-5126 §1(part), 2001, File No. 01-0833; Ord. 61-5021 §1, 1999; Ord. 61-4738 §1(part), 1991.)

19.30.040 Private well abandonment. All wells located on premises served by the municipal water system shall be abandoned in accordance with the terms of this code and Ch. NR 812, Wisconsin Administrative Code, by August 31, 1991, or no later than one year from the date of connection to the municipal water system, whichever occurs last, unless a private well permit has been obtained by the well owner from the city as specified by this code.

All wells abandoned under the jurisdiction of this code or rule shall be abandoned according to the procedures and methods of Ch. NR 812, Wisconsin Administrative Code. All debris, pump, piping, unsealed liners and any other obstructions which may interfere with sealing operations shall be removed prior to abandonment.

An abandonment report form, supplied by the Department of Natural Resources, shall be submitted by the well owner to Wausau Water Works and the Department of Natural Resources within ten days of the completion of the well abandonment. (Ord. 61-5126 §1(part), 2001, File No. 01-0833; Ord. 61-4738 §1(part), 1991.)

19.30.050 Penalties. Any well owner violating any provision of this chapter shall upon conviction be punished by forfeiture of not less than twenty dollars nor more than one hundred dollars and the cost of prosecution. Each day of violation is a separate offense. If any person fails to comply with this chapter for more than ten days after receiving written notice of the violation, the

municipality may impose a penalty and cause the well abandonment to be performed and the expense to be assessed as a special tax against the property. (Ord. 61-4738 §1(part), 1991.)

Chapter 19.32

SWIMMING POOLS

Sections:

19.32.010 Public—Permit required. Before commencing the installation of a public swimming pool, a permit authorizing plumbing, mechanical and drainage work shall be obtained from the plumbing inspector. The application for a permit shall be accompanied by plans and specifications together with written approval from the State Board of Health, copies of which shall be filed with the plumbing inspector. (Ord. 61-4380 §1(part), 1978.)

19.32.020 Private—Permit required. Before commencing the installation of a private residential swimming pool, a permit authorizing plumbing, mechanical and drainage work shall be obtained from the plumbing inspector. The application for a permit shall be accompanied by plans and specifications showing the following in sufficient detail:

(a) Pool dimensions and volume of water in gallons;

(b) Type and size of filter system, filtration and backwash capabilities;

(c) Pool piping layout, showing pipe sizes, valves and type of materials;

(d) The rated capacity and head at filtration and backwash flows of the pool pump in gallons per minute with size and type of motor;

(e) Location and type of waste water disposal system. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.36

INDIVIDUAL SEWAGE DISPOSAL SYSTEMS

Sections:

19.36.010 Allowable use. Individual sewage disposal systems may be constructed where no public sewage system is available or likely to become available within a reasonable time. (Ord. 61-4380 §1(part), 1978.)

19.36.020 Permit required—Restrictions. (a) Permit to construct an individual sewage disposal system shall be obtained from the plumbing inspector.

(b) No permit to construct a private sewage disposal system shall be granted without written approval from the board of public works and the water and sewerage utility commission. (Ord. 61-4380 §1(part), 1978.)

19.36.030 Applications for permits. Applications for permits shall be in writing and include the following:

(a) Name and address of applicant;

(b) Legal description of property;

(c) Percolation test as required in Sections H62 and H65 of the Wisconsin Administrative Code;

(d) Complete plan of the proposed facility showing the location and size of all proposed disposal facilities, location of water supplies, buildings and lot lines. (Ord. 61-4380 §1(part), 1978.)

19.36.040 Construction. The entire disposal system shall comply with Section H62 of the Wisconsin Administrative Code. (Ord. 61-4380 §1(part), 1978.)

19.36.050 Minimum size lots. Under the absorption field requirements, it is apparent that in some areas individual sewage disposal systems cannot be used unless more than one lot is made available for this purpose, or alternate lots are held vacant until such time as public sewer systems have been installed, at which time additional construction on the remaining lots could be permitted. (Ord. 61-4380 §1(part), 1978.)

19.36.060 Industrial and commercial establishments. Individual sewage disposal systems as defined in this chapter involving septic tanks and absorption field shall be permitted for industrial and commercial establishments. Private disposal systems for such uses shall be by design of a competent registered engineer specializing in sanitation, plans for the installation having been approved by state and local authorities. (Ord. 61-4380 §1(part), 1978.)

19.36.070 Sewer system available. Private systems for sewage disposal shall be discontinued within one year after public sewers become available. The building sewer shall be discontinued from the old system and be reconnected with the public sewer. All abandoned septic tanks and seepage pits shall have the contents removed and shall be immediately filled with sand, gravel, or similar material. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.40

CROSS-CONNECTION TO WATER SERVICE

Sections:

19.40.010 Cross-connection regulations—Municipal code. See Chapter 13.13 of this code. (Ord. 61-4666 §1(part), 1989.)

19.40.020 Enforcement authority. The plumbing inspector has the full authority and responsibility to enforce Chapter 13.13 of this code and the State Plumbing Code with reference to cross-connections. (Ord. 61-4666 §1(part), 1989.)

19.40.030 State provisions adopted. The city adopts by reference the State Plumbing Code of Wisconsin, Chapter ILHR 82 of the Wisconsin Administrative Code concerning cross-connections. (Ord. 61-4666 §1(part), 1989.)

Chapter 19.44

SPECIAL PROVISIONS

Sections:

19.44.010 Connections to water distribution system. No valve or connection of any kind shall be tapped into the wall of any domestic water pipe, nor shall any saddle type of connection device be used except on a valved branch provided for this purpose. (Ord. 61-4380 §1(part), 1978.)

19.44.020 Trailer wastes. No person shall discharge the effluent from any trailer privy or disposal collector used in trailers for human habitation into any plumbing fixture not specifically designed for the reception of such effluent. (Ord. 61-4380 §1(part), 1978.)

19.44.030 Abandoned water and sewer service. Before a building is moved or demolished, the water services and building sewers shall be located at the property line. The water service and sewer shall be sealed off in the presence of the plumbing inspector. The plugs or seals shall not be covered until an approval has been given by the plumbing inspector. (Ord. 61-4380 §1(part), 1978.)

19.44.040 Parking lots and surface drains. (a) All parking lots shall meet the requirements of Chapter 15.52 of this code, and shall be provided with adequate yard drainage. Where a storm sewer is available and the lot is greater than seven thousand five hundred square feet in area, the lot shall be provided with interior yard drainage and shall be connected to the storm sewer. In all cases, drainage shall be to a terminal designated and approved by the city engineer and the plumbing inspector.

(b) The size of the storm sewer serving a parking lot shall be determined by the area to be drained and be approved by the city engineer.

(c) Catch basins and grate areas shall be to the standards of the city specifications. (Ord. 61-4739 §1, 1991; Ord. 61-4380 §1(part), 1978.)

19.44.050 Catch basins and receptacles. All storm or clearwater drain pipes that must be left open to drain basement areas, yards, gardens or other places shall be connected with suitable catch basins of brick, vitrified clay pipe, concrete or other suitable substance, the bottom of which

shall not be less than one-half foot below the bottom of the outlet pipe. Every such catch basin or receptacle shall be placed inside the lot line of the lot or lots to be drained. The installation of such basins or connections shall have the approval of the plumbing inspector and city engineer. (Ord. 61-4380 §1(part), 1978.)

19.44.060 Subsoil or footing drains. Where footing or subsoil drains are installed without or within the walls or footings of any building, they shall be discharged to an accessible catch basin not less than eighteen inches deep and twelve inches in diameter. The rim of such catch basin shall terminate not less than two inches above the basement floor and shall be located not less than ten feet from any building drain or branch. No catch basin will be required when footing or subsoil drains can be discharged to the storm sewer, a seepage pit or to the ground surface by gravity; provided, that the discharge point is within the property boundaries or to a public gutter and that no hazard or nuisance is created. (Ord. 61-4380 §1(part), 1978.)

19.44.070 Catch basin ejectors. When there are indications that indoor catch basins receiving the discharge of subsoil drains will discharge indirectly to the sanitary sewer, a sump pump, or ejector shall be installed to elevate the contents of the basin to a proper discharge point. (Ord. 61-4380 §1(part), 1978.)

19.44.080 Sump pumps. All sump pumps installed for the purpose of discharging clear waters from foundation drains and ground infiltration and where the building is not serviced by gravity shall either discharge into an underground conduit leading to a drainage ditch, gutter, dry well, or shall discharge onto the ground at least one foot or more out from the building and above permanent grade in such manner as not to create a nuisance. No sump discharge shall be allowed to flow on or across a public sidewalk. The discharge pipe shall not be reduced in size from the discharge opening left by the manufacturer. The discharge pipe from the pump opening to the outside of the building shall be rigidly secured. (Ord. 61-4380 §1 (part), 1978.)

19.44.090 Roof drains. Roof drains may discharge on the ground, provided such discharge does not create a nuisance. (Ord. 61-4380 §1(part), 1978.)

19.44.100 Mobile home and trailer camp regulations. (a) Mobile home parks shall be served by a private main sanitary sewer connected to the municipal sanitary sewer system. The connection from an individual mobile home to the private main sanitary sewer shall be adequately trapped and vented to conform with regulations set forth by state and local authorities.

(b) The size of the water service for a mobile home and trailer camp shall be determined by the number of units served and shall conform to the recommendations of the municipal water department superintendent, and the plumbing inspector. (Ord. 61-4380 §1(part), 1978.)

[INTENTIONALLY BLANK]

Chapter 19.48

INSURANCE

Sections:

19.48.010 Required. Before permits are issued, each master plumber shall have in full force and effect public liability insurance in the amount of one hundred thousand dollars for each injury, three hundred thousand dollars personal injury for each accident and one hundred thousand dollars property damage and Workmen's Compensation insurance. Certificates of such insurance shall be filed with the city clerk, together with a statement by the insurance company, showing that such policies will not be canceled without extending ten days' written notice to the city clerk. No permits shall be lawfully issued and no plumbing work shall be installed or worked on unless such policies are in full force and effect. (Ord. 61-4380 §1(part), 1978.)

19.48.020 Exceptions. The requirements of section 19.48.010 of this chapter shall not apply to installed plumbing manufactured for shipment out of the city, to property owners or to licensed and registered maintenance plumbers obtaining permits for plumbing work within the complex of their employers business enterprise only. Section 19.48.010 shall apply to any work performed in a public right-of-way. (Ord. 61-4380 §1(part), 1978.)

Chapter 19.52

PENALTIES

Sections:

19.52.010 Penalty for violation. Any person who violates any provision of this title shall be subject to a penalty as provided in section 1.01.110 of this code. Each violation and each day on which a violation of any provision of this title occurs or continues shall constitute a separate offense. (Ord. 61-4380 §1(part), 1978.)

Appendix H

VOC Analytical Results In Water Effluent at Wausau Water Supply (2013)

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

NLS Project: 209912
NLS Customer: 36394

Fax: 715 261 6946 Phone: 715 261 7288

Client: **Wausau Waterworks**
Attn: Dick Boers
Drinking Water Division
407 Grant Street
Wausau, WI 54403 4783

Project: 2013 Drinking Water VOCs PWS#73701023

EP 300 - VOC NLS ID: 760889
COC: 166319:1 Matrix: DW
Collected: 12/03/13 07:02 Received: 12/03/13

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					12/09/13	EPA 524.2, Rev 4.1	721026460

EP 200 - VOC NLS ID: 760890
COC: 166319:2 Matrix: DW
Collected: 12/03/13 11:05 Received: 12/03/13

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					12/05/13	EPA 524.2, Rev 4.1	721026460

Trip Blank NLS ID: 760891
COC: 166319 Matrix: TB
Collected: 12/03/13 00:00 Received: 12/03/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					12/05/13	EPA 524.2, Rev 4.1	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 ug/L = 1 mg/L
DWB = Dry Weight Basis NA = Not Applicable %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

Printed: 03/21/14 Code: NNNN-S

NLS Project: 214554
NLS Customer: 36394

Fax: 715 261 6946 Phone: 715 261 7288

Client: Wausau Waterworks
Attn: Dick Boers
Drinking Water Division
407 Grant Street
Wausau, WI 54403 4783

Project: 2014 Volatiles PWS#73701023

200 NLS ID: 774544
COC: 173932:1 Matrix: DW
Collected: 03/13/14 07:05 Received: 03/13/14

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					03/20/14	EPA 524.2, Rev 4.1	721026460

300 NLS ID: 774545
COC: 173932:2 Matrix: DW
Collected: 03/13/14 11:11 Received: 03/13/14

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					03/20/14	EPA 524.2, Rev 4.1	721026460

Trip Blank NLS ID: 774546
COC: 173932 Matrix: TB
Collected: 03/13/14 00:00 Received: 03/13/14

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					03/19/14	EPA 524.2, Rev 4.1	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 ug/L = 1 mg/L
DWB = Dry Weight Basis NA = Not Applicable %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 214554**

Project Description: 2014 Volatiles

Project Title: PWS#73701023 **Template: AGIDNRL** **Printed: 03/21/2014 09:51**

Sample: 774544 200 Collected: 03/13/14 Analyzed: 03/19/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	MCL	Note
Benzene	ND	ug/L	1	0.22	0.72	5	
Bromobenzene	ND	ug/L	1	0.17	0.57		
Bromodichloromethane	0.70	ug/L	1	0.15	0.49	80	
Bromoform	ND	ug/L	1	0.16	0.53	80	
Bromomethane	ND	ug/L	1	0.26	0.85		
Carbon Tetrachloride	ND	ug/L	1	0.20	0.66	5	
Chloroethane	ND	ug/L	1	0.94	3.1		
Chloroform	22	ug/L	2	0.39	1.4	80	
Chloromethane	ND	ug/L	1	0.16	0.53		
o-Chlorotoluene	ND	ug/L	1	0.18	0.59		
p-Chlorotoluene	ND	ug/L	1	0.19	0.63		
Dibromochloromethane	ND	ug/L	1	0.15	0.49	80	
Dibromomethane	ND	ug/L	1	0.22	0.74		
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.21	0.69		
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.57	600	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.17	0.56	75	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.65		
1,2-Dichloroethane	ND	ug/L	1	0.16	0.54	5	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.68	7	
cis-1,2-Dichloroethene	ND	ug/L	1	0.19	0.65	70	
trans-1,2-Dichloroethene	ND	ug/L	1	0.14	0.45	100	
Dichloromethane	ND	ug/L	1	0.19	0.63	5	
1,2-Dichloropropane	ND	ug/L	1	0.24	0.78	5	
1,3-Dichloropropane	ND	ug/L	1	0.19	0.63		
2,2-Dichloropropane	ND	ug/L	1	0.14	0.46		
1,1-Dichloropropene	ND	ug/L	1	0.10	0.32		
1,3-Dichloropropene	ND	ug/L	1	0.36	1.2		
Ethylbenzene	ND	ug/L	1	0.19	0.64	700	
Chlorobenzene	ND	ug/L	1	0.19	0.63	100	
Styrene	ND	ug/L	1	0.17	0.56	100	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.18	0.59		
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.49		
Tetrachloroethene	ND	ug/L	1	0.18	0.61	5	
Toluene	ND	ug/L	1	0.18	0.59	1000	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.19	0.62	70	
1,1,1-Trichloroethane	ND	ug/L	1	0.15	0.51	200	
1,1,2-Trichloroethane	ND	ug/L	1	0.20	0.65	5	
Trichloroethene	ND	ug/L	1	0.11	0.36	5	
1,2,3-Trichloropropane	ND	ug/L	1	0.19	0.62		
Vinyl chloride	ND	ug/L	1	0.18	0.61	2	
Xylene total	ND	ug/L	1	0.53	1.8	10000	
4-Bromofluorobenzene (SURR)	81%						S
1,2-Dichlorobenzene-d4 (SURR)	87%						S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 214554**

