CONESTOGA-ROVERS
& ASSOCIATES

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March 5, 2010

Reference No. 003978

Ms. Sheri Bianchin
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY
77 West Jackson
Chicago, Illinois 60604

Mr. Gary Edelstein
WISCONSIN DEPARTMENT OF
NATURAL RESOURCES
P.O. Box 7921
Madison, Wisconsin 53707-7921

Dear Ms. Bianchin and Mr. Edelstein:

Re: 2009 Annual Monitoring Report
Wausau Water Supply NPL Site

On behalf of the Wausau Water Supply PRP Group, Conestoga-Rovers and Associates (CRA) is pleased to submit this 2009 Annual Monitoring Report for the Wausau Water Supply NPL Site. This Report has been prepared as required by the Groundwater Monitoring Plan for the Wausau Water Supply NPL Site.

Please contact me if you have any questions or comments.

Sincerely,

CONESTOGA-ROVERS & ASSOCIATES

Received
MAR - 8 2010
REMEDIATION &
REDEVELOPMENT

Charles Ahrens

CEA/ma/6
Encl.

cc: Dave Erickson, City of Wausau
Lee Bergmann, Regal Beloit
Art Flashinski, Wausau Chemical

2009 ANNUAL MONITORING REPORT

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

2009 ANNUAL MONITORING REPORT

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Prepared by:
Conestoga-Rovers & Associates

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MARCH 2010
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1.0 INTRODUCTION

Conestoga-Rovers and Associates (CRA) has prepared this 2009 Annual Monitoring Report (Report) for the Wausau Water Supply NPL Site (Site) in Wausau, Wisconsin, on behalf of the Wausau Potential Responsible Party (PRP) Group. This Report presents the results of groundwater and extraction well monitoring at the Site during 2009. This Report also presents operational data for the remediation systems.

1.1 HISTORY

The Wausau PRP Group initiated remedial action at the Site in the early 1990s in accordance with the September 29, 1990, Record of Decision (ROD) and the Consent Decree (CD) entered with the court on January 24, 1991. The final remedial action at the Site consisted of two soil vapor extraction (SVE) systems to address the source areas and groundwater extraction and treatment utilizing existing municipal production wells and an extraction well. The Site location is shown on Figure 1.1 and a Site plan is presented on Figure 1.2.

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. 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. In January 2001 the East Bank system was shut down while evaluation for final closure occurred. The East Bank source remediation was approved as complete in 2007.

Groundwater remediation is provided through two existing municipal production wells (CW3 and CW6) and one extraction well installed at Marathon Electric (EW1). Air strippers, located at the Wausau water treatment plant, treat water from the municipal supply wells. Water from EW1 is also treated by air stripping (over riprap on the riverbank) before being discharged to the Wisconsin River.

The pumping rates for the three extraction wells were originally defined in the CD. In the Groundwater Flow Model report (CRA, May 1993), CRA established a range of pumping rates that would maintain capture of the groundwater plume. Then, in an August 4, 1995 letter, the United States Environmental Protection Agency (USEPA) approved a pumping configuration range from that report for the three extraction wells. Those pumping rates are:

- CW3: 65 hours per week at 1,200 gallons per minute (gpm) to 100 hours per week at 1,100 gpm
- CW6: 85 hours to 100 hours per week at 1,400 gpm
- EW1: 800 to 900 gpm continuously

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 in addition to the requirements of the ROD or the CD and operation ceased in 1996.

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. This Report fulfills the requirement for 2009.

1.2 BACKGROUND

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 remedial actions and ongoing volatile organic compound (VOC) removal from the aquifer.

Groundwater remediation at the Wausau Site is a long-term process that cannot be readily measured on a short-term basis using water quality data alone. Accordingly, water quality data is measured annually on a long-term basis to show the 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.

For the purpose of evaluation, groundwater monitoring at Wausau has been divided into two areas, the East Bank and the West Bank of the Wisconsin River, corresponding to the two original source areas. The river forms a natural hydraulic division of the Site. There are three active groundwater extraction wells that contain and remove VOC contaminated groundwater. Two of the extraction wells are on the West Bank, (CW6 and EW1) and one is on the East Bank (CW3) (see Figure 1.2).

1.3 SITE GEOLOGY

The Site is underlain by glacial outwash and alluvial sediments that have filled in the preglacial 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 preglacial 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.

1.4 GROUNDWATER CLEANUP STANDARDS

The Groundwater Monitoring Plan was developed to monitor compliance with cleanup standards for the groundwater at the Site. The groundwater cleanup standards for the Site are the United States Environmental Protection Agency (USEPA) maximum drinking water contaminant levels (MCLs). The MCLs for the primary VOC contaminants of concern at the Site are:

- Trichloroethylene (TCE) 5 µg/L
- Tetrachloroethylene (PCE) 5 µg/L
- cis-1,2-Dichloroethylene (DCE) 70 µg/L
- Vinyl chloride 2 µg/L

2.0 2009 MONITORING

Groundwater monitoring during 2009, which included water level measurements and water sampling, was conducted in October in accordance with the Groundwater Monitoring Plan with the following exceptions:

- As reported in the 2000 Annual Monitoring Report, two monitoring wells (WC2 and W51A) are no longer monitored and they were abandoned in 2000.
- Also, as approved by the USEPA and Wisconsin Department of Natural Resources (WDNR) through the 2002 Annual Monitoring Report, the analysis of bis(2-ethylhexyl)phthalate at C4S and W53A was discontinued in 2003.

Monitoring of EW1 was completed quarterly in January, April, July, and November, 2009, in accordance with the Groundwater Monitoring Plan.

2.1 WATER LEVEL MONITORING

Table 2.1 presents the groundwater elevation data measured on October 26-27, 2009. Water table contours based on these measurements are presented on Figure 2.1. Field staff measured water levels on the East Bank on October 26, 2009, while CW3 was running. After water levels were measured in the East Bank wells, CW3 was shut-off and CW6 was turned on that afternoon. West Bank water levels were then measured on October 27, 2009, after CW6 had been running overnight. Water levels in the City production wells were measured with the assistance of the City staff.

The East Bank and West Bank contours are consistent with flow patterns observed in previous years. The flow patterns are controlled by the operation of EW1 and the City production wells. Under natural conditions, groundwater would flow toward and discharge to the Wisconsin River and its tributary, Bos Creek. Under existing conditions however, groundwater flows toward EW1 and the production wells. The operation of EW1 has created groundwater flow divides between the west and east City well fields and has isolated the former landfill source of contaminated groundwater from the production wells.

2.2 GROUNDWATER SAMPLING

Annual groundwater sampling was conducted on October 26-28, 2009, according to the Groundwater Monitoring Plan. Monitoring well samples were analyzed for the Site

specific VOC list, presented in Table 2.2, by EPA Method 8260. A summary of the groundwater-sampling event, including field parameter measurements, is presented in Table 2.3.

Groundwater sampling was conducted according to the Quality Assurance Project Plan, (CRA, February 1994) as amended by a June 11, 1999, letter to the USEPA. TestAmerica Laboratories, Inc. in North Canton, Ohio, analyzed all samples. Laboratory results are being submitted electronically in the Region V Electronic Data Deliverable (EDD) format for inclusion in the Region V EPA database. A copy of the Data Quality Validation memorandum for the 2009 data is included in Appendix A.