Project Description: 2014 Volatiles

Project Title: PWS#73701023 **Template: AGIDNRL** **Printed: 03/21/2014 09:51**

Sample: 774545 300 Collected: 03/13/14 Analyzed: 03/19/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	MCL	Note
Benzene	ND	ug/L	1	0.22	0.72	5	
Bromobenzene	ND	ug/L	1	0.17	0.57		
Bromodichloromethane	0.67	ug/L	1	0.15	0.49	80	
Bromoform	ND	ug/L	1	0.16	0.53	80	
Bromomethane	ND	ug/L	1	0.26	0.85		
Carbon Tetrachloride	ND	ug/L	1	0.20	0.66	5	
Chloroethane	ND	ug/L	1	0.94	3.1		
Chloroform	20	ug/L	2	0.39	1.4	80	
Chloromethane	ND	ug/L	1	0.16	0.53		
o-Chlorotoluene	ND	ug/L	1	0.18	0.59		
p-Chlorotoluene	ND	ug/L	1	0.19	0.63		
Dibromochloromethane	ND	ug/L	1	0.15	0.49	80	
Dibromomethane	ND	ug/L	1	0.22	0.74		
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.21	0.69		
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.57	600	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.17	0.56	75	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.65		
1,2-Dichloroethane	ND	ug/L	1	0.16	0.54	5	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.68	7	
cis-1,2-Dichloroethene	ND	ug/L	1	0.19	0.65	70	
trans-1,2-Dichloroethene	ND	ug/L	1	0.14	0.45	100	
Dichloromethane	ND	ug/L	1	0.19	0.63	5	
1,2-Dichloropropane	ND	ug/L	1	0.24	0.78	5	
1,3-Dichloropropane	ND	ug/L	1	0.19	0.63		
2,2-Dichloropropane	ND	ug/L	1	0.14	0.46		
1,1-Dichloropropene	ND	ug/L	1	0.10	0.32		
1,3-Dichloropropene	ND	ug/L	1	0.36	1.2		
Ethylbenzene	ND	ug/L	1	0.19	0.64	700	
Chlorobenzene	ND	ug/L	1	0.19	0.63	100	
Styrene	ND	ug/L	1	0.17	0.56	100	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.18	0.59		
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.49		
Tetrachloroethene	ND	ug/L	1	0.18	0.61	5	
Toluene	ND	ug/L	1	0.18	0.59	1000	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.19	0.62	70	
1,1,1-Trichloroethane	ND	ug/L	1	0.15	0.51	200	
1,1,2-Trichloroethane	ND	ug/L	1	0.20	0.65	5	
Trichloroethene	ND	ug/L	1	0.11	0.36	5	
1,2,3-Trichloropropane	ND	ug/L	1	0.19	0.62		
Vinyl chloride	ND	ug/L	1	0.18	0.61	2	
Xylene total	ND	ug/L	1	0.53	1.8	10000	
4-Bromofluorobenzene (SURR)	81%						S
1,2-Dichlorobenzene-d4 (SURR)	89%						S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 214554**

Project Description: 2014 Volatiles

Project Title: PWS#73701023 **Template: AGIDNRL** **Printed: 03/21/2014 09:51**

Sample: 774546 Trip Blank Collected: 03/13/14 Analyzed: 03/19/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	Note
Benzene	ND	ug/L	1	0.22	0.72	
Bromobenzene	ND	ug/L	1	0.17	0.57	
Bromodichloromethane	ND	ug/L	1	0.15	0.49	
Bromoform	ND	ug/L	1	0.16	0.53	
Bromomethane	ND	ug/L	1	0.26	0.85	
Carbon Tetrachloride	ND	ug/L	1	0.20	0.66	
Chloroethane	ND	ug/L	1	0.94	3.1	
Chloroform	ND	ug/L	1	0.19	0.62	
Chloromethane	ND	ug/L	1	0.16	0.53	
o-Chlorotoluene	ND	ug/L	1	0.18	0.59	
p-Chlorotoluene	ND	ug/L	1	0.19	0.63	
Dibromochloromethane	ND	ug/L	1	0.15	0.49	
Dibromomethane	ND	ug/L	1	0.22	0.74	
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.21	0.69	
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.57	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.17	0.56	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.65	
1,2-Dichloroethane	ND	ug/L	1	0.16	0.54	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.68	
cis-1,2-Dichloroethene	ND	ug/L	1	0.19	0.65	
trans-1,2-Dichloroethene	ND	ug/L	1	0.14	0.45	
Dichloromethane	ND	ug/L	1	0.19	0.63	
1,2-Dichloropropane	ND	ug/L	1	0.24	0.78	
1,3-Dichloropropane	ND	ug/L	1	0.19	0.63	
2,2-Dichloropropane	ND	ug/L	1	0.14	0.46	
1,1-Dichloropropene	ND	ug/L	1	0.10	0.32	
1,3-Dichloropropene	ND	ug/L	1	0.36	1.2	
Ethylbenzene	ND	ug/L	1	0.19	0.64	
Chlorobenzene	ND	ug/L	1	0.19	0.63	
Styrene	ND	ug/L	1	0.17	0.56	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.18	0.59	
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.49	
Tetrachloroethene	ND	ug/L	1	0.18	0.61	
Toluene	ND	ug/L	1	0.18	0.59	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.19	0.62	
1,1,1-Trichloroethane	ND	ug/L	1	0.15	0.51	
1,1,2-Trichloroethane	ND	ug/L	1	0.20	0.65	
Trichloroethene	ND	ug/L	1	0.11	0.36	
1,2,3-Trichloropropane	ND	ug/L	1	0.19	0.62	
Vinyl chloride	ND	ug/L	1	0.18	0.61	
Xylene total	ND	ug/L	1	0.53	1.8	
4-Bromofluorobenzene (SURR)	78%					S
1,2-Dichlorobenzene-d4 (SURR)	85%					S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 209912**

Project Description: 2013 Drinking Water VOCs

Project Title: PWS#73701023 **Template: SAT3DNRL** **Printed: 04/29/2014 11:31**

Sample: 760889 EP 300 - VOC Collected: 12/03/13 Analyzed: 12/05/13 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	MCL	Note
Benzene	ND	ug/L	1	0.17	0.60	5	
Bromobenzene	ND	ug/L	1	0.18	0.64		
Bromodichloromethane	3.5	ug/L	1	0.18	0.64	80	
Bromoform	ND	ug/L	1	0.17	0.60	80	
Bromomethane	ND	ug/L	1	0.36	1.3		
Carbon Tetrachloride	ND	ug/L	1	0.24	0.85	5	
Chloroethane	ND	ug/L	1	1.3	4.6		
Chloroform	23	ug/L	2.5	0.49	1.7	80	
Chloromethane	ND	ug/L	1	0.14	0.51		
o-Chlorotoluene	ND	ug/L	1	0.15	0.55		
p-Chlorotoluene	ND	ug/L	1	0.19	0.66		
Dibromochloromethane	[0.27]	ug/L	1	0.15	0.53	80	
Dibromomethane	ND	ug/L	1	0.21	0.75		
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.20	0.71		
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.61	600	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.14	0.47	75	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.68		
1,2-Dichloroethane	ND	ug/L	1	0.23	0.80	5	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.75	7	
cis-1,2-Dichloroethene	ND	ug/L	1	0.13	0.47	70	
trans-1,2-Dichloroethene	ND	ug/L	1	0.16	0.55	100	
Dichloromethane	ND	ug/L	1	0.17	0.61	5	
1,2-Dichloropropane	ND	ug/L	1	0.26	0.92	5	
1,3-Dichloropropane	ND	ug/L	1	0.26	0.91		
2,2-Dichloropropane	ND	ug/L	1	0.17	0.62		
1,1-Dichloropropene	ND	ug/L	1	0.16	0.55		
1,3-Dichloropropene	ND	ug/L	1	0.35	1.2		
Ethylbenzene	ND	ug/L	1	0.15	0.51	700	
Chlorobenzene	[0.26]	ug/L	1	0.19	0.69	100	
Styrene	ND	ug/L	1	0.20	0.68	100	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.17	0.59		
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.55		
Tetrachloroethene	ND	ug/L	1	0.18	0.62	5	
Toluene	ND	ug/L	1	0.14	0.48	1000	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.15	0.51	70	
1,1,1-Trichloroethane	ND	ug/L	1	0.11	0.37	200	
1,1,2-Trichloroethane	ND	ug/L	1	0.22	0.78	5	
Trichloroethene	ND	ug/L	1	0.19	0.66	5	
1,2,3-Trichloropropane	ND	ug/L	1	0.25	0.87		
Vinyl chloride	ND	ug/L	1	0.19	0.67	.2	
Xylene total	ND	ug/L	1	0.53	1.9	10000	
4-Bromofluorobenzene (SURR)	86%						S
1,2-Dichlorobenzene-d4 (SURR)	96%						S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 209912**

Project Description: 2013 Drinking Water VOCs

Project Title: PWS#73701023 **Template: SAT3DNRL** **Printed: 04/29/2014 11:31**

Sample: 760890 EP 200 - VOC Collected: 12/03/13 Analyzed: 12/05/13 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	MCL	Note
Benzene	ND	ug/L	1	0.17	0.60	5	
Bromobenzene	ND	ug/L	1	0.18	0.64		
Bromodichloromethane	1.5	ug/L	1	0.18	0.64	80	
Bromoform	ND	ug/L	1	0.17	0.60	80	
Bromomethane	ND	ug/L	1	0.36	1.3		
Carbon Tetrachloride	ND	ug/L	1	0.24	0.85	5	
Chloroethane	ND	ug/L	1	1.3	4.6		
Chloroform	15	ug/L	1	0.20	0.70	80	
Chloromethane	ND	ug/L	1	0.14	0.51		
o-Chlorotoluene	ND	ug/L	1	0.15	0.55		
p-Chlorotoluene	ND	ug/L	1	0.19	0.66		
Dibromochloromethane	ND	ug/L	1	0.15	0.53	80	
Dibromomethane	ND	ug/L	1	0.21	0.75		
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.20	0.71		
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.61	600	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.14	0.47	75	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.68		
1,2-Dichloroethane	ND	ug/L	1	0.23	0.80	5	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.75	7	
cis-1,2-Dichloroethene	ND	ug/L	1	0.13	0.47	70	
trans-1,2-Dichloroethene	ND	ug/L	1	0.16	0.55	100	
Dichloromethane	ND	ug/L	1	0.17	0.61	5	
1,2-Dichloropropane	ND	ug/L	1	0.26	0.92	5	
1,3-Dichloropropane	ND	ug/L	1	0.26	0.91		
2,2-Dichloropropane	ND	ug/L	1	0.17	0.62		
1,1-Dichloropropene	ND	ug/L	1	0.16	0.55		
1,3-Dichloropropene	ND	ug/L	1	0.35	1.2		
Ethylbenzene	ND	ug/L	1	0.15	0.51	700	
Chlorobenzene	[0.29]	ug/L	1	0.19	0.69	100	
Styrene	ND	ug/L	1	0.20	0.68	100	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.17	0.59		
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.55		
Tetrachloroethene	ND	ug/L	1	0.18	0.62	5	
Toluene	ND	ug/L	1	0.14	0.48	1000	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.15	0.51	70	
1,1,1-Trichloroethane	ND	ug/L	1	0.11	0.37	200	
1,1,2-Trichloroethane	ND	ug/L	1	0.22	0.78	5	
Trichloroethene	ND	ug/L	1	0.19	0.66	5	
1,2,3-Trichloropropane	ND	ug/L	1	0.25	0.87		
Vinyl chloride	ND	ug/L	1	0.19	0.67	.2	
Xylene total	ND	ug/L	1	0.53	1.9	10000	
4-Bromofluorobenzene (SURR)	86%						S
1,2-Dichlorobenzene-d4 (SURR)	96%						S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form
Customer: Wausau Waterworks NLS Project: 209912
Project Description: 2013 Drinking Water VOCs
Project Title: PWS#73701023 Template: SAT3DNRL Printed: 04/29/2014 11:31

Sample: 760891 Trip Blank Collected: 12/03/13 Analyzed: 12/05/13 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	Note
Benzene	ND	ug/L	1	0.17	0.60	
Bromobenzene	ND	ug/L	1	0.18	0.64	
Bromodichloromethane	ND	ug/L	1	0.18	0.64	
Bromoform	ND	ug/L	1	0.17	0.60	
Bromomethane	ND	ug/L	1	0.36	1.3	
Carbon Tetrachloride	ND	ug/L	1	0.24	0.85	
Chloroethane	ND	ug/L	1	1.3	4.6	
Chloroform	ND	ug/L	1	0.20	0.70	
Chloromethane	ND	ug/L	1	0.14	0.51	
o-Chlorotoluene	ND	ug/L	1	0.15	0.55	
p-Chlorotoluene	ND	ug/L	1	0.19	0.66	
Dibromochloromethane	ND	ug/L	1	0.15	0.53	
Dibromomethane	ND	ug/L	1	0.21	0.75	
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.20	0.71	
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.61	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.14	0.47	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.68	
1,2-Dichloroethane	ND	ug/L	1	0.23	0.80	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.75	
cis-1,2-Dichloroethene	ND	ug/L	1	0.13	0.47	
trans-1,2-Dichloroethene	ND	ug/L	1	0.16	0.55	
Dichloromethane	ND	ug/L	1	0.17	0.61	
1,2-Dichloropropane	ND	ug/L	1	0.26	0.92	
1,3-Dichloropropane	ND	ug/L	1	0.26	0.91	
2,2-Dichloropropane	ND	ug/L	1	0.17	0.62	
1,1-Dichloropropene	ND	ug/L	1	0.16	0.55	
1,3-Dichloropropene	ND	ug/L	1	0.35	1.2	
Ethylbenzene	ND	ug/L	1	0.15	0.51	
Chlorobenzene	ND	ug/L	1	0.19	0.69	
Styrene	ND	ug/L	1	0.20	0.68	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.17	0.59	
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.55	
Tetrachloroethene	ND	ug/L	1	0.18	0.62	
Toluene	ND	ug/L	1	0.14	0.48	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.15	0.51	
1,1,1-Trichloroethane	ND	ug/L	1	0.11	0.37	
1,1,2-Trichloroethane	ND	ug/L	1	0.22	0.78	
Trichloroethene	ND	ug/L	1	0.19	0.66	
1,2,3-Trichloropropane	ND	ug/L	1	0.25	0.87	
Vinyl chloride	ND	ug/L	1	0.19	0.67	
Xylene total	ND	ug/L	1	0.53	1.9	
4-Bromofluorobenzene (SURR)	81%					S
1,2-Dichlorobenzene-d4 (SURR)	83%					S

NOTES APPLICABLE TO THIS ANALYSIS:
S = This compound is a surrogate used to evaluate the quality control of a method.