2.3 EXTRACTION WELL (EW1) SAMPLING

The monitoring program for EW1 was designed to measure long-term water quality improvement in the groundwater and to measure the effectiveness of the EW1 groundwater treatment system. These data are also used to monitor the contaminant levels discharged to the Wisconsin River from the treatment system. The discharge concentrations must meet the substantive requirements of the Wisconsin Pollutant Discharge Elimination System (WPDES).

Influent and Effluent samples were collected from the EW1 treatment system on a quarterly basis in January, April, July, and November, 2009, according to the Groundwater Monitoring Plan. Both the influent and effluent samples were analyzed by EPA Method 8260 for the Site specific VOCs (Table 2.2).

Each quarterly sample was analyzed by TestAmerica. Laboratory results are being submitted electronically in the Region V EDD format for inclusion in the Region V EPA database. Copies of the Data Quality Validation memorandums for the 2009 data are included in Appendix A.

3.0 OPERATION AND MAINTENANCE

Operation and maintenance activities reported in this section cover EW1, the city production wells, the groundwater monitoring wells, and the annual inspection of the East Bank source area.

3.1 EW1 OPERATION

In 2009, approximately 346,897,000 gallons of water were extracted and treated by the West Bank extraction well (EW1) at Marathon Electric. The extraction well pumped at an average flow rate of 650 gallons per minute during 2009. Table 3.1 summarizes EW1 operational data for 2009, including the number of gallons pumped and flow rate.

EW1 had one minor shutdown in 2009. The pump was shut down for 1.9 hours on December 7, 2009, to clean the strainer screen.

The pumping rate at EW1 is currently maintained above 600 gpm. There is ongoing correspondence with USEPA regarding the pumping requirements for the groundwater extraction system. USEPA has acknowledged that the pumping regime can be re-evaluated and will consider a request for a lower pumping rate. However, USEPA has stated that the USEPA hydrogeologist must review and approve any proposed changes. The following factors support a pumping rate reduction at EW1:

1. As described in the 2008 AMR, the potential pumping rate has declined due principally to plugging of the pore spaces in the surrounding sand pack and aquifer material.
2. Aquifer concentrations have declined dramatically since EW1 began pumping 15 years ago. The influent concentrations at EW1, CW3 ,and CW6 are similar and relatively low (< 10 µg/L) and the old landfill adjacent to Marathon Electric is no longer a significant source of VOC impacts.
3. A lower EW1 pumping rate could shift the stagnation zones between EW1, CW3, and CW6, thus achieving aquifer cleanup goals more quickly.

3.2 CITY PRODUCTION WELLS

CW3 and CW6 operated as required in 2009 with minimal shutdowns or repairs. Table 3.2 presents 2009 pumping data for all six City wells. While only CW3 and CW6 are part of the remediation system, data for all six City wells is presented, consistent

with previous reports. The table shows, by month, the number of hours each well was operated, the number of gallons pumped from each well, and the average pumping rate while the pump was operating.

CW3 and CW6 operated on alternate schedules at rates that exceeded the operating requirements established by the USEPA approval letter dated August 4, 1995. CW3 operated for an average of 78.4 hours per week with an average pumping rate of 1,341 gpm, exceeding the requirements of 65 hours per week at 1,200 gpm.

CW6 operated for an average of 88.5 hours per week with an average pumping rate of 1,666 gpm, exceeding the requirement of 85 hours per week at 1,400 gpm.

3.3 EAST BANK SOURCE REMEDIATION SYSTEM

The USEPA and WDNR approved final closure of the East Bank source remediation system in September 2007. A requirement of the closure 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. The April 2009 inspection found the pavement to be in good condition. No cracks in the pavement were noted. In August 2009 the entire paved area was repaved with new asphalt. The street adjacent to the west side of the property, North River Drive, was also repaved by the City of Wausau. A copy of the inspection report is presented in Appendix B.

4.0 EVALUATION OF GROUNDWATER DATA

The objectives of groundwater monitoring at the Site are to monitor the containment of the contaminant plume and the long-term improvement in groundwater quality.

Table 4.1 presents the laboratory results for monitoring well samples collected in October 2009. The data indicate that, in general, the plumes are stable or decreasing in size and concentration. Figure 4.1 presents the total chlorinated VOC (CVOC) data and CVOC concentration contours that illustrate the plume configuration based on the October 2009 data.

4.1 WEST BANK

The primary CVOC found in the West Bank groundwater is trichloroethene (TCE), which was detected at 10 of the 13 West Bank wells. The degradation product, cis-1,2-dichloroethene (C12DCE), was detected at three locations with relatively low concentrations. Vinyl chloride was detected in one well on the West Bank. Monitoring wells with TCE concentrations greater than the MCL of 5 µg/L included R2D, R3D, R4D, and W53A. The MCL for TCE was also exceeded in the samples from the two extraction wells, EW1 and CW6 (see Table 4.1).

In the portion of the plume north of extraction well EW1, CVOCs are located in the deeper portions of the aquifer. Wells north of EW1 that exceeded the MCL for TCE included R2D, R3D, R4D, and CW6. In the southern portion of the plume, in the vicinity of the old landfill, CVOCs are located in the shallower portions of the aquifer at relatively lower concentrations. MW53A is the only location south of EW1 that exceeded the MCL for TCE. No other CVOC concentrations exceeded the MCL on the West Bank.

In general, the West Bank plume concentrations decreased in 2009 compared to 2008 results. As illustrated on Figure 4.1, the extent and magnitude of the contaminant plume continues to decline.

Previous Annual Monitoring Reports have described the migration of a relatively high concentration slug of CVOCs towards extraction well EW1. The slug of CVOCs began in the vicinity of R2D, near the flow divide between EW1 and CW6, in 1993, and has been slowly moving towards EW1. The 2009 CVOC data indicate that this slug continues to move south toward EW1 (see Figure 4.1). Historical data for R2D, R3D, and R4D are presented below.

Total CVOCs (µg/L)			
Year	*R2D*	*R3D*	*R4D*
1993	3635	4	1016
1994	2130	11	1019
1995	152	5	720
1996	1600	2	540
1997	720	5	65/65
1998	320	580	52/58
1999	110	1200	33
2000	45	1800	58
2001	17	1500	13/13
2002	15	1200	36
2003	10	980	39/37
2004	11	899	51
2005	7.5	400	56/57
2006	8.2	480/500	42
2007	9.9	280	1.3
2008	6.5	180	13
2009	7.2/7.4	92	22.4/23.4

As shown above, concentrations at R3D continued to decrease in 2009. R4D, which is closer to EW1, showed an increase in concentrations, indicating that the slug of higher concentrations is passing through that area as it is contained and removed by EW1.

In the far north portion of the plume, within the capture area of City production well CW6 (see Figure 4.1), the total CVOC concentration in CW6 and W55 (exclusively TCE) has steadily declined since 2000. The 2009 concentrations are essentially unchanged from 2008. This area of the plume appears to be stable with gradually decreasing TCE concentrations.

In the southern portion of the West Bank plume, under the old landfill, CVOC concentrations decreased significantly relative to 2008. The total CVOC concentration at W53A decreased to 9.82 µg/L in 2009, compared to 39 µg/L in 2008. Total VOC

concentrations at C4S, and WSWD were less than 1 µg/L and no CVOCs were detected at W54.