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

NLS Project: 219016
NLS Customer: 36394

Fax: 715 261 6946 Phone: 715 261 7288

Client: Wausau Waterworks
Attn: Dick Boers
Drinking Water Division
407 Grant Street
Wausau, WI 54403 4783

Project: 2014 Drinking Water VOCs PWS#73701023

200 NLS ID: 789472
COC: 143816:1 Matrix: DW
Collected: 05/16/14 07:03 Received: 05/16/14

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					05/23/14	EPA 524.2, Rev 4.1	721026460

300 NLS ID: 789473
COC: 143816:2 Matrix: DW
Collected: 05/16/14 11:10 Received: 05/16/14

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					05/23/14	EPA 524.2, Rev 4.1	721026460

Trip Blank NLS ID: 789474
COC: 143816 Matrix: TB
Collected: 05/16/14 00:00 Received: 05/16/14

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					05/24/14	EPA 524.2, Rev 4.1	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 ug/L = 1 mg/L
DWB = Dry Weight Basis NA = Not Applicable %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 219016**

Project Description: 2014 Drinking Water VOCs

Project Title: PWS#73701023 **Template: AGIDNRL** **Printed: 05/27/2014 11:24**

Sample: 789474 Trip Blank Collected: 05/16/14 Analyzed: 05/24/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	Note
Benzene	ND	ug/L	1	0.22	0.72	
Bromobenzene	ND	ug/L	1	0.17	0.57	
Bromodichloromethane	ND	ug/L	1	0.15	0.49	
Bromoform	ND	ug/L	1	0.16	0.53	
Bromomethane	ND	ug/L	1	0.26	0.85	
Carbon Tetrachloride	ND	ug/L	1	0.20	0.66	
Chloroethane	ND	ug/L	1	0.94	3.1	
Chloroform	ND	ug/L	1	0.19	0.62	
Chloromethane	ND	ug/L	1	0.16	0.53	
o-Chlorotoluene	ND	ug/L	1	0.18	0.59	
p-Chlorotoluene	ND	ug/L	1	0.19	0.63	
Dibromochloromethane	ND	ug/L	1	0.15	0.49	
Dibromomethane	ND	ug/L	1	0.22	0.74	
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.21	0.69	
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.57	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.17	0.56	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.65	
1,2-Dichloroethane	ND	ug/L	1	0.16	0.54	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.68	
cis-1,2-Dichloroethene	ND	ug/L	1	0.19	0.65	
trans-1,2-Dichloroethene	ND	ug/L	1	0.14	0.45	
Dichloromethane	ND	ug/L	1	0.19	0.63	
1,2-Dichloropropane	ND	ug/L	1	0.24	0.78	
1,3-Dichloropropane	ND	ug/L	1	0.19	0.63	
2,2-Dichloropropane	ND	ug/L	1	0.14	0.46	
1,1-Dichloropropene	ND	ug/L	1	0.10	0.32	
1,3-Dichloropropene	ND	ug/L	1	0.36	1.2	
Ethylbenzene	ND	ug/L	1	0.19	0.64	
Chlorobenzene	ND	ug/L	1	0.19	0.63	
Styrene	ND	ug/L	1	0.17	0.56	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.18	0.59	
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.49	
Tetrachloroethene	ND	ug/L	1	0.18	0.61	
Toluene	ND	ug/L	1	0.18	0.59	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.19	0.62	
1,1,1-Trichloroethane	ND	ug/L	1	0.15	0.51	
1,1,2-Trichloroethane	ND	ug/L	1	0.20	0.65	
Trichloroethene	ND	ug/L	1	0.11	0.36	
1,2,3-Trichloropropane	ND	ug/L	1	0.19	0.62	
Vinyl chloride	ND	ug/L	1	0.18	0.61	
Xylene total	ND	ug/L	1	0.53	1.8	
4-Bromofluorobenzene (SURR)	75%					S
1,2-Dichlorobenzene-d4 (SURR)	75%					S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 219016**

Project Description: 2014 Drinking Water VOCs

Project Title: PWS#73701023 **Template: SAT3DNRL** **Printed: 05/27/2014 11:24**

Sample: 789472 200 Collected: 05/16/14 Analyzed: 05/23/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	MCL	Note
Benzene	ND	ug/L	1	0.17	0.60	5	
Bromobenzene	ND	ug/L	1	0.18	0.64		
Bromodichloromethane	0.67	ug/L	1	0.18	0.64	80	
Bromoform	ND	ug/L	1	0.17	0.60	80	
Bromomethane	ND	ug/L	1	0.36	1.3		
Carbon Tetrachloride	ND	ug/L	1	0.24	0.85	5	
Chloroethane	ND	ug/L	1	1.3	4.6		
Chloroform	13	ug/L	1	0.20	0.70	80	
Chloromethane	ND	ug/L	1	0.14	0.51		
o-Chlorotoluene	ND	ug/L	1	0.15	0.55		
p-Chlorotoluene	ND	ug/L	1	0.19	0.66		
Dibromochloromethane	ND	ug/L	1	0.15	0.53	80	
Dibromomethane	ND	ug/L	1	0.21	0.75		
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.20	0.71		
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.61	600	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.14	0.47	75	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.68		
1,2-Dichloroethane	ND	ug/L	1	0.23	0.80	5	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.75	7	
cis-1,2-Dichloroethene	ND	ug/L	1	0.13	0.47	70	
trans-1,2-Dichloroethene	ND	ug/L	1	0.16	0.55	100	
Dichloromethane	ND	ug/L	1	0.17	0.61	5	
1,2-Dichloropropane	ND	ug/L	1	0.26	0.92	5	
1,3-Dichloropropane	ND	ug/L	1	0.26	0.91		
2,2-Dichloropropane	ND	ug/L	1	0.17	0.62		
1,1-Dichloropropene	ND	ug/L	1	0.16	0.55		
1,3-Dichloropropene	ND	ug/L	1	0.35	1.2		
Ethylbenzene	ND	ug/L	1	0.15	0.51	700	
Chlorobenzene	ND	ug/L	1	0.19	0.69	100	
Styrene	ND	ug/L	1	0.20	0.68	100	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.17	0.59		
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.55		
Tetrachloroethene	ND	ug/L	1	0.18	0.62	5	
Toluene	ND	ug/L	1	0.14	0.48	1000	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.15	0.51	70	
1,1,1-Trichloroethane	ND	ug/L	1	0.11	0.37	200	
1,1,2-Trichloroethane	ND	ug/L	1	0.22	0.78	5	
Trichloroethene	ND	ug/L	1	0.19	0.66	5	
1,2,3-Trichloropropane	ND	ug/L	1	0.25	0.87		
Vinyl chloride	ND	ug/L	1	0.19	0.67	.2	
Xylene total	ND	ug/L	1	0.53	1.9	10000	
4-Bromofluorobenzene (SURR)	67%						S
1,2-Dichlorobenzene-d4 (SURR)	87%						S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form
Customer: Wausau Waterworks NLS Project: 219016
Project Description: 2014 Drinking Water VOCs
Project Title: PWS#73701023 Template: SAT3DNRL Printed: 05/27/2014 11:24

Sample: 789473 300 Collected: 05/16/14 Analyzed: 05/23/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	MCL	Note
Benzene	ND	ug/L	1	0.17	0.60	5	
Bromobenzene	ND	ug/L	1	0.18	0.64		
Bromodichloromethane	[0.36]	ug/L	1	0.18	0.64	80	
Bromoform	ND	ug/L	1	0.17	0.60	80	
Bromomethane	ND	ug/L	1	0.36	1.3		
Carbon Tetrachloride	ND	ug/L	1	0.24	0.85	5	
Chloroethane	ND	ug/L	1	1.3	4.6		
Chloroform	13	ug/L	1	0.20	0.70	80	
Chloromethane	ND	ug/L	1	0.14	0.51		
o-Chlorotoluene	ND	ug/L	1	0.15	0.55		
p-Chlorotoluene	ND	ug/L	1	0.19	0.66		
Dibromochloromethane	ND	ug/L	1	0.15	0.53	80	
Dibromomethane	ND	ug/L	1	0.21	0.75		
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.20	0.71		
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.61	600	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.14	0.47	75	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.68		
1,2-Dichloroethane	ND	ug/L	1	0.23	0.80	5	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.75	7	
cis-1,2-Dichloroethene	ND	ug/L	1	0.13	0.47	70	
trans-1,2-Dichloroethene	ND	ug/L	1	0.16	0.55	100	
Dichloromethane	ND	ug/L	1	0.17	0.61	5	
1,2-Dichloropropane	ND	ug/L	1	0.26	0.92	5	
1,3-Dichloropropane	ND	ug/L	1	0.26	0.91		
2,2-Dichloropropane	ND	ug/L	1	0.17	0.62		
1,1-Dichloropropene	ND	ug/L	1	0.16	0.55		
1,3-Dichloropropene	ND	ug/L	1	0.35	1.2		
Ethylbenzene	ND	ug/L	1	0.15	0.51	700	
Chlorobenzene	ND	ug/L	1	0.19	0.69	100	
Styrene	ND	ug/L	1	0.20	0.68	100	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.17	0.59		
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.55		
Tetrachloroethene	ND	ug/L	1	0.18	0.62	5	
Toluene	ND	ug/L	1	0.14	0.48	1000	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.15	0.51	70	
1,1,1-Trichloroethane	ND	ug/L	1	0.11	0.37	200	
1,1,2-Trichloroethane	ND	ug/L	1	0.22	0.78	5	
Trichloroethene	ND	ug/L	1	0.19	0.66	5	
1,2,3-Trichloropropane	ND	ug/L	1	0.25	0.87		
Vinyl chloride	ND	ug/L	1	0.19	0.67	.2	
Xylene total	ND	ug/L	1	0.53	1.9	10000	
4-Bromofluorobenzene (SURR)	66%						S
1,2-Dichlorobenzene-d4 (SURR)	87%						S

NOTES APPLICABLE TO THIS ANALYSIS:
S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 227065**

Project Description: 2014 Drinking Water

Project Title: PWS#73701023 **Template: AGIDNRL** **Printed: 10/08/2014 09:41**

Sample: 817478 200 - VOC Collected: 09/11/14 Analyzed: 09/22/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	MCL	Note
Benzene	ND	ug/L	1	0.22	0.72	5	
Bromobenzene	ND	ug/L	1	0.17	0.57		
Bromodichloromethane	[0.21]	ug/L	1	0.15	0.49	80	
Bromoform	ND	ug/L	1	0.16	0.53	80	
Bromomethane	ND	ug/L	1	0.26	0.85		
Carbon Tetrachloride	ND	ug/L	1	0.20	0.66	5	
Chloroethane	ND	ug/L	1	0.94	3.1		
Chloroform	6.9	ug/L	1	0.19	0.62	80	
Chloromethane	ND	ug/L	1	0.16	0.53		
o-Chlorotoluene	ND	ug/L	1	0.18	0.59		
p-Chlorotoluene	ND	ug/L	1	0.19	0.63		
Dibromochloromethane	ND	ug/L	1	0.15	0.49	80	
Dibromomethane	ND	ug/L	1	0.22	0.74		
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.21	0.69		
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.57	600	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.17	0.56	75	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.65		
1,2-Dichloroethane	ND	ug/L	1	0.16	0.54	5	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.68	7	
cis-1,2-Dichloroethene	ND	ug/L	1	0.19	0.65	70	
trans-1,2-Dichloroethene	ND	ug/L	1	0.14	0.45	100	
Dichloromethane	ND	ug/L	1	0.19	0.63	5	
1,2-Dichloropropane	ND	ug/L	1	0.24	0.78	5	
1,3-Dichloropropane	ND	ug/L	1	0.19	0.63		
2,2-Dichloropropane	ND	ug/L	1	0.14	0.46		
1,1-Dichloropropene	ND	ug/L	1	0.10	0.32		
1,3-Dichloropropene	ND	ug/L	1	0.36	1.2		
Ethylbenzene	ND	ug/L	1	0.19	0.64	700	
Chlorobenzene	ND	ug/L	1	0.19	0.63	100	
Styrene	ND	ug/L	1	0.17	0.56	100	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.18	0.59		
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.49		
Tetrachloroethene	ND	ug/L	1	0.18	0.61	5	
Toluene	ND	ug/L	1	0.18	0.59	1000	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.19	0.62	70	
1,1,1-Trichloroethane	ND	ug/L	1	0.15	0.51	200	
1,1,2-Trichloroethane	ND	ug/L	1	0.20	0.65	5	
Trichloroethene	ND	ug/L	1	0.11	0.36	5	
1,2,3-Trichloropropane	ND	ug/L	1	0.19	0.62		
Vinyl chloride	ND	ug/L	1	0.18	0.61	.2	
Xylene total	ND	ug/L	1	0.53	1.8	10000	
4-Bromofluorobenzene (SURR)	96%						S
1,2-Dichlorobenzene-d4 (SURR)	103%						S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 227065**

Project Description: 2014 Drinking Water

Project Title: PWS#73701023 **Template: AGIDNRL** **Printed: 10/08/2014 09:41**

Sample: 817483 300 - VOC Collected: 09/11/14 Analyzed: 09/22/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	MCL	Note
Benzene	ND	ug/L	1	0.22	0.72	5	
Bromobenzene	ND	ug/L	1	0.17	0.57		
Bromodichloromethane	[0.19]	ug/L	1	0.15	0.49	80	
Bromoform	ND	ug/L	1	0.16	0.53	80	
Bromomethane	ND	ug/L	1	0.26	0.85		
Carbon Tetrachloride	ND	ug/L	1	0.20	0.66	5	
Chloroethane	ND	ug/L	1	0.94	3.1		
Chloroform	6.2	ug/L	1	0.19	0.62	80	
Chloromethane	ND	ug/L	1	0.16	0.53		
o-Chlorotoluene	ND	ug/L	1	0.18	0.59		
p-Chlorotoluene	ND	ug/L	1	0.19	0.63		
Dibromochloromethane	ND	ug/L	1	0.15	0.49	80	
Dibromomethane	ND	ug/L	1	0.22	0.74		
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.21	0.69		
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.57	600	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.17	0.56	75	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.65		
1,2-Dichloroethane	ND	ug/L	1	0.16	0.54	5	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.68	7	
cis-1,2-Dichloroethene	ND	ug/L	1	0.19	0.65	70	
trans-1,2-Dichloroethene	ND	ug/L	1	0.14	0.45	100	
Dichloromethane	ND	ug/L	1	0.19	0.63	5	
1,2-Dichloropropane	ND	ug/L	1	0.24	0.78	5	
1,3-Dichloropropane	ND	ug/L	1	0.19	0.63		
2,2-Dichloropropane	ND	ug/L	1	0.14	0.46		
1,1-Dichloropropene	ND	ug/L	1	0.10	0.32		
1,3-Dichloropropene	ND	ug/L	1	0.36	1.2		
Ethylbenzene	ND	ug/L	1	0.19	0.64	700	
Chlorobenzene	ND	ug/L	1	0.19	0.63	100	
Styrene	ND	ug/L	1	0.17	0.56	100	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.18	0.59		
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.49		
Tetrachloroethene	ND	ug/L	1	0.18	0.61	5	
Toluene	ND	ug/L	1	0.18	0.59	1000	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.19	0.62	70	
1,1,1-Trichloroethane	ND	ug/L	1	0.15	0.51	200	
1,1,2-Trichloroethane	ND	ug/L	1	0.20	0.65	5	
Trichloroethene	ND	ug/L	1	0.11	0.36	5	
1,2,3-Trichloropropane	ND	ug/L	1	0.19	0.62		
Vinyl chloride	ND	ug/L	1	0.18	0.61	.2	
Xylene total	ND	ug/L	1	0.53	1.8	10000	
4-Bromofluorobenzene (SURR)	91%						S
1,2-Dichlorobenzene-d4 (SURR)	108%						S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 227065**