4.1.1 GROUNDWATER FLOW DIVIDE AND CVOC MIGRATION

The following explanation was presented in the 2008 AMR in support of a recommendation to decrease the pumping requirement for CW6. It is presented again because our recommendation has not been addressed and, therefore, still stands.

In the vicinity of R3D there is a groundwater flow divide between the capture zones of CW6 and EW1. Depending on the pumping schedule at CW6, groundwater flow in this area may be to the north toward CW6 when it is pumping, but to the south toward EW1 when CW6 is not pumping. The net effect is that the movement of groundwater in the flow divide area is much slower or stagnant. Since this area contains relatively higher concentrations of CVOC, a decrease in the average pumping rate at CW6 could accelerate CVOC migration toward EW1 by moving the divide closer to CW6 and increasing the hydraulic gradient toward EW1. This could be accomplished with a moderate reduction in the average pumping rate of CW6 that would still achieve its performance standard of creating a hydraulic barrier between the CVOC plume and the other City wells in the West well field.

The current USEPA-approved pumping schedule for CW6 requires a minimum average pumping rate of 708 gpm on a weekly basis (85 hours per week at 1,400 gpm). When the groundwater flow model was constructed in 1993, several model runs were conducted to estimate lower limits for the City well pumping rates. The lower limits represented the approximate pumping rate for individual wells at which the CVOC plume was no longer contained. Based on the flow model estimates, the minimum pumping rate required for CW6 to contain the plume was 4,200,000 gallons/week (420 gpm weekly average or 50 hours per week at 1,400 gpm). Hence, pumping of CW6 could potentially be reduced up to 40 percent (708 gpm to 420 gpm weekly average) while maintaining the hydraulic containment performance standard.

4.2 EAST BANK

East Bank well data are presented in Table 4.1. While tetrachloroethene (PCE) was the original contaminant on the East Bank, the presence of TCE, C12DCE, and vinyl chloride at concentrations that equal or exceed the PCE concentration in most wells indicates an

active natural biodegradation process. For example, at E22A, E23A, and E37A the C12DCE concentrations were higher than the PCE and TCE concentrations combined.

Six East Bank wells had PCE concentrations that exceeded the MCL of 5 µg/L (out of eight detections). The highest PCE concentration was 1,100 µg/L at WC3B. Three wells (E37A, E22A, and E23A) had C12DCE concentrations that exceeded the MCL of 70 µg/L; five wells (E22A, E23A, E37A, IWD, and WC3B) had TCE concentrations that exceeded the MCL of 5 µg/L; and four wells (E22A, E37A, WC3B, and WW6) had VC concentrations that exceeded the MCL of 2 µg/L.

The areal extent of the East Bank contaminant plume remained relatively stable in 2009 (see Figure 4.1). However, concentrations within the plume were generally higher. Total CVOC concentrations from 2004 through 2009 for key East Bank wells are shown below:

Total CVOCs (µg/L)						
Well	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***
WC3B	10.2	1.4	18	4.2	1.5	1,460/565.2[1]
WC5A	10.1	12	8.4	1.8	2.8	12.1
E24A	2.6	1.6	3.7	1.1	1	13
E22A	9.2	ND	14	10	ND	231.9
E37A	16.4	17	8.5	34	460	77.35
E23A	15.2	66	47	130	260	154
WW6	10.1	28	78	35	12	29.97
CW3	7.2	6.4	4.6	4.8	6.4	4.48
IWD	8.9	6.6	13	11	4.4	7.3

The most significant change in the contaminant plume occurred at WC3B where the total CVOC concentration for the October 2009 sample was 1,460 µg/L. WC3B is located at the south end of the Wausau Chemical building. Construction for a building addition included a 4-foot deep excavation for footings that was directly adjacent to WC3B. The excavation was open for approximately 6 weeks during August and September 2009. Also, the pavement in that area was removed for a while prior to being replaced with new pavement. During August 2009 Wausau received more than 6-inches of rainfall, which likely flushed some remnant contamination from the shallow soils and carried it

[1] WC3B was resampled on January 12, 2010, to confirm the October, 2009 result.

down to the water table. The entire southern portion of Wausau Chemical property is now capped by new concrete and asphalt, hence the potential for additional leaching of contaminants has been eliminated. WC3B was resampled in January 2010 to confirm the October 2009 result and the CVOC concentrations had already declined by more than 60 percent (1,460 µg/L to 565.2 µg/L). This suggests that the CVOC mass at WC3B is not significant or persistent and should continue to dissipate as the groundwater migrates down-gradient to the north where it is contained and removed by City Well CW3.

Variability within the plume was also demonstrated at E23A and E37A, where CVOC concentrations were significantly lower compared to 2008 data, and at E22A, where concentrations increased from "ND" to 231.9 µg/L in one year. These changes in CVOC concentrations are probably due to ongoing movement of contaminant slugs as they migrate toward CW3. Although individual monitoring well concentrations generally have not shown a clear downward trend from 2008 to 2009, the CVOC concentrations at CW3 remained steady.

CVOC concentrations at the island well, IWD, have been stable over the last six years. The aquifer at IWD appears to have been impacted by West Bank contaminants based on the depth and the plume composition (TCE only). Prior to operation of EW1, CW3 captured some groundwater from the West Bank and caused it to migrate beneath the river towards the east side. There is a low concentration remnant of the West Bank contaminants in a relatively stagnant area between the capture zones of EW1 and CW3. This remnant will move slowly toward one side or the other, depending on the pumping rates and pumping patterns of EW1 and CW3.

The 2009 concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) at monitoring well FVD5 were consistent with historical data. The aromatic compounds found in this well are related to the Wausau Energy property and are independent of the Wausau NPL site remediation process.

4.3 EW1

The 2009 influent and effluent laboratory results for EW1 are presented in Table 4.2. TCE was the primary CVOC detected. C12DCE was also detected in samples from all four quarterly sampling events, but its concentration was less than 1 µg/L.

Influent concentrations of TCE remained steady, ranging from 6.5 µg/L to 8.9 µg/L. The influent concentration has shown a steady decrease over the past several years. The

effluent concentrations indicate that the EW1 treatment system removes about 50 percent of the CVOCs in the extracted groundwater.

The results of the effluent samples were compared to surface water discharge limits for discharge to the Wisconsin River, as calculated by the WDNR. Those discharge limits were presented in the "Remedial Action Plan, Groundwater Extraction, Treatment, and Discharge System", (CRA, 1990). None of the discharge limits were exceeded during 2009. EW1 influent and effluent sampling results are also reported quarterly.

4.4 HYDRAULIC CAPTURE

Hydraulic capture of the contaminant plume is demonstrated by the water table contours illustrated on Figure 2.1. The water table contours indicate that groundwater flow in the contaminated portions of the Site is toward the three extraction wells (CW3, CW6, and EW1) which is supported by the analytical data as discussed in Sections 4.1 and 4.2. At nested well locations, the water table elevations for shallow and deep wells are similar, indicating horizontal flow and hydraulic containment of the shallow and deeper portions of the aquifer. Figure 4.1 also demonstrates that hydraulic containment of the contaminant plume was maintained through 2009.