Project Description: 2014 Drinking Water

Project Title: PWS#73701023 **Template: AGIDNRL** **Printed: 10/08/2014 09:41**

Sample: 817484 Trip Blank Collected: 09/11/14 Analyzed: 09/22/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	Note
Benzene	ND	ug/L	1	0.22	0.72	
Bromobenzene	ND	ug/L	1	0.17	0.57	
Bromodichloromethane	ND	ug/L	1	0.15	0.49	
Bromoform	ND	ug/L	1	0.16	0.53	
Bromomethane	ND	ug/L	1	0.26	0.85	
Carbon Tetrachloride	ND	ug/L	1	0.20	0.66	
Chloroethane	ND	ug/L	1	0.94	3.1	
Chloroform	ND	ug/L	1	0.19	0.62	
Chloromethane	ND	ug/L	1	0.16	0.53	
o-Chlorotoluene	ND	ug/L	1	0.18	0.59	
p-Chlorotoluene	ND	ug/L	1	0.19	0.63	
Dibromochloromethane	ND	ug/L	1	0.15	0.49	
Dibromomethane	ND	ug/L	1	0.22	0.74	
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.21	0.69	
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.57	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.17	0.56	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.65	
1,2-Dichloroethane	ND	ug/L	1	0.16	0.54	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.68	
cis-1,2-Dichloroethene	ND	ug/L	1	0.19	0.65	
trans-1,2-Dichloroethene	ND	ug/L	1	0.14	0.45	
Dichloromethane	ND	ug/L	1	0.19	0.63	
1,2-Dichloropropane	ND	ug/L	1	0.24	0.78	
1,3-Dichloropropane	ND	ug/L	1	0.19	0.63	
2,2-Dichloropropane	ND	ug/L	1	0.14	0.46	
1,1-Dichloropropene	ND	ug/L	1	0.10	0.32	
1,3-Dichloropropene	ND	ug/L	1	0.36	1.2	
Ethylbenzene	ND	ug/L	1	0.19	0.64	
Chlorobenzene	ND	ug/L	1	0.19	0.63	
Styrene	ND	ug/L	1	0.17	0.56	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.18	0.59	
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.49	
Tetrachloroethene	ND	ug/L	1	0.18	0.61	
Toluene	ND	ug/L	1	0.18	0.59	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.19	0.62	
1,1,1-Trichloroethane	ND	ug/L	1	0.15	0.51	
1,1,2-Trichloroethane	ND	ug/L	1	0.20	0.65	
Trichloroethene	ND	ug/L	1	0.11	0.36	
1,2,3-Trichloropropane	ND	ug/L	1	0.19	0.62	
Vinyl chloride	ND	ug/L	1	0.18	0.61	
Xylene total	ND	ug/L	1	0.53	1.8	
4-Bromofluorobenzene (SURR)	89%					S
1,2-Dichlorobenzene-d4 (SURR)	103%					S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

NLS Project: 229264
NLS Customer: 36394

Fax: 715 261 6946 Phone: 715 261 7288

Client: Wausau Waterworks
Attn: Dick Boers
Drinking Water Division
407 Grant Street
Wausau, WI 54403 4783

Project: 4th Quarter VOC Analyses PWS#73701023

E -200 VOC NLS ID: 824991
COC: 183834:1 Matrix: DW
Collected: 10/10/14 07:02 Received: 10/10/14

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					10/15/14	EPA 524.2, Rev 4.1	721026460

E -300 VOC NLS ID: 824992
COC: 183834:2 Matrix: DW
Collected: 10/10/14 11:09 Received: 10/10/14

Parameter	Result	Units	Dilution	LOD	LOQ/MCL	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					10/15/14	EPA 524.2, Rev 4.1	721026460

Trip Blank NLS ID: 824993
COC: 183834:3 Matrix: TB
Collected: 10/10/14 00:00 Received: 10/10/14

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
SDWA Volatile Organics (VOCs) by EPA 524.2	see attached					10/17/14	EPA 524.2, Rev 4.1	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 ug/L = 1 mg/L
DWB = Dry Weight Basis NA = Not Applicable %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks **NLS Project: 229264**

Project Description: 4th Quarter VOC Analyses

Project Title: PWS#73701023 **Template: SAT3DNRL** **Printed: 10/20/2014 10:30**

Sample: 824991 E -200 VOC Collected: 10/10/14 Analyzed: 10/15/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	MCL	Note
Benzene	ND	ug/L	1	0.17	0.60	5	
Bromobenzene	ND	ug/L	1	0.18	0.64		
Bromodichloromethane	1.1	ug/L	1	0.18	0.64	80	
Bromoform	ND	ug/L	1	0.17	0.60	80	
Bromomethane	ND	ug/L	1	0.36	1.3		
Carbon Tetrachloride	ND	ug/L	1	0.24	0.85	5	
Chloroethane	ND	ug/L	1	1.3	4.6		
Chloroform	15	ug/L	1	0.20	0.70	80	
Chloromethane	ND	ug/L	1	0.14	0.51		
o-Chlorotoluene	ND	ug/L	1	0.15	0.55		
p-Chlorotoluene	ND	ug/L	1	0.19	0.66		
Dibromochloromethane	ND	ug/L	1	0.15	0.53	80	
Dibromomethane	ND	ug/L	1	0.21	0.75		
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.20	0.71		
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.61	600	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.14	0.47	75	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.68		
1,2-Dichloroethane	ND	ug/L	1	0.23	0.80	5	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.75	7	
cis-1,2-Dichloroethene	ND	ug/L	1	0.13	0.47	70	
trans-1,2-Dichloroethene	ND	ug/L	1	0.16	0.55	100	
Dichloromethane	ND	ug/L	1	0.17	0.61	5	
1,2-Dichloropropane	ND	ug/L	1	0.26	0.92	5	
1,3-Dichloropropane	ND	ug/L	1	0.26	0.91		
2,2-Dichloropropane	ND	ug/L	1	0.17	0.62		
1,1-Dichloropropene	ND	ug/L	1	0.16	0.55		
1,3-Dichloropropene	ND	ug/L	1	0.35	1.2		
Ethylbenzene	ND	ug/L	1	0.15	0.51	700	
Chlorobenzene	ND	ug/L	1	0.19	0.69	100	
Styrene	ND	ug/L	1	0.20	0.68	100	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.17	0.59		
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.55		
Tetrachloroethene	ND	ug/L	1	0.18	0.62	5	
Toluene	ND	ug/L	1	0.14	0.48	1000	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.15	0.51	70	
1,1,1-Trichloroethane	ND	ug/L	1	0.11	0.37	200	
1,1,2-Trichloroethane	ND	ug/L	1	0.22	0.78	5	
Trichloroethene	ND	ug/L	1	0.19	0.66	5	
1,2,3-Trichloropropane	ND	ug/L	1	0.25	0.87		
Vinyl chloride	ND	ug/L	1	0.19	0.67	.2	
Xylene total	ND	ug/L	1	0.53	1.9	10000	
4-Bromofluorobenzene (SURR)	103%						S
1,2-Dichlorobenzene-d4 (SURR)	99%						S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form

Customer: Wausau Waterworks NLS Project: 229264

Project Description: 4th Quarter VOC Analyses

Project Title: PWS#73701023 Template: SAT3DNRL Printed: 10/20/2014 10:30

Sample: 824992 E -300 VOC Collected: 10/10/14 Analyzed: 10/15/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	MCL	Note
Benzene	ND	ug/L	1	0.17	0.60	5	
Bromobenzene	ND	ug/L	1	0.18	0.64		
Bromodichloromethane	[0.22]	ug/L	1	0.18	0.64	80	
Bromoform	ND	ug/L	1	0.17	0.60	80	
Bromomethane	ND	ug/L	1	0.36	1.3		
Carbon Tetrachloride	ND	ug/L	1	0.24	0.85	5	
Chloroethane	ND	ug/L	1	1.3	4.6		
Chloroform	6.0	ug/L	1	0.20	0.70	80	
Chloromethane	ND	ug/L	1	0.14	0.51		
o-Chlorotoluene	ND	ug/L	1	0.15	0.55		
p-Chlorotoluene	ND	ug/L	1	0.19	0.66		
Dibromochloromethane	ND	ug/L	1	0.15	0.53	80	
Dibromomethane	ND	ug/L	1	0.21	0.75		
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.20	0.71		
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.61	600	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.14	0.47	75	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.68		
1,2-Dichloroethane	ND	ug/L	1	0.23	0.80	5	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.75	7	
cis-1,2-Dichloroethene	ND	ug/L	1	0.13	0.47	70	
trans-1,2-Dichloroethene	ND	ug/L	1	0.16	0.55	100	
Dichloromethane	ND	ug/L	1	0.17	0.61	5	
1,2-Dichloropropane	ND	ug/L	1	0.26	0.92	5	
1,3-Dichloropropane	ND	ug/L	1	0.26	0.91		
2,2-Dichloropropane	ND	ug/L	1	0.17	0.62		
1,1-Dichloropropene	ND	ug/L	1	0.16	0.55		
1,3-Dichloropropene	ND	ug/L	1	0.35	1.2		
Ethylbenzene	ND	ug/L	1	0.15	0.51	700	
Chlorobenzene	ND	ug/L	1	0.19	0.69	100	
Styrene	ND	ug/L	1	0.20	0.68	100	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.17	0.59		
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.55		
Tetrachloroethene	ND	ug/L	1	0.18	0.62	5	
Toluene	ND	ug/L	1	0.14	0.48	1000	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.15	0.51	70	
1,1,1-Trichloroethane	ND	ug/L	1	0.11	0.37	200	
1,1,2-Trichloroethane	ND	ug/L	1	0.22	0.78	5	
Trichloroethene	ND	ug/L	1	0.19	0.66	5	
1,2,3-Trichloropropane	ND	ug/L	1	0.25	0.87		
Vinyl chloride	ND	ug/L	1	0.19	0.67	2	
Xylene total	ND	ug/L	1	0.53	1.9	10000	
4-Bromofluorobenzene (SURR)	108%						S
1,2-Dichlorobenzene-d4 (SURR)	105%						S

NOTES APPLICABLE TO THIS ANALYSIS:

S = This compound is a surrogate used to evaluate the quality control of a method.

ANALYTICAL RESULTS: GCMS 524.2, Rev 4.1 Safe Drinking Water Analysis - DNR Form
Customer: Wausau Waterworks NLS Project: 229264
Project Description: 4th Quarter VOC Analyses
Project Title: PWS#73701023 Template: SAT3DNRL Printed: 10/20/2014 10:30

Sample: 824993 Trip Blank Collected: 10/10/14 Analyzed: 10/17/14 - Analytes: 41

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	Note
Benzene	ND	ug/L	1	0.17	0.60	
Bromobenzene	ND	ug/L	1	0.18	0.64	
Bromodichloromethane	ND	ug/L	1	0.18	0.64	
Bromoform	ND	ug/L	1	0.17	0.60	
Bromomethane	ND	ug/L	1	0.36	1.3	
Carbon Tetrachloride	ND	ug/L	1	0.24	0.85	
Chloroethane	ND	ug/L	1	1.3	4.6	
Chloroform	ND	ug/L	1	0.20	0.70	
Chloromethane	ND	ug/L	1	0.14	0.51	
o-Chlorotoluene	ND	ug/L	1	0.15	0.55	
p-Chlorotoluene	ND	ug/L	1	0.19	0.66	
Dibromochloromethane	ND	ug/L	1	0.15	0.53	
Dibromomethane	ND	ug/L	1	0.21	0.75	
1,3-Dichlorobenzene (m)	ND	ug/L	1	0.20	0.71	
1,2-Dichlorobenzene (o)	ND	ug/L	1	0.17	0.61	
1,4-Dichlorobenzene (p)	ND	ug/L	1	0.14	0.47	
1,1-Dichloroethane	ND	ug/L	1	0.20	0.68	
1,2-Dichloroethane	ND	ug/L	1	0.23	0.80	
1,1-Dichloroethene	ND	ug/L	1	0.21	0.75	
cis-1,2-Dichloroethene	ND	ug/L	1	0.13	0.47	
trans-1,2-Dichloroethene	ND	ug/L	1	0.16	0.55	
Dichloromethane	ND	ug/L	1	0.17	0.61	
1,2-Dichloropropane	ND	ug/L	1	0.26	0.92	
1,3-Dichloropropane	ND	ug/L	1	0.26	0.91	
2,2-Dichloropropane	ND	ug/L	1	0.17	0.62	
1,1-Dichloropropene	ND	ug/L	1	0.16	0.55	
1,3-Dichloropropene	ND	ug/L	1	0.35	1.2	
Ethylbenzene	ND	ug/L	1	0.15	0.51	
Chlorobenzene	ND	ug/L	1	0.19	0.69	
Styrene	ND	ug/L	1	0.20	0.68	
1,1,1,2-Tetrachloroethane	ND	ug/L	1	0.17	0.59	
1,1,2,2-Tetrachloroethane	ND	ug/L	1	0.15	0.55	
Tetrachloroethene	ND	ug/L	1	0.18	0.62	
Toluene	ND	ug/L	1	0.14	0.48	
1,2,4-Trichlorobenzene	ND	ug/L	1	0.15	0.51	
1,1,1-Trichloroethane	ND	ug/L	1	0.11	0.37	
1,1,2-Trichloroethane	ND	ug/L	1	0.22	0.78	
Trichloroethene	ND	ug/L	1	0.19	0.66	
1,2,3-Trichloropropane	ND	ug/L	1	0.25	0.87	
Vinyl chloride	ND	ug/L	1	0.19	0.67	
Xylene total	ND	ug/L	1	0.53	1.9	
4-Bromofluorobenzene (SURR)	102%					S
1,2-Dichlorobenzene-d4 (SURR)	107%					S

NOTES APPLICABLE TO THIS ANALYSIS:
S = This compound is a surrogate used to evaluate the quality control of a method.

Appendix I

SVE Close Out Letters

3978

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

SR-6J

April 2, 1996

Mr. Miles Philips
Conestoga-Rovers and Associates
1801 Old Highway 8, Suite 114
St. Paul, Minnesota 55112

Dear Mr. Philips

The United States Environmental Protection Agency (U.S. EPA) has reviewed the Final SVE System Performance Evaluation Report/Mid Point of Operations for the Wausau Water Supply NPL Site which was submitted on February 14, 1996. The report adequately addresses all comments made on the draft report, and is therefore approved as final.

If you have any questions, please call me at (312)-886-0394.

Sincerely,

Jennifer L. Wendel
Remedial Project Manager

cc: Lawrence Lester, WDNR
Joseph Gehin, City of Wausau
James Cherwinka, Wausau Chemical
David Eisenreich, Marathon Electric

SVE SYSTEM PERFORMANCE EVALUATION REPORT MID POINT OF OPERATIONS

Wausau Water Supply NPL Site
Wausau, Wisconsin

FEBRUARY 1996
REF. NO. 3978-00 (15)
This report printed on recycled paper

CONESTOGA-ROVERS & ASSOCIATES

5.0 WEST BANK SUMMARY, COMPLETION NOTIFICATION AND REQUEST FOR CLOSURE OF THE WEST BANK SVE SYSTEM

Based on the criteria specified in the CD and the monitoring plan, the Wausau PRP Group hereby presents notice of completion and formal request for approval for shut down and closure of the West Bank SVE system. Data evaluations and summaries documenting that closure criteria have been met are presented below.

5.1 SOIL SAMPLING SUMMARY

5.1.1 Summary of the West Bank Pre-Startup Soil Sampling

The results of the pre start-up soil sampling conducted in 1993 are presented in Table 5.1. The statistical summary of this data is presented in Table 5.2. Figure 5.7 presents the 1993 soil sample locations. The soil samples were analyzed for the list of Site VOCs in use during December 1993. The data indicates TCE as the primary contaminant at the Site. The data also indicates acetone in high concentrations. The acetone detections were attributed to sample collection and analysis contamination after results of soil gas samples collected at the start up of the system did not detect any acetone.

5.1.2 Summary of the West Bank Mid-Point Soil Sampling

The results of the mid-point soil sampling conducted in 1995 are presented in Table 5.3. The statistical summary of this data is presented in Table 5.4. Figure 5.8 presents the 1995 soil sample locations.