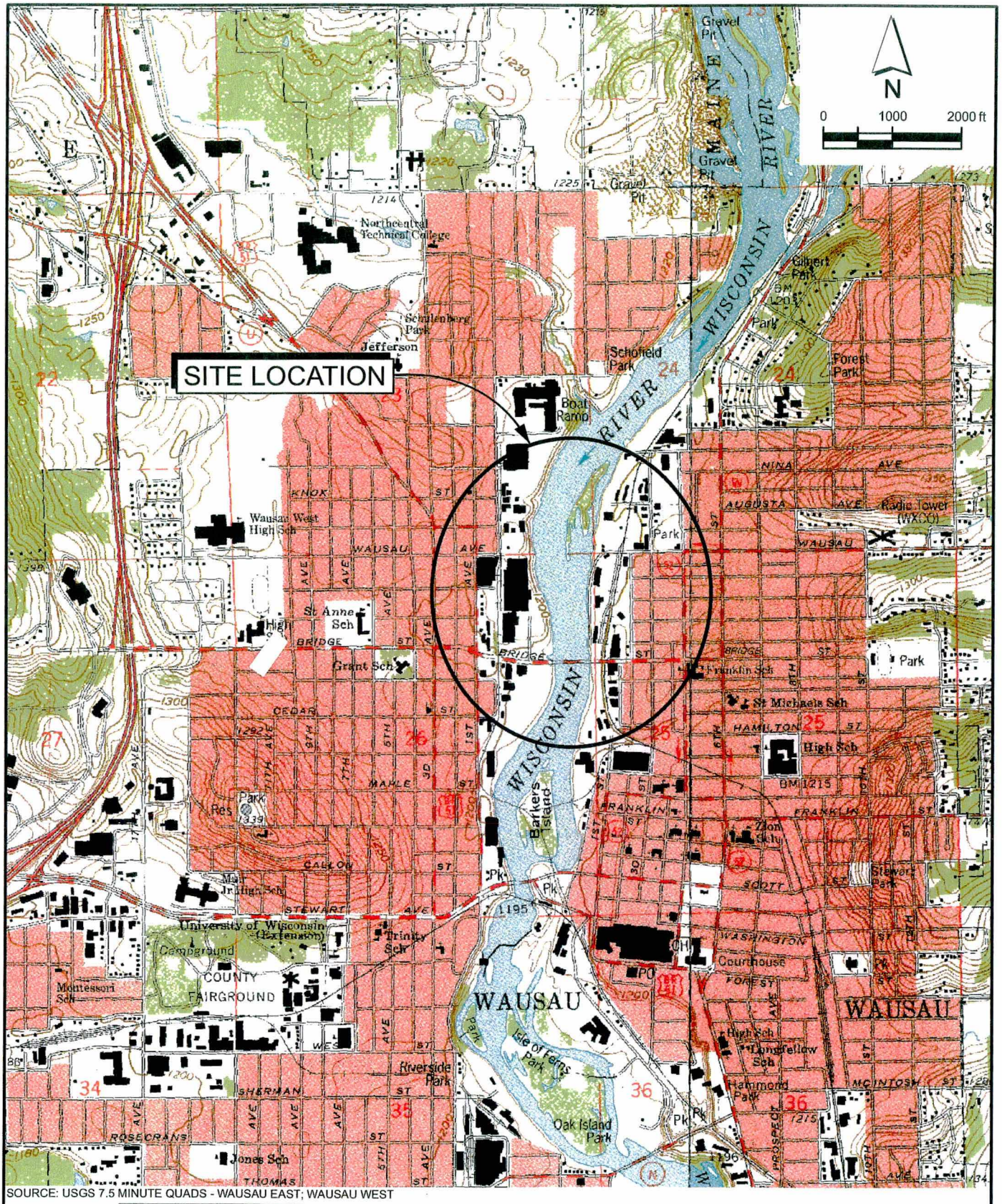
5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

- The Marathon Electric extraction well, EW1, and the two City production wells, CW3 and CW6, continue to capture the CVOC plume as evidenced by analysis of the hydraulic data and the chemical data.
- The East Bank CVOC plume exhibited variable, but generally higher, concentrations compared to 2008. However, the areal extent of the plume remained stable. CVOC concentrations increased in the source area due to disruption of the pavement cap on the south side of Wausau Chemical. There is considerable evidence of natural attenuation of the East Bank plume.
- The CVOC plume on the West Bank continues to decrease in its extent and magnitude. The high concentration slug of CVOCs near R3D continued to decrease in concentration, indicating continued migration towards EW1. CVOC concentrations decreased significantly in the plume south of EW1 under the old landfill.
- Four West Bank monitoring wells (W53A, R2D, R3D, and R4D) and the two West Bank pumping wells (EW1 and CW6) had TCE concentrations greater than the MCL of 5 µg/L.
- Six East Bank wells had PCE concentrations that exceeded the MCL of 5 µg/L. Three wells (E37A, E22A, and E23A) had C12DCE concentrations that exceeded the MCL of 70 µg/L; five wells (E22A, E23A, E37A, IWD, and WC3B) had TCE concentrations that exceeded the MCL of 5 µg/L; and four wells (E22A, E37A, WC3B, and WW6) had VC concentrations that exceeded the MCL of 2 µg/L.
- EW1 removed approximately 347,000,000 gallons of water in 2009 at an average pumping rate of 650 gallons per minute. The well was shut down for one period of less than two hours in December to clean the filter screen.
- The EW1 treatment system removed approximately 50 percent of the CVOCs from the extracted groundwater. The effluent concentrations from the treatment system were far below the established discharge limits.
- The City production wells operated within the requirements established by USEPA.
- The annual inspection of the pavement and building barrier at Wausau Chemical was performed in April 2009. The inspection found the pavement to be in good condition. No cracks in the pavement were noted. In August 2009 the entire paved area was repaved with new asphalt. The street adjacent to the west side of the property, North River Drive, was also repaved by the City of Wausau.

5.2 RECOMMENDATIONS

- Monitoring in 2010 should continue as described in the Groundwater Monitoring Plan with slight modifications discussed in previous reports.
- Continue discussions with USEPA to re-evaluate the pumping requirements of the groundwater extraction system. As described in the 2008 AMR, EW1 can achieve groundwater containment with a lower discharge limit of 600 gpm. Also, a 20 percent reduction in the minimum average pumping rate requirement for CW6 would provide some flexibility to the City of Wausau while maintaining containment of the CVOC plume.

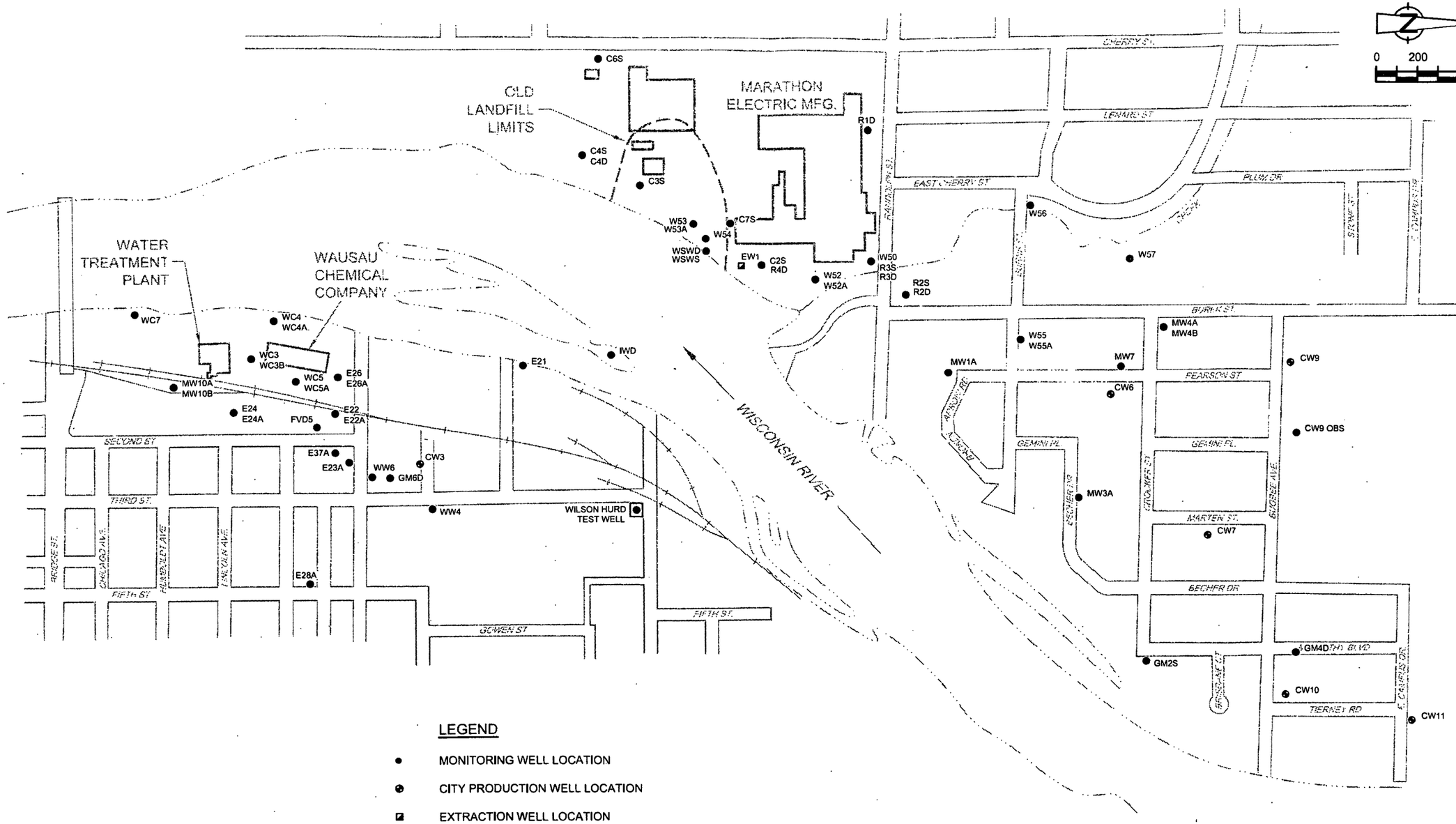


SOURCE: USGS 7.5 MINUTE QUADS - WAUSAU EAST; WAUSAU WEST

figure 1.1

SITE LOCATION
WAUSAU WATER SUPPLY NPL LOCATION
Wausau, Wisconsin

003978-00(028)GIS-SP001 DEC 30/2009



LEGEND

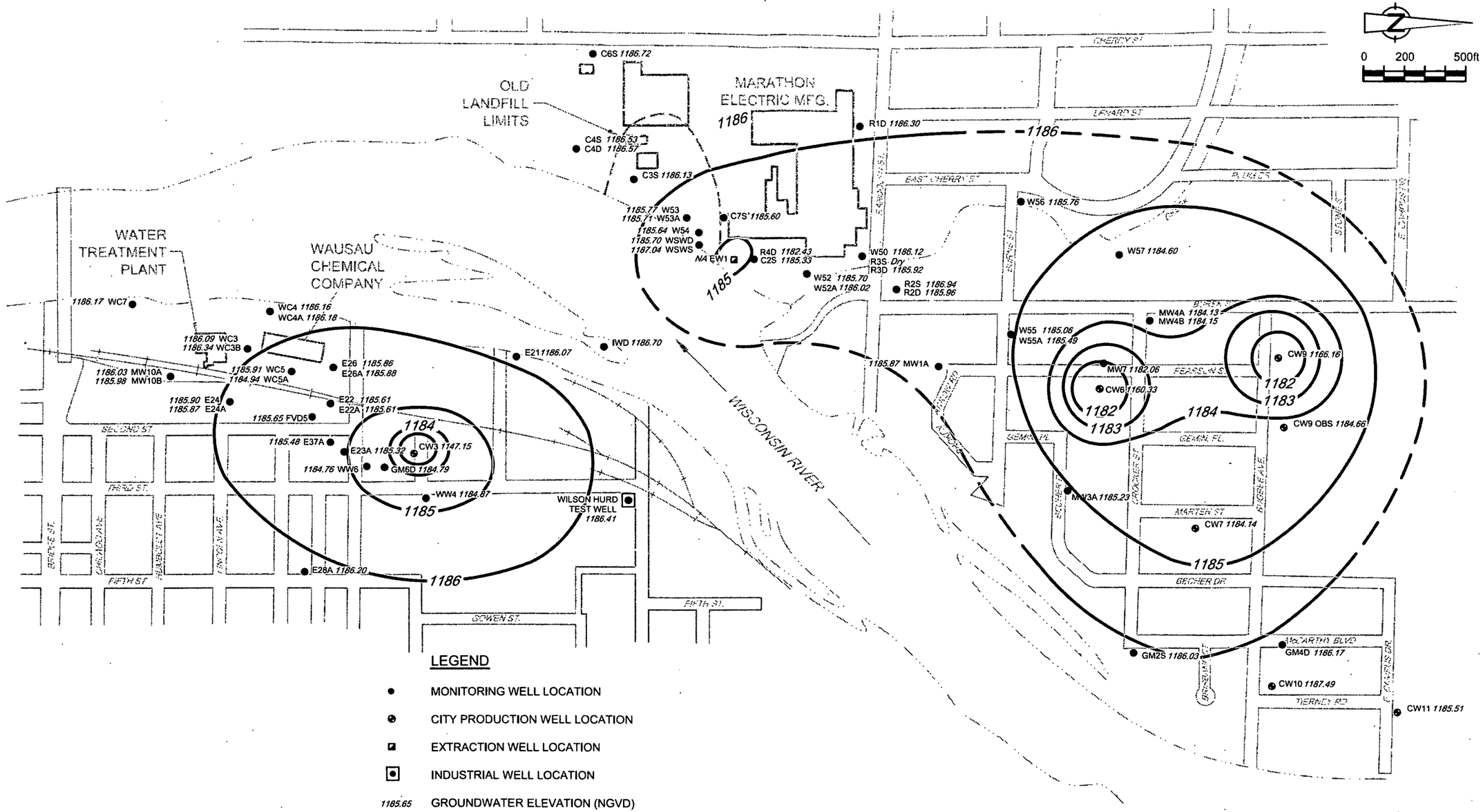
- MONITORING WELL LOCATION
- CITY PRODUCTION WELL LOCATION
- EXTRACTION WELL LOCATION
- INDUSTRIAL WELL LOCATION