The soil samples were analyzed for the current list of Site VOCs. This list is shorter than the Site VOC list used for the pre start-up sampling as the list was reduced by eight VOCs as part of the approved monitoring program changes in 1994. The approved modifications to the Site VOC list were due to repeated non detects for those VOCs in the groundwater. Any VOC not on the current Site VOC list is not a contaminant of concern and

adding two new active SVE wells to the SVE system and shutting down SVE wells 1 and 3. The new wells would be placed within the Wausau Chemical Building to improve VOC removal from beneath the building.

7.3 RECOMMENDATIONS FOR OPERATIONS OF THE WEST BANK SVE SYSTEM

The cleanup objectives at the West Bank have been achieved and with closure approval, operation and monitoring of the system will cease. Marathon Electric and the City of Wausau propose to postpone dismantling of the SVE system until the East Bank SVE system is dismantled. There are potential cost savings for combining this work. This would also allow for the voluntary operation of the West Bank system beyond the requirements of the Consent Decree.

3978-20

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

September 26, 2007

Jason Twaddle
Conestoga-Rovers
1801 Old Highway 8 Northwest, Suite 114
St. Paul, Minnesota 55112

RE: Wausau Groundwater Superfund Site

Dear Mr. Twaddle:

This letter is to inform you that U.S. EPA and WDNR approve the closure of the East Bank Soil Vapor Extraction (SVE) system on the Wausau Chemical property, in response to your August 29, 2007 memo to Eileen Kramer and myself, which included the requested Deed Restriction for Wausau Chemical recorded 4/26/07 by Marathon County, Wisconsin. The East Bank SVE system operated from 1994 to 2001. Subsequent soil sampling in 2001 and local quarterly groundwater monitoring completed in 2003 provided confirmation to the shut down of the East Bank SVE system in 2001.

As a result, all the requirements for the SVE soil source remediation at the Wausau Groundwater Superfund Site have been completed, as approval for the closure of a second West Bank SVE system on the Marathon Electric property took place in April 1996. In addition, though, a documented property restriction is needed for the former Wausau City Landfill on the Marathon Electric property. The West Bank SVE system operated between 1994 and 1996.

Future remediation activities at the Wausau Groundwater Site will now focus on the operation, maintenance and monitoring of the groundwater remedy at the Site.

Sincerely,

Jeff Gore, RPM

cc: Eileen Kramer, WDNR

Appendix J

Figures

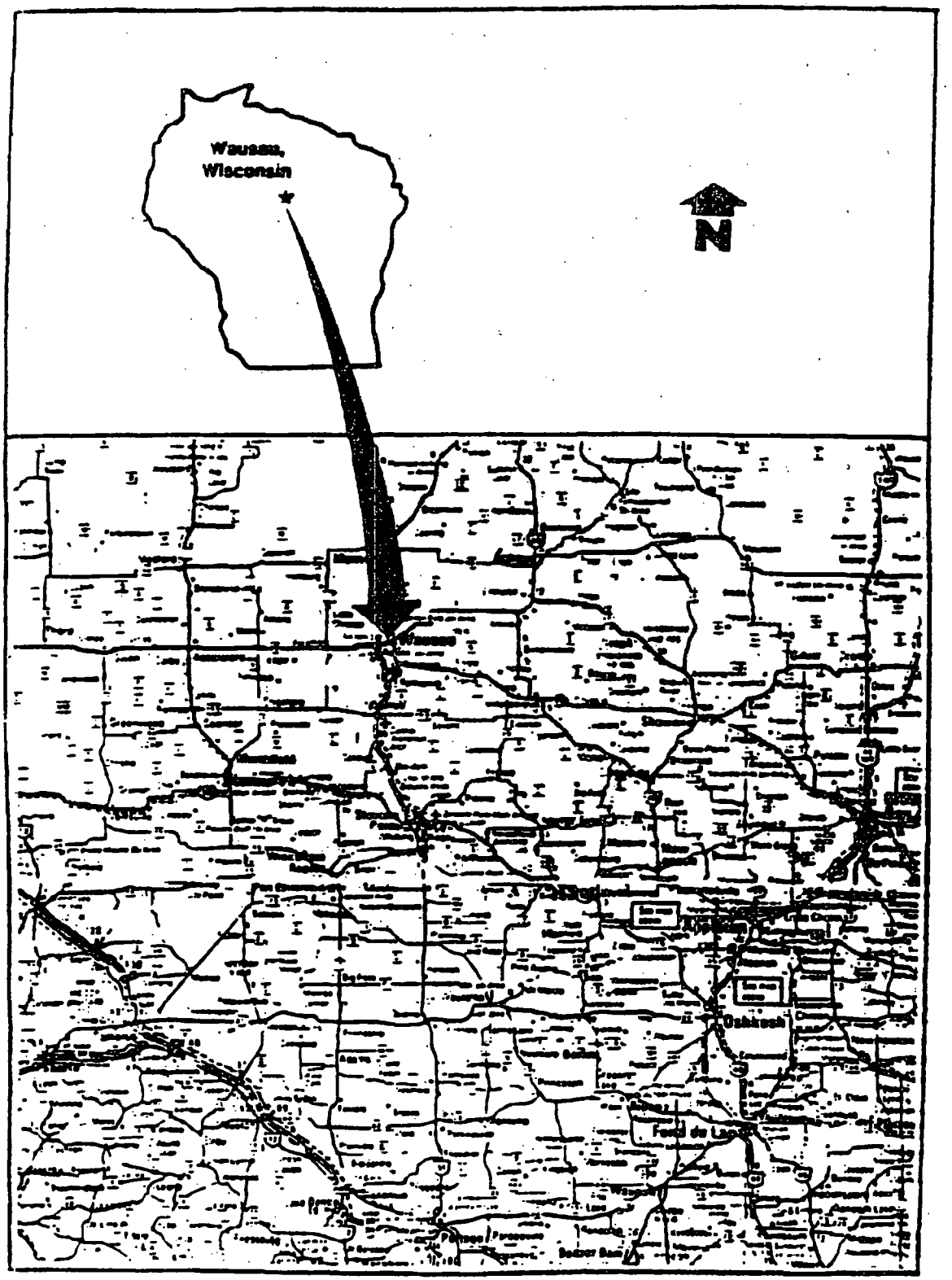
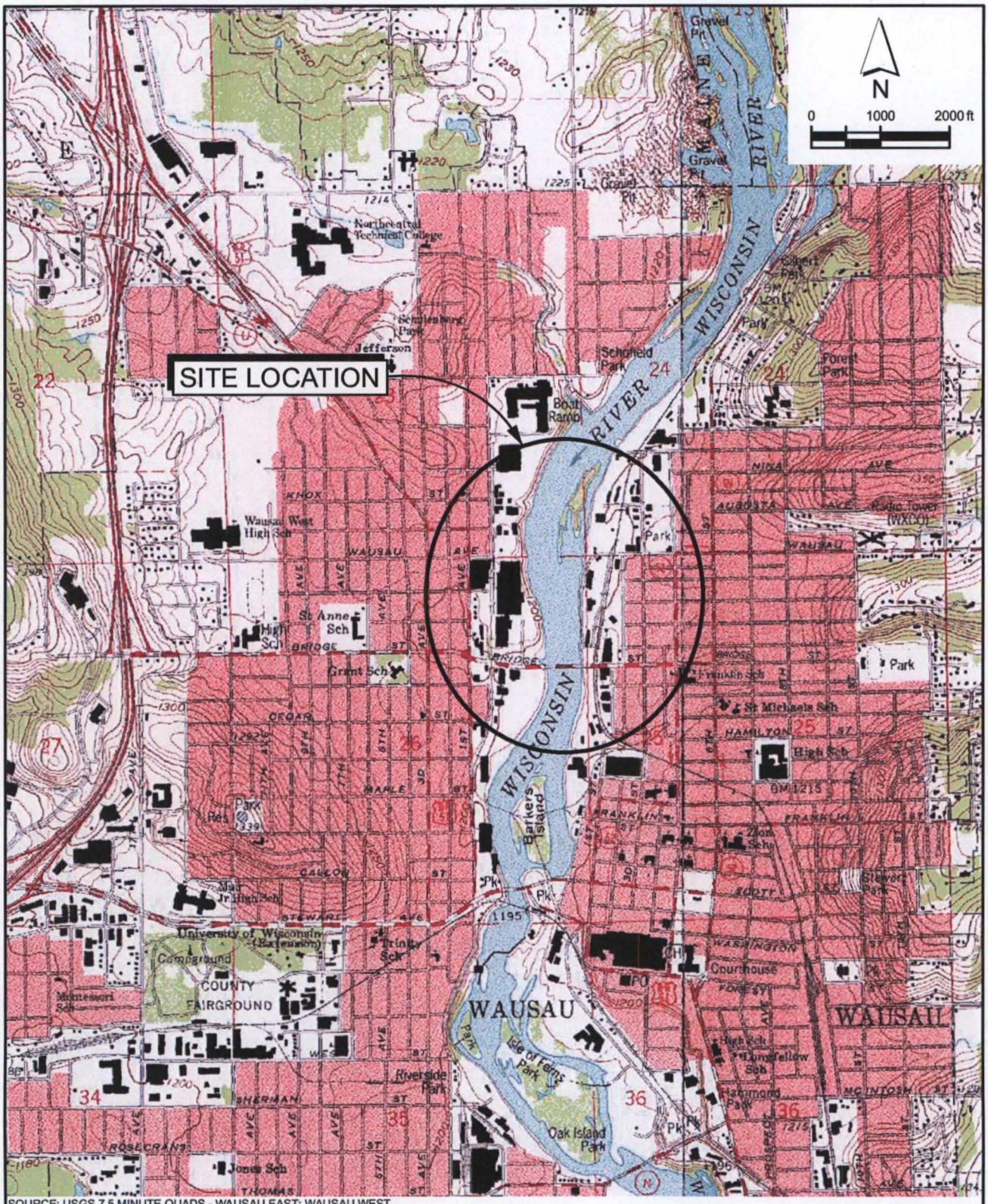


FIGURE 1 REGIONAL LOCATION MAP



SOURCE: USGS 7.5 MINUTE QUADS - WAUSAU EAST; WAUSAU WEST

figure 1.1

SITE LOCATION
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

003978-00(034)GIS-SP001 FEB 18/2015

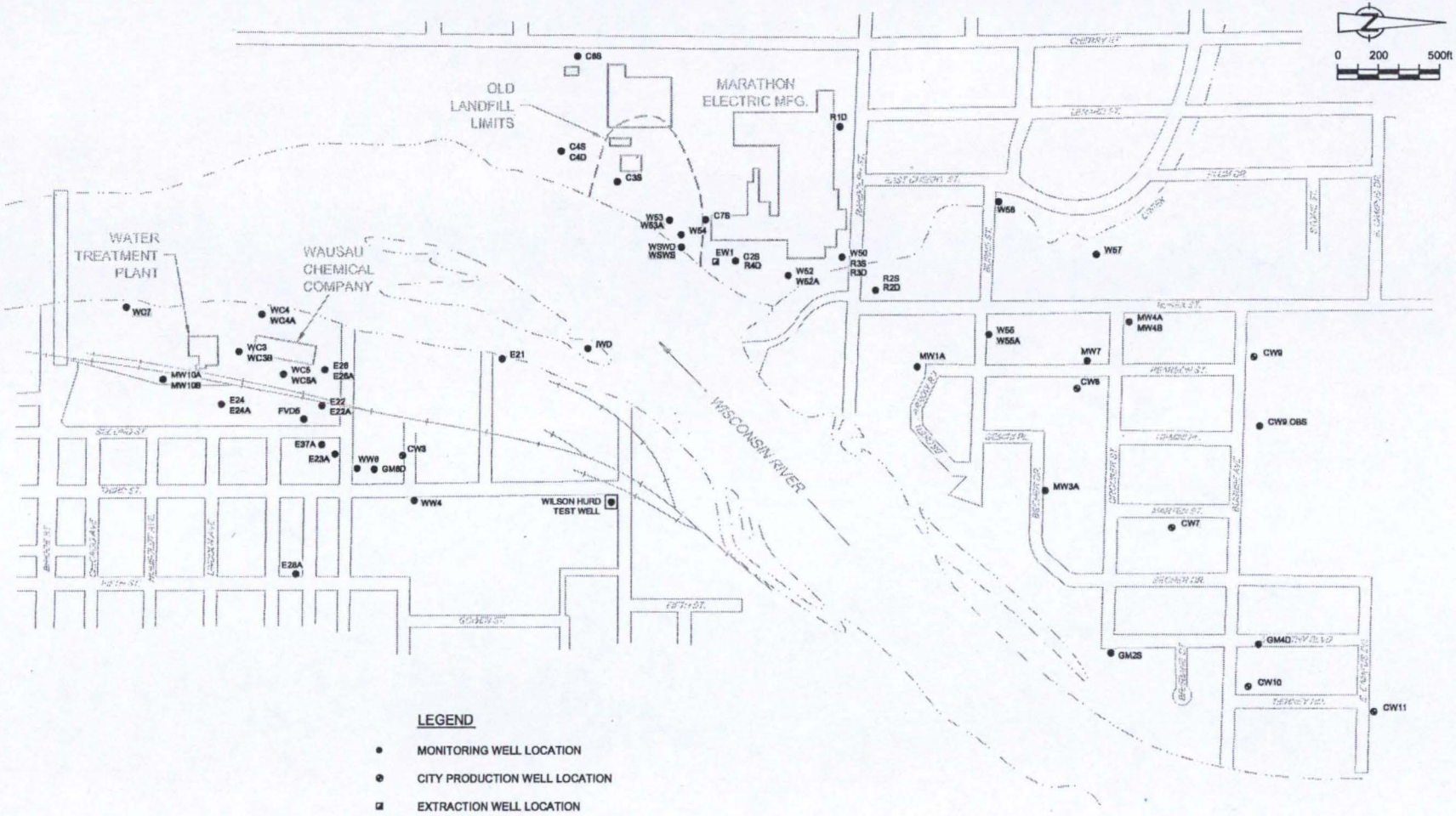


figure 1.2

SITE PLAN
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin
View 1

SOURCE: RMT INC. FIGURE 1, 5/14/87.