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

figure 1.2

SITE PLAN
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

003978-00(028)GN-SP003 Feb 11/2010



LEGEND

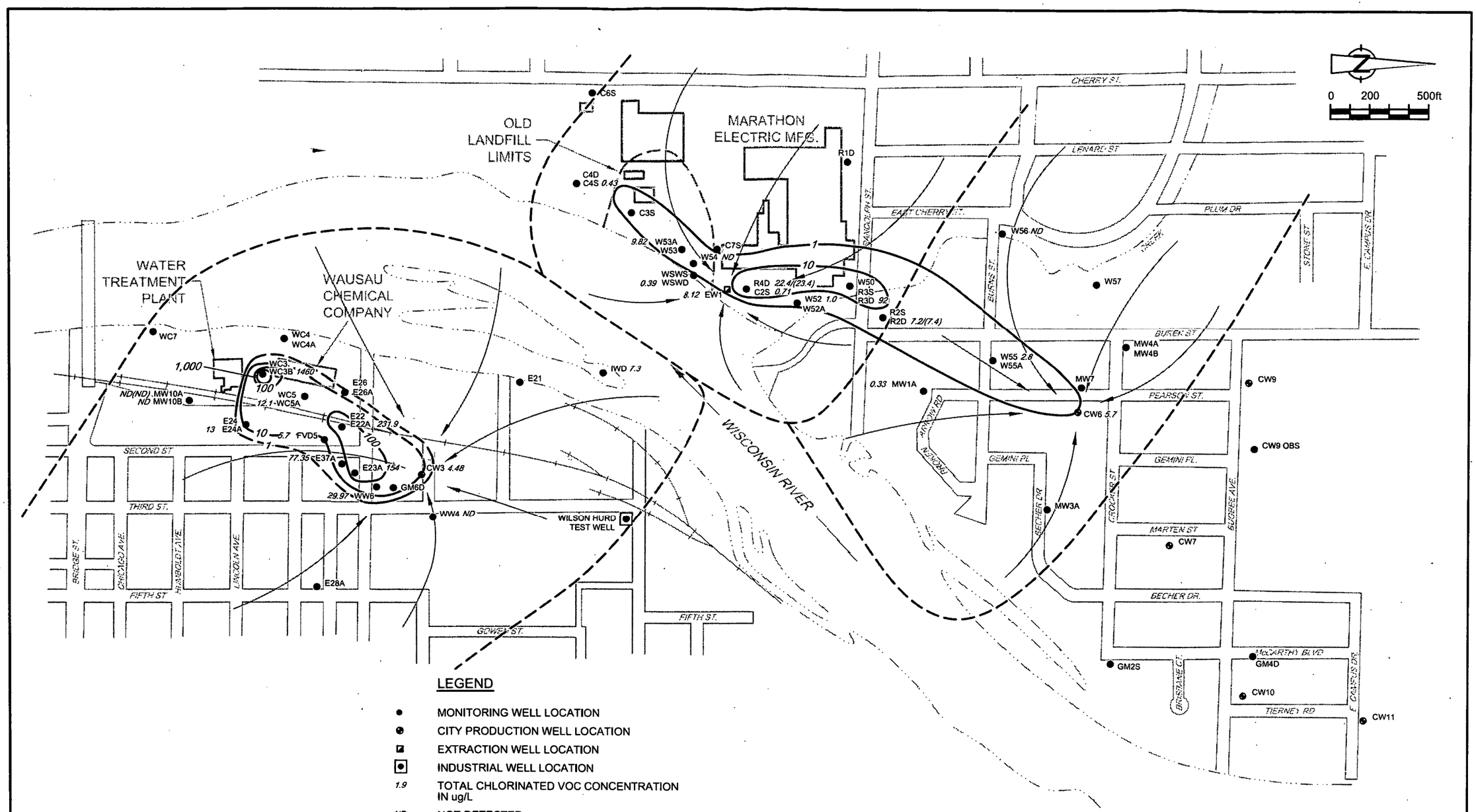
- MONITORING WELL LOCATION
- CITY PRODUCTION WELL LOCATION
- EXTRACTION WELL LOCATION
- INDUSTRIAL WELL LOCATION
- 1185.65 GROUNDWATER ELEVATION (NGVD)
- NA NOT APPLICABLE
- 1185 GROUNDWATER CONTOUR (NGVD)
- 1186 GROUNDWATER CONTOUR (NGVD) ASSUMED

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

NOTE: EAST BANK WATER LEVELS MEASURED ON OCTOBER 26, 2009.
WEST BANK WATER LEVELS MEASURED ON OCTOBER 27, 2009.

figure 2.1

WATER TABLE CONTOURS (10/26-27/09)
WAUSAU WATER SUPPLY NPL SITE,
Wausau, Wisconsin



LEGEND

- MONITORING WELL LOCATION
- CITY PRODUCTION WELL LOCATION
- EXTRACTION WELL LOCATION
- INDUSTRIAL WELL LOCATION
- 1.9 — TOTAL CHLORINATED VOC CONCENTRATION IN ug/L
- ND — NOT DETECTED
- () — DUPLICATE SAMPLE
- 10 — TOTAL CHLORINATED VOC CONTOUR
- APPROXIMATE CAPTURE ZONE
- GROUNDWATER FLOW DIRECTION
- 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 (OCTOBER 2009)
WAUSAU WATER SUPPLY NPL SITE
Wausau, Wisconsin

TABLE 2.1

GROUNDWATER ELEVATIONS - 2009
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

	Reference Elevation		*Water Level 10/26 - 27/2009*	*Water Table Elevation 10/26 - 27/2009*
East Bank				
CW3	1202.15		55.00	1147.15
E21	1197.51		11.44	1186.07
E22	1195.47		9.86	1185.61
E22A	1195.88		10.27	1185.61
E23A	1197.61		12.29	1185.32
E24	1210.01		24.11	1185.90
E24A	1211.07		25.20	1185.87
E26	1199.02		13.16	1185.86
E26A	1199.13		13.25	1185.88
E28A	1211.60		25.40	1186.20
E37A	1197.84		12.36	1185.48
FVD5	1198.89		13.24	1185.65
GM6D	1198.57		13.78	1184.79
W. HURD	1200.23		13.82	1186.41
IWD	1192.10	(1)	5.40	1186.70
MW10A	1210.67		24.64	1186.03
MW10B	1210.37		24.39	1185.98
WC3	1198.26		12.17	1186.09
WC3B	1198.04		11.70	1186.34
WC4	1196.74		10.58	1186.16
WC4A	1196.57		10.39	1186.18
WC5	1196.62		10.71	1185.91
WC5A	1196.66		11.72	1184.94
WC7	1196.77		10.60	1186.17
WW4	1202.23		17.36	1184.87
WW6	1200.53		15.77	1184.76

Notes:

Elevations relative to National Geodetic Vertical Datum.
(1) All reference elevations based on 2003 survey data except IWI which was last surveyed in 1993.

TABLE 2.1

GROUNDWATER ELEVATIONS - 2009
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

	Reference Elevation		*Water Level 10/26 - 27/2009*	*Water Table Elevation 10/26 - 27/2009*
West Bank				
EW1	NA		NA	NA
CW6	1220.33		60.00	1160.33
CW7	1224.14		40.00	1184.14
CW9	1226.16		60.00	1166.16
CW9 OBS	1224.24		39.58	1184.66
CW10	1218.49		31.00	1187.49
CW11	1216.51		31.00	1185.51
C2S	1219.05		33.72	1185.33
C3S	1220.58		34.45	1186.13
C4S	1216.70		30.17	1186.53
C4D	1216.16		29.59	1186.57
C6S	1221.58		34.86	1186.72
C7S	1220.87		35.27	1185.60
GM2S	1211.78		25.75	1186.03
GM4D	1216.35		30.18	1186.17
MW1A	1215.69		29.82	1185.87
MW3A	1220.87	(2)	35.64	1185.23
MW4A	1215.48		31.35	1184.13
MW4B	1215.10		30.95	1184.15
MW7	1218.53		36.47	1182.06
R1D	1222.24		35.94	1186.30
R2S	1209.70		22.76	1186.94
R2D	1209.42		23.46	1185.96
R3S	1215.17		Dry	Dry
R3D	1215.42		29.50	1185.92
R4D	1218.90		36.47	1182.43
W50	1215.54		29.42	1186.12
W52	1219.16		33.46	1185.70
W52A	1218.95		32.93	1186.02
W53	1216.67		30.90	1185.77
W53A	1216.90		31.19	1185.71
W54	1216.19		30.55	1185.64
W55	1217.04		31.98	1185.06
W55A	1217.31		31.82	1185.49
W56	1200.01		14.25	1185.76
W57	1205.17		20.57	1184.60
WSWS	1193.04		6.00	1187.04
WSWD	1193.02		7.32	1185.70

Notes:

Elevations relative to National Geodetic Vertical Datum.
(1) All reference elevations based on 2003 survey data except IWI which was last surveyed in 1993.
(2) Well MW3A was converted to a flush mount in 2006 and the reference elevation was resurveyed.

TABLE 2.2

SITE SPECIFIC VOC LIST
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Acetone

Benzene

Carbon tetrachloride

Chloroform

1,1-Dichloroethene

cis-1,2-Dichloroethene

Ethylbenzene

Methylene chloride

Tetrachloroethene

Toluene

1,1,2-Trichloroethane

Trichloroethene

Vinyl chloride

Xylenes

TABLE 2.3

GROUNDWATER SAMPLING SUMMARY - OCTOBER 2009
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Well	*pH*	*Conductivity (uS/cm)*	*Temperature (°C)*	*Water Clarity*	*Gallons Removed*	*Sample ID Number*	*QA/QC*
CW3	6.10	292.0	10.7	Clear	Grab	W-091026-RA-01	
MW-10B	6.83	210.0	10.9	Clear	9.0	W-091026-RA-02/03	Duplicate
MW-10A	7.17	198.5	11.2	Clear	30.0	W-091026-RA-05 W-091026-RA-04	 Rinsate
WW4	6.33	434.0	10.3	Clear	12.0	W-091026-RA-06	MS/MSD
WW6	6.93	203.0	11.0	Clear	12.0	W-091026-RA-07	
WC5A	6.69	234.0	12.4	Orange tint	6.0	W-091026-RA-08	
WC3B	6.92	354.0	11.2	Cloudy	9.0	W-091026-RA-09	
CW6	6.27	193.0	10.5	Clear	Grab	W-091027-RA-10	
E24A	6.78	220.0	9.7	Orange	6.0	W-091027-RA-11	
FVD 5	6.37	425.0	11.5	Suspended Solids	4.5	W-091027-RA-12	

TABLE 2.3

GROUNDWATER SAMPLING SUMMARY - OCTOBER 2009
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Well	*pH*	*Conductivity (uS/cm)*	*Temperature (°C)*	*Water Clarity*	*Gallons Removed*	*Sample ID Number*	*QA/QC*
E37A	6.57	363.0	12.5	Cloudy	6.0	W-091027-RA-13	
E23A	6.57	540.0	11.0	Cloudy	4.5	W-091027-RA-14	
E22A	6.57	342.0	11.8	Cloudy	6.0	W-091027-RA-15	
R4D	6.57	223.0	10.2	Clear	4.0	W-091027-RA-16/17	Duplicate
C2S	6.15	700.0	10.4	Clear	3.0	W-091027-RA-18	
W54	7.04	187.3	12.1	Cloudy	3.0	W-091027-RA-20 W-091027-RA-19	Field Blank
W53A	6.52	319.0	12.9	Cloudy	3.0	W-091027-RA-21	
WSWD	7.37	158.0	13.1	Clear	3.0	W-091027-RA-22	
IWD	7.06	149.1	11.4	Clear	3.0	W-091027-RA-23	
W52	7.70	162.2	9.8	Sl. Cloudy	5.0	W-091027-RA-24	MS/MSD
C4S	6.85	1238	11.7	Cloudy	3.0	W-091027-RA-25	
R2D	6.90	165.6	10.4	Clear	3.0	W-091028-RA-26/27	Duplicate

TABLE 2.3

GROUNDWATER SAMPLING SUMMARY - OCTOBER 2009
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Well	*pH*	*Conductivity (uS/cm)*	*Temperature (°C)*	*Water Clarity*	*Gallons Removed*	*Sample ID Number*	*QA/QC*
MW-1A	10.72	164.6	9.9	Clear	3.0	W-091028-RA-29	
						W-091028-RA-28	Field Blank
W55	7.73	186.2	9.7	Clear	3.0	W-091028-RA-30	
W56	6.61	534.0	9.7	Clear	36.0	W-091028-RA-31	
R3D	6.76	178.4	9.5	Clear	54.0	W-091028-RA-32	

TABLE 3.1

EXTRACTION WELL (EW1) PUMPING RATES - 2009
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Date	*Elapsed Time*	*Meter Reading*	*Total Flow* [1] *(gallons)*	*Flow Rate* [1] *(gpm)*
12/30/08		739,046,000		
02/02/09	48,990	780,308,000	41,262,000	842
02/27/09	36,030	808,990,000	28,682,000	796
03/30/09	44,610	841,053,000	32,063,000	719
04/28/09	41,737	869,011,000	27,958,000	670
06/02/09	50,713	901,450,000	32,439,000	640
06/30/09	40,005	927,699,000	26,249,000	656
08/14/09	65,215	965,138,000	37,439,000	574
09/08/09	35,595	986,854,000	21,716,000	610
10/08/09	43,219	14,153,000	27,299,000	632 [2]
11/03/09	37,793	36,569,000	22,416,000	593
12/02/09	41,433	58,528,000	21,959,000	530
01/04/10	47,940	85,943,000	27,415,000	572
2009 Total	533,280		**346,897,000**	**650**

Notes:

[1] The total flows and the average flow rates shown are for the period preceding the date