003978-00(027)GN-SP002 Mar 11/2009

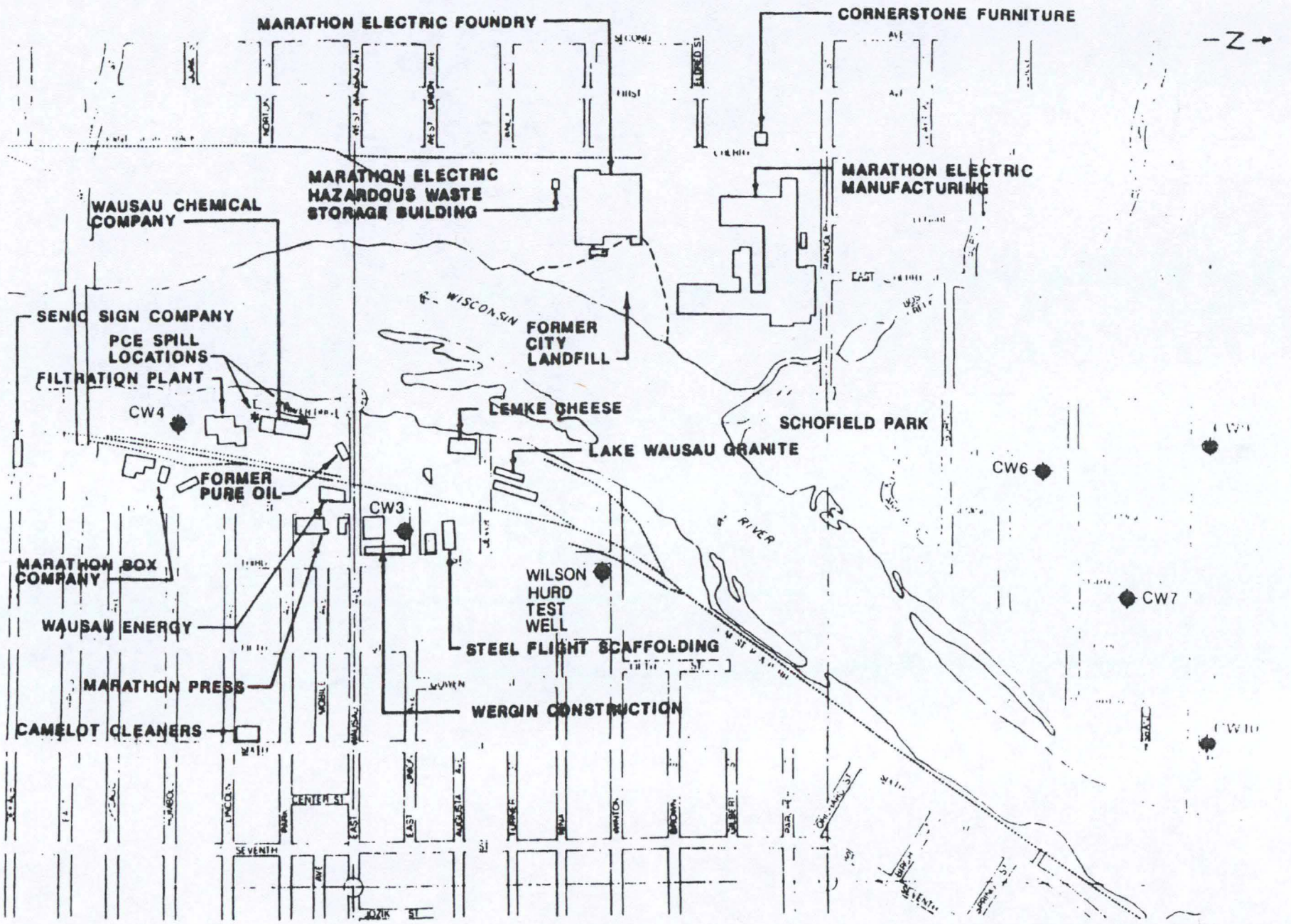
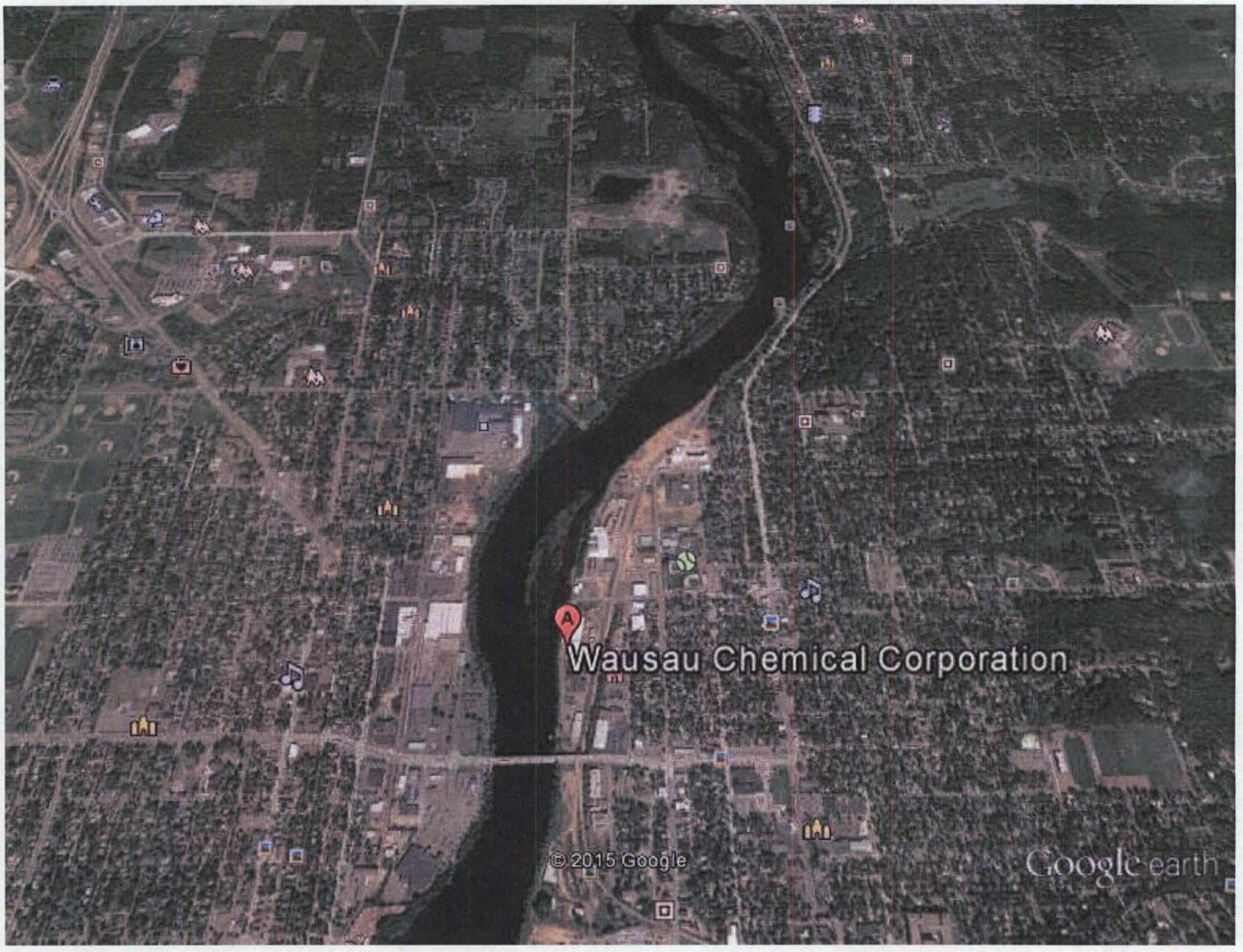


Figure 1.3
Site Plan Layout
View 2



Aerial Photograph
Figure 1.4

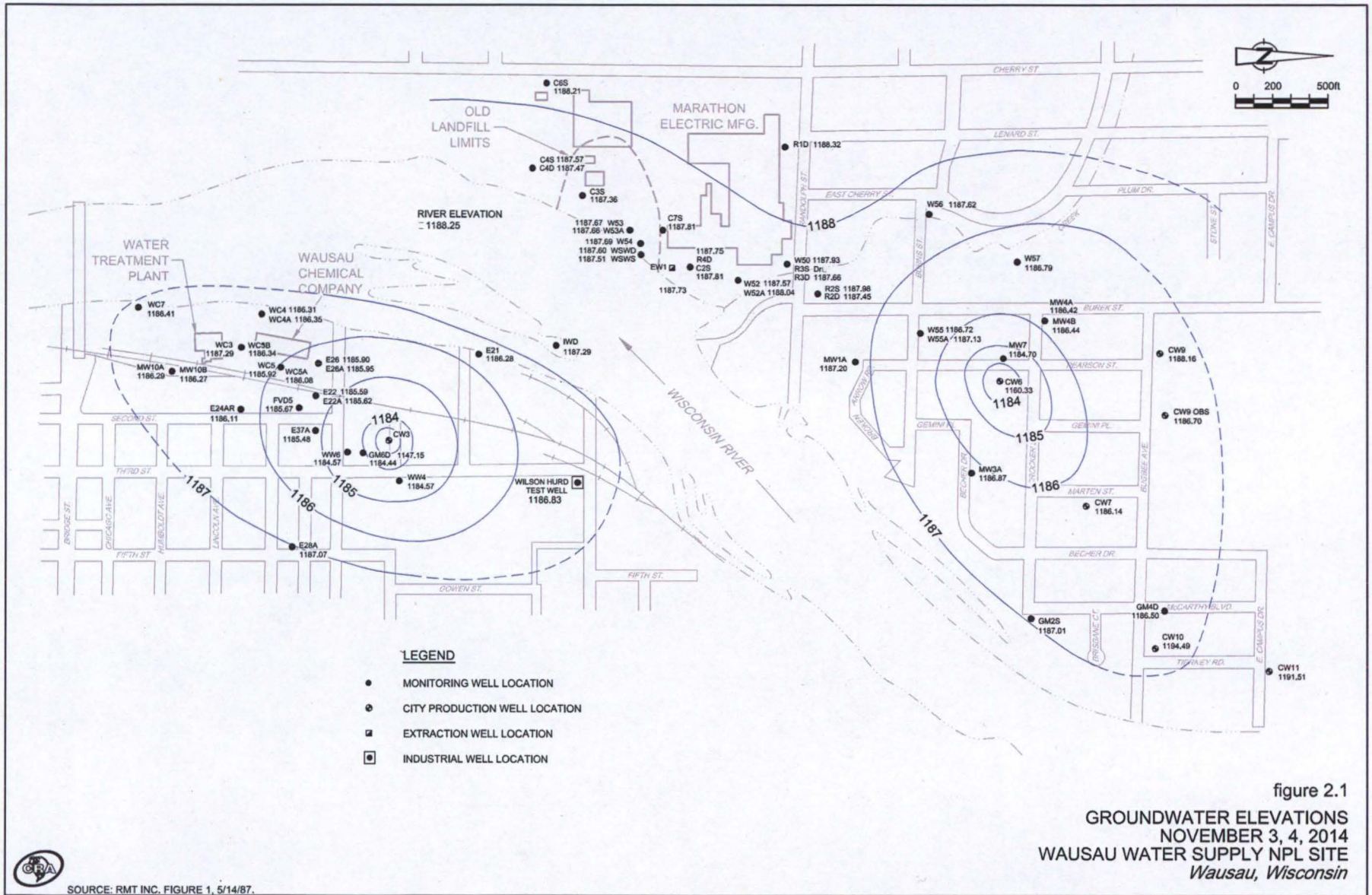
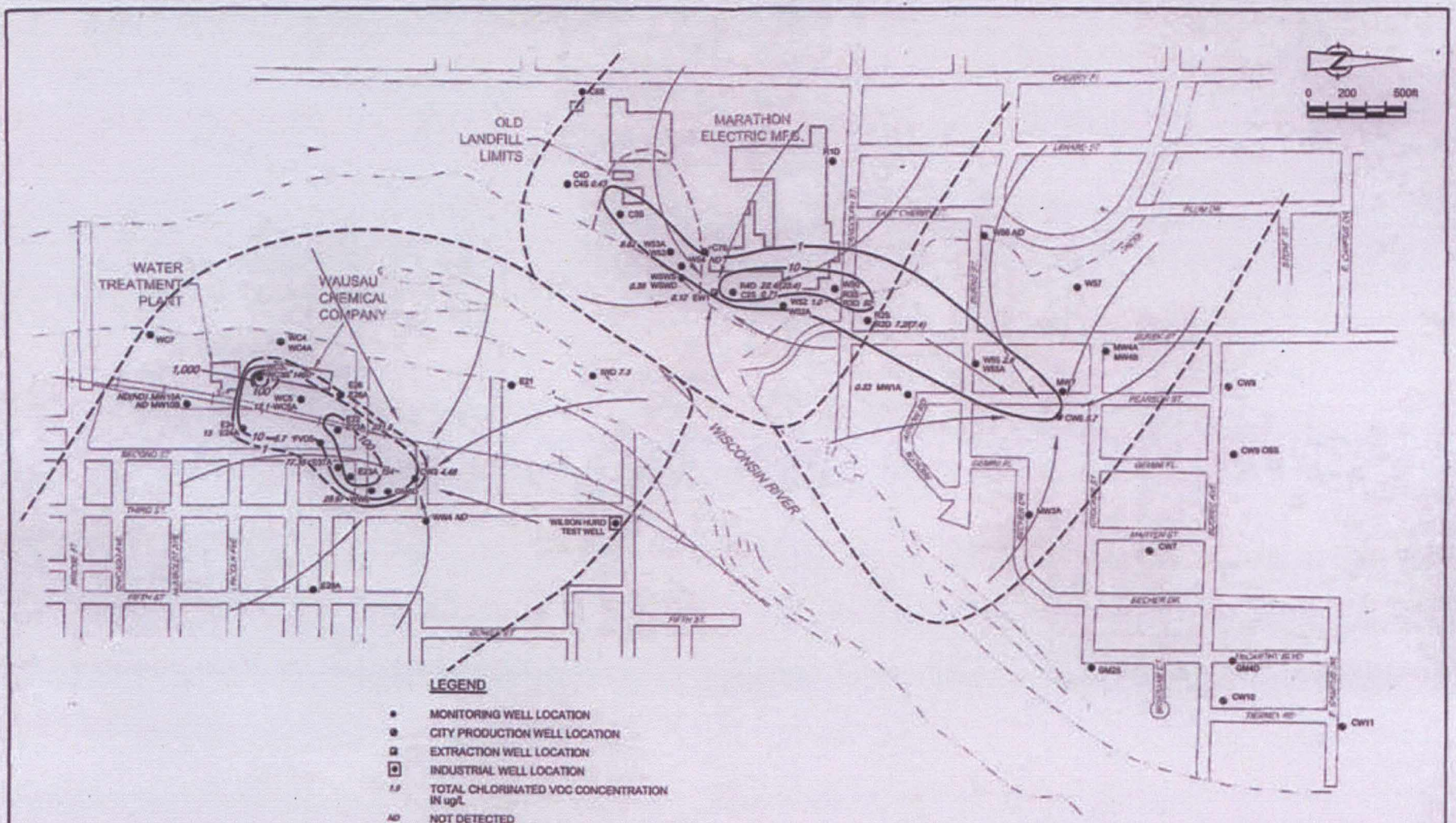


figure 2.1

GROUNDWATER ELEVATIONS
NOVEMBER 3, 4, 2014
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

SOURCE: RMT INC. FIGURE 1, 5/14/87.

03978-00(034)GN-WA002 FEB 2/2015

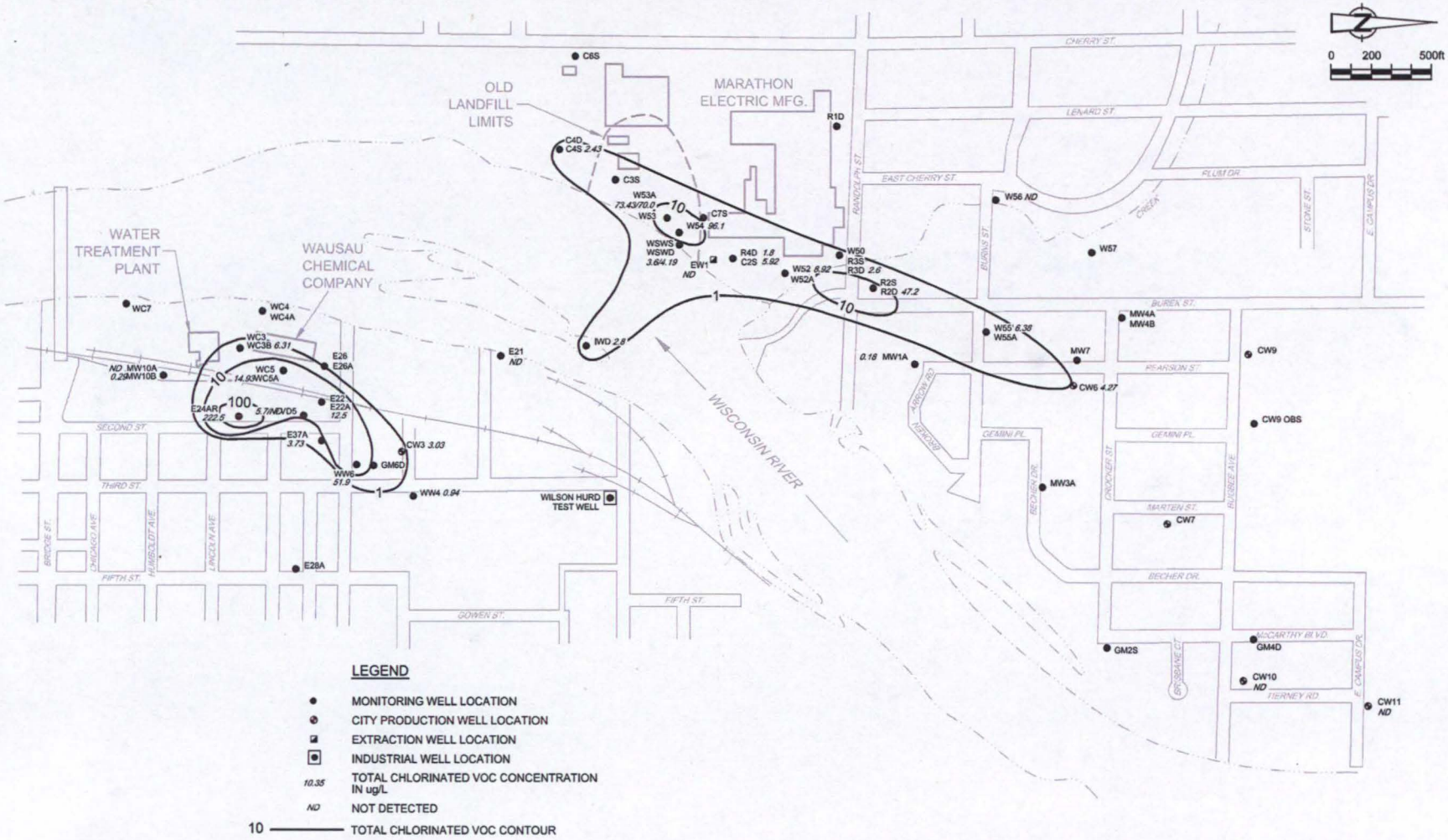


SOURCE: RMT INC. FIGURE 1, 5/14/87.

figure 3

TOTAL CHLORINATED VOCs IN GROUNDWATER (OCTOBER 2009)
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

003978-00(028)GN-SP001 Feb 17/2010



LEGEND

- MONITORING WELL LOCATION
- CITY PRODUCTION WELL LOCATION
- EXTRACTION WELL LOCATION
- INDUSTRIAL WELL LOCATION
- 10.35 TOTAL CHLORINATED VOC CONCENTRATION IN ug/L
- ND NOT DETECTED
- 10 TOTAL CHLORINATED VOC CONTOUR

NOTE:
WHERE NO VALUE IS SHOWN, WELL WAS NOT SAMPLED

SOURCE: RMT INC. FIGURE 1, 5/14/87.

figure 4.1

TOTAL CHLORINATED VOCs IN GROUNDWATER (NOVEMBER 2014)
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

03978-00(034)GN-WA003 FEB 2/2015

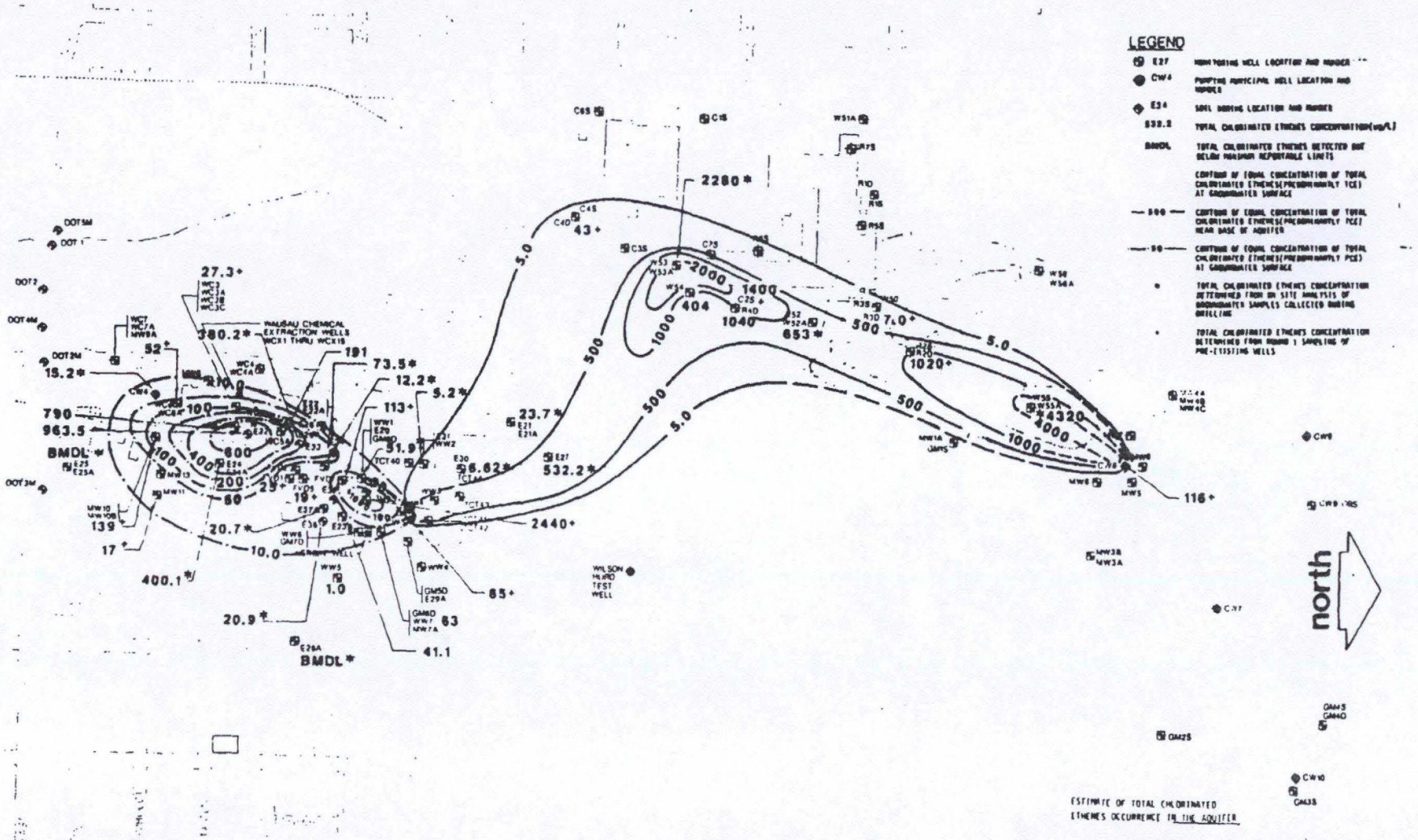


FIGURE 5

Wausau Groundwater Contamination Superfund Site

(Source 1988 ROD)

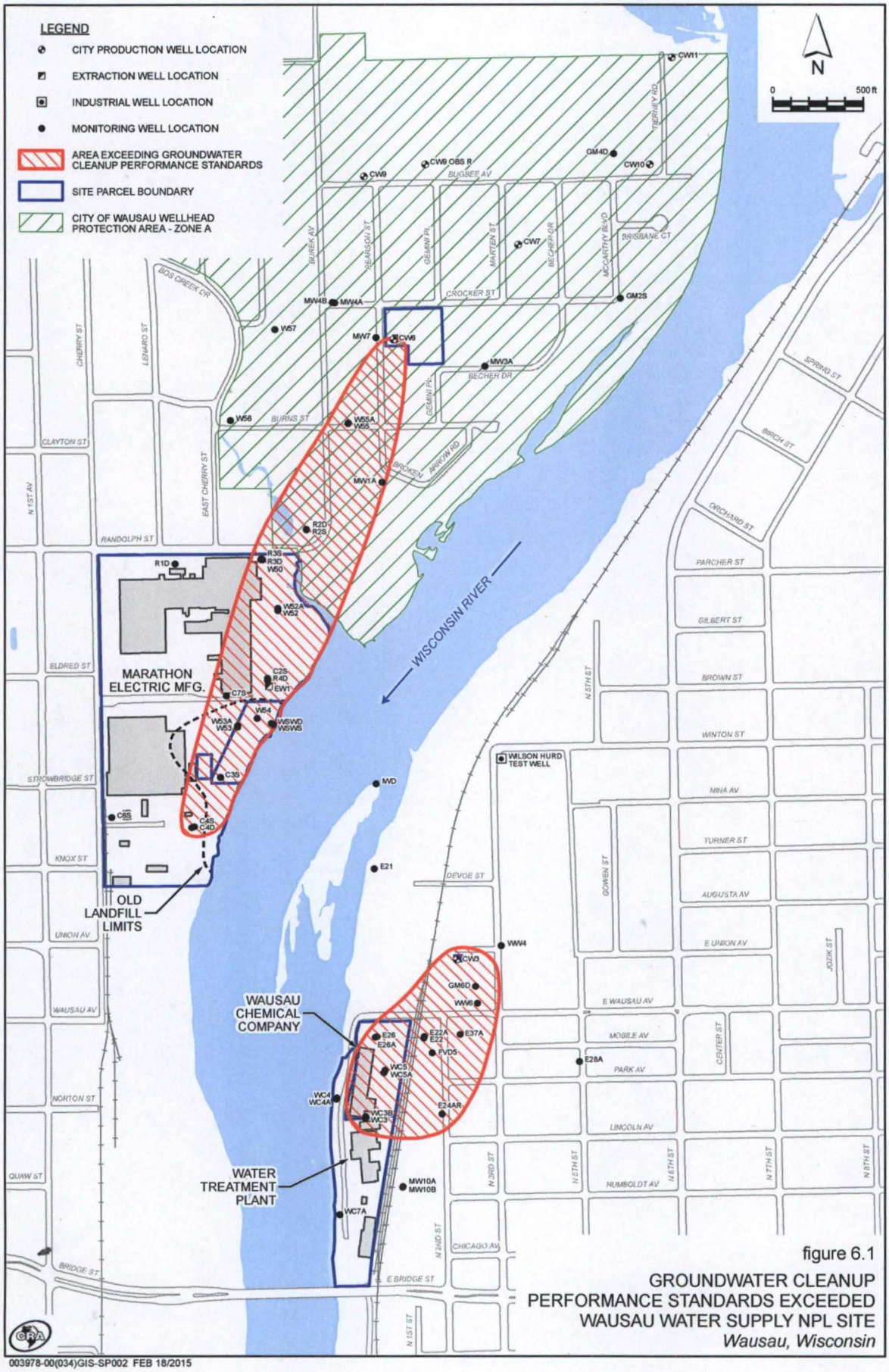


figure 6.1
GROUNDWATER CLEANUP PERFORMANCE STANDARDS EXCEEDED
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

003978-00(034)GIS-SP002 FEB 18/2015

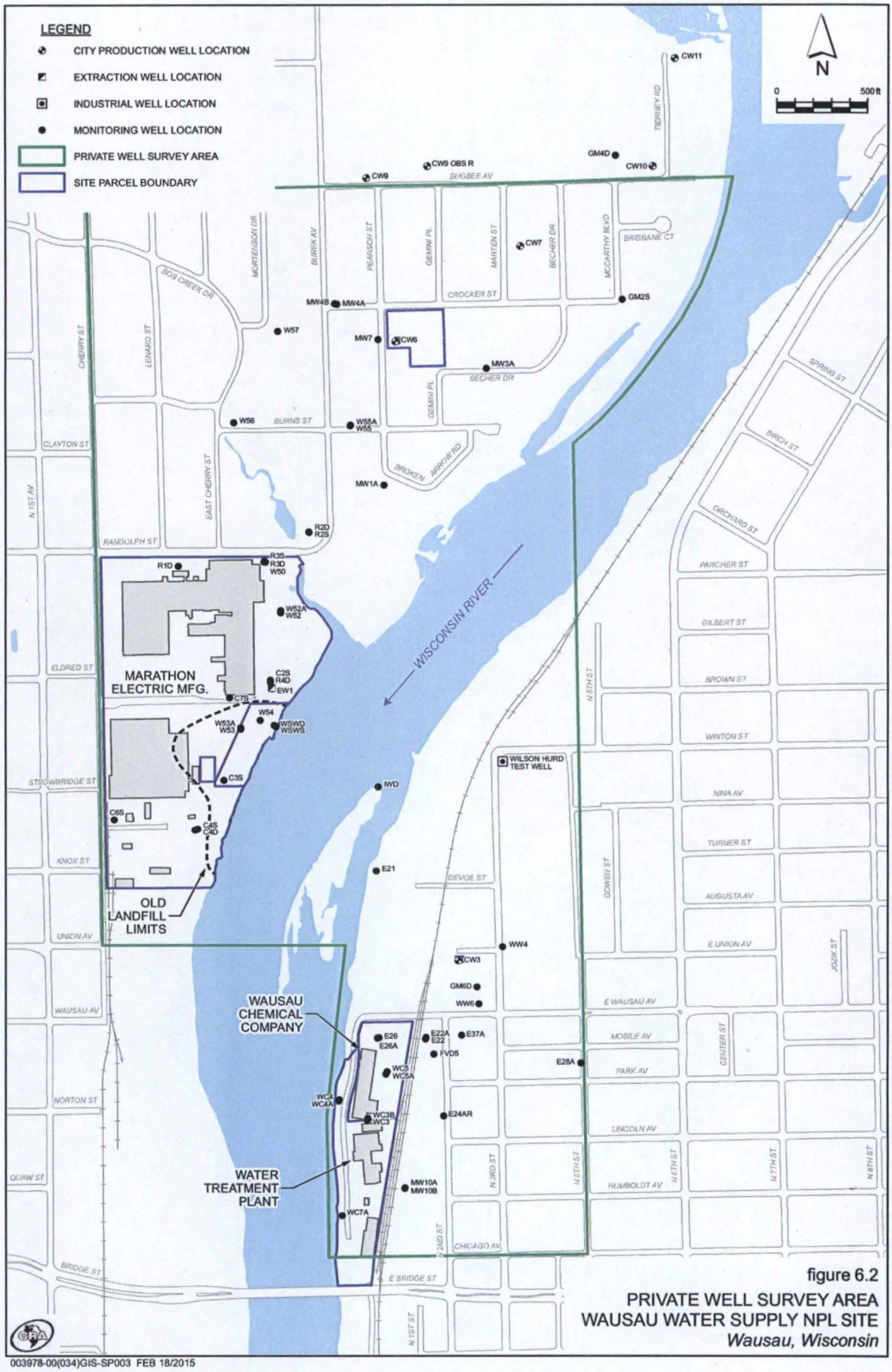


figure 6.2
PRIVATE WELL SURVEY AREA
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

003978-00(034)GIS-SP003 FEB 18/2015

Appendix K

Additional Tables

TABLE 3.2

CITY WATER SUPPLY WELL PUMPING AVERAGES
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Hours indicates total hours pumped per month - Gallons indicates millions of gallons pumped per month		*Well #3*	*Well #6*	*Well #7*	*Well #9*	*Well #10*	*Well #11*
	Hours	356.6	383.1	235.1	82.7	99.8	96.9
January	Gallons	33.051	30.469	24.37	4.479	19.925	16.943
	gpm	1545	1326	1728	903	3327	2914
	Hours	308.7	359.5	275.4	185.4	169.5	208.8
February	Gallons	27.344	29.992	28.45	10.097	31.838	36.443
	gpm	1476	1390	1722	908	3131	2909
	Hours	387.8	353.9	200	124	269.6	399
March	Gallons	33.915	32.04	19.445	6.713	50.23	69.454
	gpm	1458	1509	1620	902	3105	2901
	Hours	240.3	476.3	190.3	76.2	221.3	281.9
April	Gallons	20.477	38.436	18.002	3.851	46.201	49.107
	gpm	1420	1345	1577	842	3480	2903
	Hours	394.5	350.8	304.7	112.8	133.2	141.8
May	Gallons	29.449	28.034	31.826	6.061	26.162	24.63
	gpm	1244	1332	1741	896	3274	2895
	Hours	333.1	380.8	267.4	111.9	157.1	149.12
June	Gallons	30.637	31.065	27.356	6.256	30.027	26.889
	gpm	1533	1360	1705	932	3186	3005
	Hours	313.9	423.8	240	120.5	333.7	6.3
July	Gallons	29.927	34.03	26.158	6.541	77.64	1.058
	gpm	1589	1338	1817	905	3878	2799
	Hours	406.3	310	279.3	183.6	191.8	97.4
August	Gallons	36.399	24.2	30.38	9.929	36.525	16.979
	gpm	1493	1301	1813	901	3174	2905
	Hours	287.3	394.3	204.7	39.9	84.4	152.7
September	Gallons	30.434	30.78	22.18	2.152	15.999	26.622
	gpm	1766	1301	1806	899	3159	2906
	Hours	338.8	400.1	220.8	49.3	147	129.7
October	Gallons	28.574	30.234	22.713	2.693	23.202	22.546
	gpm	1406	1259	1714	910	2631	2897
	Hours	393.5	320.5	242.9	36.6	85	98.9
November	Gallons	32.621	24.922	24.933	2.005	16.542	17.232
	gpm	1382	1296	1711	913	3244	2904
	Hours	287	452.4	197.6	37.1	144.7	117.3
December	Gallons	23.737	35.43	20.237	2.007	28.668	19.813
	gpm	1378	1305	1707	902	3302	2815
Average hours per week:		77.8	88.6	55.0	22.3	39.2	36.2
Average gpm:		1474	1339	1722	901	3241	2896

TABLE 4.1

VOC ANALYTICAL RESULTS
ANNUAL GROUNDWATER MONITORING EVENT - NOVEMBER 2014
WAUSAU SUPERFUND SITE
WAUSAU, WISCONSIN

Sample Location:			***CW3***	***CW3***	***CW3***	***CW3***	***CW3***	***CW3***	***E21***	***E21***	***E21***
Sample Date:			***11/11/2013***	***3/24/2014***	***5/19/2014***	***5/19/2014***	***8/11/2014***	***11/3/2014***	***11/11/2013***	***3/24/2014***	***5/19/2014***
Sample Type:						***Duplicate***					
		MCL									
1,1,2-Trichloroethane	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	80*	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	70	**0.50 J**	**0.74 J**	**0.90 J**	**0.82 J**	**0.59 J**	**0.58 J**	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	700	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	5	**1.40**	**1.40**	**1.4**	**1.4**	**1.6**	**1.6**	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	5	**0.72 J**	**0.78 J**	**0.78 J**	**0.79 J**	**0.75 J**	**0.85 J**	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	10000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Chlorinated VOCs	ug/L		2.62	2.92	3.08	3.01	2.94	3.03	0.0	0.0	0.0

TABLE 4.1

VOC ANALYTICAL RESULTS
ANNUAL GROUNDWATER MONITORING EVENT - NOVEMBER 2014
WAUSAU SUPERFUND SITE
WAUSAU, WISCONSIN

Sample Location:		***E21***	***E21***	***E22A***	***E22A***	***E24AR***	***E24AR***	***E37A***	***E37A***	***WC3B***	***WC3B***
Sample Date:		***8/11/2014***	***11/3/2014***	***11/12/2013***	***11/3/2014***	***11/12/2013***	***11/3/2014***	***11/12/2013***	***11/3/2014***	***11/11/2013***	***11/3/2014***
Sample Type:											
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	2.9 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	2.9 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	10 U	10 U	29 U	10 U	10 U	40 U	10 U	10 U	10 U	**4.3 J**
Benzene	ug/L	1.0 U	1.0 U	2.9 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	2.9 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	2.9 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	**97**	**3.5**	**3.5**	**120**	**1.9**	**1.1**	1.0 U	**0.35 J**
Ethylbenzene	ug/L	1.0 U	1.0 U	2.9 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	2.9 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	**17**	**8.1**	**15**	**86**	**1.4**	**2.0**	1.0 U	**5.5**
Toluene	ug/L	1.0 U	1.0 U	2.9 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	**6.9**	**0.90 J**	**2.3**	**11**	**0.78 J**	**0.63 J**	1.0 U	**0.46 J**
Vinyl chloride	ug/L	1.0 U	1.0 U	**1.0 J**	1.0 U	**1.2**	**5.5**	**0.59 J**	1.0 U	**0.26 J**	1.0 U
Xylenes (total)	ug/L	1.0 U	1.0 U	2.9 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Chlorinated VOCs	ug/L	0.0	0.0	121.9	12.5	22.0	222.5	4.67	3.73	0.26	6.31

TABLE 4.1

VOC ANALYTICAL RESULTS
ANNUAL GROUNDWATER MONITORING EVENT - NOVEMBER 2014
WAUSAU SUPERFUND SITE
WAUSAU, WISCONSIN

Sample Location:		***WC5A***	***WC5A***	***WW4***	***WW4***	***FVD5***	***FVD5***	***FVD5***	***WW6***	***WW6***
Sample Date:		***11/11/2013***	***11/3/2014***	***11/12/2013***	***11/3/2014***	***11/12/2013***	***11/3/2014***	***11/3/2014 Duplicate***	***11/12/2013***	***11/3/2014***
Sample Type:										
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	25 U	33 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	25 U	33 U	1.0 U	1.0 U
Acetone	ug/L	10 U	10 U	10 U	10 U	50 U	250 U	330 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	**19**	**23 J**	**20 J**	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	25 U	33 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	**0.20 J**	**0.94 J**	5.0 U	25 U	33 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	**1.7**	1.0 U	1.0 U	5.0 U	25 U	33 U	**21**	**28**
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	**210**	**370**	**360**	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	25 U	33 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	**7.3**	**12**	1.0 U	1.0 U	5.0 U	25 U	33 U	**3.8**	**6.0**
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	**9.5**	**23 J**	**21 J**	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	**0.52 J**	1.0 U	1.0 U	5.0 U	**5.7 J**	33 U	**2.0**	**5.9**
Vinyl chloride	ug/L	1.0 U	**0.71 J**	1.0 U	1.0 U	5.0 U	25 U	33 U	**19**	**12**
Xylenes (total)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	**440**	**980**	**920**	1.0 U	1.0 U
Total Chlorinated VOCs	ug/L	7.3	14.93	0.20	0.94	0.0	5.7	0.0	45.8	51.9

TABLE 4.1

VOC ANALYTICAL RESULTS
ANNUAL GROUNDWATER MONITORING EVENT - NOVEMBER 2014
WAUSAU SUPERFUND SITE
WAUSAU, WISCONSIN

Sample Location:		***MW10A***	***MW10A***	***MW10B***	***MW10B***	***IWD***	***IWD***	***IWD***	***IWD***	***CW6***	***CW6***
Sample Date:		***11/11/2013***	***11/3/2014***	***11/11/2013***	***11/3/2014***	***11/13/2013***	***5/20/2014***	***8/12/2014***	***11/4/2014***	***11/12/2013***	***3/25/2014***
Sample Type:											
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	**1.1**	**1.8**	**0.87 J**	**0.30 J**	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	**0.29 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	**2.2**	**3.3**	**2.7**	**2.5**	**3.9**	**3.7**
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Chlorinated VOCs	ug/L	0.0	0.0	0.0	0.29	3.3	5.1	3.57	2.8	3.9	3.7

VOC ANALYTICAL RESULTS
ANNUAL GROUNDWATER MONITORING EVENT - NOVEMBER 2014
WAUSAU SUPERFUND SITE
WAUSAU, WISCONSIN

Sample Location:		*CW6*	*CW6*	*CW6*	*CW10*	*CW10*	*CW10*	*CW10*	*CW11*	*CW11*	*CW11*
Sample Date:		*5/20/2014*	*8/12/2014*	*11/4/2014*	*11/12/2013*	*3/25/2014*	*5/20/2014*	*8/12/2014*	*11/12/2013*	*3/25/2014*	*8/12/2014*
Sample Type:											
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.63 J**
cis-1,2-Dichloroethene	ug/L	1.0 U	**0.19 J**	**0.27 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	**3.4**	**4.0**	**4.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Chlorinated VOCs	ug/L	3.4	4.19	4.27	0.0	0.0	0.0	0.0	0.0	0.0	0.63

TABLE 4.1

VOC ANALYTICAL RESULTS
ANNUAL GROUNDWATER MONITORING EVENT - NOVEMBER 2014
WAUSAU SUPERFUND SITE
WAUSAU, WISCONSIN

Sample Location:		***EW1***	***EW1***	***EW1***	***EW1***	***MW1A***	***MW1A***	***MW1A***	***C2S***	***C2S***	***C2S***
Sample Date:		***11/12/2013***	***5/20/2014***	***8/12/2014***	***11/4/2014***	***11/12/2013***	***5/20/2014***	***11/4/2014***	***11/13/2013***	***5/20/2014***	***11/3/2014***
Sample Type:											
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	10 U	2.4 J	1.0 U	10 U	10 U	10 U	12	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	**0.20 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.0**	**0.67 J**	**0.52 J**
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	**0.59 J**	1.0 U	1.0 U	1.0 U	1.0 U	**0.42 J**	**0.18 J**	**7.9**	**5.5**	**5.4**
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.25 J**	1.0 U	1.0 U	1.0 U	1.0 U
Total Chlorinated VOCs	ug/L	0.79	0.0	0.0	0.0	0.0	0.42	0.18	8.9	6.17	5.92

TABLE 4.1

VOC ANALYTICAL RESULTS
ANNUAL GROUNDWATER MONITORING EVENT - NOVEMBER 2014
WAUSAU SUPERFUND SITE
WAUSAU, WISCONSIN

Sample Location:		***C4S***	***C4S***	***C4S***	***R2D***	***R2D***	***R2D***	***R2D***	***R2D***	***R2D***	***R3D***
Sample Date:		***11/13/2013***	***5/20/2014***	***11/4/2014***	***11/12/2013***	***3/24/2014***	***3/24/2014 Duplicate***	***5/19/2014***	***8/11/2014***	***11/4/2014***	***11/13/2013***
Sample Type:											
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
Acetone	ug/L	10 U	**1.3 J**	10 U	10 U	10 U	10 U	**1.4 J**	10 U	17 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	**0.23 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	**1.0**	**0.61 J**	**0.62 J**	**1.1**	**1.2**	**1.2 J**	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
Trichloroethene	ug/L	**1.1**	**1.4**	**2.2**	**19**	**18**	**17**	**18**	**32**	**46**	**4.8**
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
Xylenes (total)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 U	1.0 U
Total Chlorinated VOCs	ug/L	1.1	1.4	2.43	20.0	18.61	17.62	19.1	33.2	47.2	4.8

TABLE 4.1

VOC ANALYTICAL RESULTS
ANNUAL GROUNDWATER MONITORING EVENT - NOVEMBER 2014
WAUSAU SUPERFUND SITE
WAUSAU, WISCONSIN

Sample Location:		***R3D***	***R3D***	***R3D***	***R3D***	***R4D***	***R4D***	***R4D***	***W52***	***W52***	***W52***
Sample Date:		***3/24/2014***	***5/20/2014***	***8/12/2014***	***11/4/2014***	***11/12/2013***	***5/20/2014***	***11/3/2014***	***11/13/2013***	***5/20/2014***	***11/3/2014***
Sample Type:											
1,1,2-Trichloroethane	ug/L	3.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	3.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	33 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	3.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	3.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	3.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	**5.7**	1.0 U	1.0 U	1.0 U	**0.58 J**	**0.49 J**	1.0 U	**0.32 J**	1.0 U	**0.42 J**
Ethylbenzene	ug/L	3.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	3.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	3.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	3.3 U	1.0 U	**0.14 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	**68**	**4.7**	**2.9**	**2.6**	**16**	**7.4**	**1.8**	**2.6**	**3.4**	**8.5**
Vinyl chloride	ug/L	3.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	3.3 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Chlorinated VOCs	ug/L	73.7	4.7	2.9	2.6	16.58	7.89	1.8	2.92	3.40	8.92

TABLE 4.1

VOC ANALYTICAL RESULTS
ANNUAL GROUNDWATER MONITORING EVENT - NOVEMBER 2014
WAUSAU SUPERFUND SITE
WAUSAU, WISCONSIN

Sample Location:		***W53A***	***W53A***	***W53A***	***W53A***	***W53A***	***W54***	***W54***	***W54***	***W55***	***W55***
Sample Date:		***11/13/2013***	***5/20/2014***	***8/12/2014***	***11/3/2014***	***11/3/2014***	***11/13/2013***	***5/20/2014***	***11/3/2014***	***11/12/2013***	***5/20/2014***
Sample Type:						***Duplicate***					
1,1,2-Trichloroethane	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	1.0 U	1.4 U	3.3 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	**0.22 J**	1.4 U	3.3 U	1.0 U	1.0 U
Acetone	ug/L	10 U	33 U	1.3 U	20 U	20 U	10 U	14 U	33 U	10 U	10 U
Benzene	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	1.0 U	1.4 U	3.3 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	1.0 U	1.4 U	3.3 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	1.0 U	1.4 U	3.3 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	3.3 U	**0.31 J**	**0.43 J**	2.0 U	**0.74 J**	**1.5**	**1.1 J**	**0.47 J**	**0.39 J**
Ethylbenzene	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	1.0 U	1.4 U	3.3 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	1.0 U	1.4 U	3.3 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	1.0 U	1.4 U	3.3 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	1.0 U	1.4 U	3.3 U	1.0 U	1.0 U
Trichloroethene	ug/L	**54**	**88**	**77**	**73**	**70**	**23**	**39**	**95**	**4.7**	**4.6**
Vinyl chloride	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	1.0 U	1.4 U	3.3 U	1.0 U	1.0 U
Xylenes (total)	ug/L	1.0 U	3.3 U	1.3 U	2.0 U	2.0 U	1.0 U	1.4 U	3.3 U	1.0 U	1.0 U
Total Chlorinated VOCs	ug/L	54	88	77.31	73.43	70.0	23.96	40.5	96.1	5.17	4.99

TABLE 4.1

VOC ANALYTICAL RESULTS
ANNUAL GROUNDWATER MONITORING EVENT - NOVEMBER 2014
WAUSAU SUPERFUND SITE
WAUSAU, WISCONSIN

Sample Location:		***W55***	***W55***	***W55***	***W56***	***W56***	***W56***	***WSWD***	***WSWD***	***WSWD***	***WSWD***
Sample Date:		***8/12/2014***	***8/12/2014***	***11/3/2014***	***11/12/2013***	***5/19/2014***	***11/4/2014***	***11/13/2013***	***5/20/2014***	***11/4/2014***	***11/4/2014***
Sample Type:			***Duplicate***								***Duplicate***
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	**0.38 J**	**0.38 J**	**0.48 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.40 J**	**0.39 J**
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	**5.0**	**5.0**	**5.9**	1.0 U	1.0 U	1.0 U	**0.45 J**	**0.48 J**	**3.2**	**3.8**
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Chlorinated VOCs	ug/L	5.38	5.38	6.38	0.0	0.0	0.0	0.45	0.48	3.60	4.19

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration
FD - Field Duplicate
* - Total trihalomethanes
MCL -EPA Maximum Contaminant Level for Drinking Water