[2] Flow meter switched over to 1,000,000,000 gallons

TABLE 3.2

CITY SUPPLY WELL PUMPING SUMMARY - 2009
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Month		*Well #3*	*Well #6*	*Well #7*	*Well #9*	*Well #10*	*Well #11*
January	Hours [1]	354.1	386	322.4	42.2	95.7	161.3
	MG [2]	31.619	37.872	39.514	1.366	18.269	30.762
	gpm [3]	1488	1635	2043	539	3182	3179
February	Hours	312.9	356.1	251.8	13.1	114.1	192.2
	MG	27.172	37.218	32.223	0.324	22.318	36.471
	gpm	1447	1742	2133	412	3260	3163
March	Hours	313.9	423.1	277.6	15.2	111.9	230.2
	MG	28.702	44.136	33.48	0.417	21.653	42.433
	gpm	1524	1739	2010	457	3225	3072
April	Hours	318.7	392.8	290.8	0 [4]	84.5	189.8
	MG	25.558	40.883	35.549	0	16.641	35.268
	gpm	1337	1735	2037	0	3282	3097
May	Hours	388.9	350.1	360.4	3.4	112.5	184.8
	MG	31.087	35.967	46.522	0.164	21.131	34.11
	gpm	1332	1712	2151	804	3131	3076
June	Hours	360.8	347.8	251.5	242.8	151.5	229
	MG	28.713	35	29.708	14.392	26.771	41.085
	gpm	1326	1677	1969	988	2945	2990
July	Hours	366.2	374	378.1	282.2	152.9	326.6
	MG	29.244	36.694	43.464	20.275	28.013	53.451
	gpm	1331	1635	1916	1197	3054	2728
August	Hours	382.3	357.3	337.1	199.7	131.8	172
	MG	30.572	34.857	40.795	11.991	24.845	32.449
	gpm	1333	1626	2017	1001	3142	3144
September	Hours	287.5	405.3	288.1	172.9	132.4	186
	MG	23.911	39.388	33.99	10.52	24.591	36.267
	gpm	1386	1620	1966	1014	3096	3250
October	Hours	366.3	377.3	330.6	101.7	102.8	78.7
	MG	26.619	36.774	40.604	6.158	19.631	15.719
	gpm	1211	1624	2047	1009	3183	3329
November	Hours	316.5	399.6	199.1	120.9	104.4	93.5
	MG	22.668	39.048	24.034	7.217	19.855	18.665
	gpm	1194	1629	2012	995	3170	3327
December	Hours	307.8	432.4	255.1	99	136.2	86.9
	MG	22.108	42.202	30.575	5.993	25.732	17.328
	gpm	1197	1627	1998	1009	3149	3323
Average gpm		1341	1666	2025	1016	3139	3082

Notes:

[1] Hours indicates total hours pumped each month.

[2] MG indicates millions of gallons pumped each month.

[3] gpm indicates the average flow rate for the month while the pump is operating.

[4] Well #9 was cleaned during April.

TABLE 4.1

MONITORING WELL LABORATORY RESULTS - 2009
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Location	Date	MCL	Acetone --	Benzene 5	Ethylbenzene 700	Toluene 1,000	Xylenes (total) 10,000	Chloroform --	Carbon tetrachloride 5	Methylene chloride 5	1,1-Dichloroethene 7	1,1,2-Trichloroethane 5	Tetrachloroethene 5	Trichloroethene 5	cis-1,2-Dichloroethene 70	Vinyl chloride 2	Total Chlorinated VOC: --
East Bank																	
CW3	10/26/09		< 10	< 1	< 1	< 1	< 1	0.2 J	< 1	< 1	< 1	< 1	2	0.91 J	1.1	0.27 J	4.48
E22A	10/27/09		11 J	< 8	< 8	< 8	< 8	< 8	< 8	< 8	1.8 J	< 8	12	6.1 J	190	22	231.9
E23A	10/27/09		8.9 J	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	1.2 J	< 3.3	< 3.3	41	12	98	1.8 J	154
E24A	10/27/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	13	< 1	< 1	< 1	13
E37A	10/27/09		4.1 J	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	0.71 J	0.6 J	< 1.7	18	7.9	43	7.1	77.35
FVD5	10/27/09		30 J	61	370	36	1000	< 14	< 14	5.7 J	< 14	< 14	< 14	< 14	< 14	< 14	5.7
IWD	10/27/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	7.3	< 1	< 1	7.3
MW10A	10/26/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	ND
MW10B	10/26/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	ND
MW10B	10/26/09	D	1.5 J	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	ND
WC3B	10/26/09		< 330	< 33	< 33	< 33	< 33	< 33	< 33	< 33	< 33	< 33	1100	180	180	< 33	1460
WC3B	1/12/10	(1)	< 100	< 10	< 10	< 10	< 10	< 10	< 10	< 10	6.0 J	< 10	320	94	140	5.2 J	565.2
WC5A	10/26/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	8.6	2.1	1.4	< 1	12.1
WW4	10/26/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	ND
WW6	10/26/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.3 J	< 1	3.1	1.5	18	7.1	29.97

MONITORING WELL LABORATORY RESULTS - 2009
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Location	Date	MCL	Acetone --	Benzene 5	Ethylbenzene 700	Toluene 1,000	Xylenes (total) 10,000	Chloroform --	Carbon tetrachloride 5	Methylene chloride 5	1,1-Dichloroethene 7	1,1,2-Trichloroethane 5	Tetrachloroethene 5	Trichloroethene 5	cis-1,2-Dichloroethene 70	Vinyl chloride 2	Total Chlorinated VOC. --
West Bank																	
C2S	10/27/09		2.7 J	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.71 J	< 1	< 1	0.71
C4S	10/27/09		3.7 J	1.3	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.43 J	0.43
CW6	10/27/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	5.7	< 1	< 1 1	5.7
MW1A	10/28/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.33 J	< 1	< 1	0.33
R2D	10/28/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	7.2	< 1	< 1	7.2
R2D	10/28/09	D	< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	7.4	< 1	< 1	7.4
R3D	10/28/09		6.9 J	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	< 3.3	1.6 J	< 3.3	< 3.3	< 3.3	88	2.4 J	< 3.3	92
R4D	10/27/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	21	1.4	< 1	22.4
R4D	10/27/09	D	3.9 J	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	22	1.4	< 1	23.4
W52	10/27/09		2 J	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1	1.0
W53A	10/27/09		2.7 J	< 1	< 1	< 1	< 1	0.22 J	0.2 J	< 1	< 1	< 1	< 1	6	3.4	< 1	9.82
W54	10/27/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	ND
W55	10/28/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2.8	< 1	< 1	2.8
W56	10/28/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	ND
WSWD	10/27/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.39 J	< 1	< 1	0.39
EW1	11/9/09		< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	7.7	0.42 J	< 1	8.12

Notes:

Units = mg/L
(1) - WC3B resample to confirm 10/26/09 result
MCL - Maximum Contaminant Levels for drinking water published by the United States Environmental Protection Agency
VOC - Volatile organic compound.
D - Duplicate Sample
J - Estimated value, below the reporting limit
ND - All CVOCs were less than the reporting limit.
Shaded values exceed the MCL.

EW1 LABORATORY RESULTS - 2009
WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

Location	Date	Acetone	Benzene	Ethylbenzene	Toluene	Xylenes (total)	Carbon tetrachloride	Chloroform	1,1-Dichloroethene	Methylene chloride	1,1,2-Trichloroethane	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	Vinyl chloride
	MCL	--	5	700	1,000	10,000	5	--	7	5	5	5	5	70	2
Effluent	1/7/09	< 10	< 1	< 1	< 1	< 1	< 1	1.6	< 1	< 1	< 1	< 1	3.8	0.26 J	< 1
Effluent	4/27/09	< 10	< 1	< 1	< 1	< 1	< 1	0.22 J	< 1	< 1	< 1	< 1	3.8	0.29 J	< 1
Effluent	7/7/09	< 10	< 1	< 1	< 1	< 1	< 1	0.47 J	< 1	< 1	< 1	< 1	3.8	0.26 J	< 1
Effluent	11/9/09	< 10	< 1	< 1	< 1	< 1	< 1	1.8	< 1	< 1	< 1	< 1	3.4	0.26 J	< 1
Influent	1/7/09	< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	7.9	0.43 J	< 1
Influent	4/27/09	< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	6.5	0.45 J	< 1
Influent	7/7/09	< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	8.9	0.55 J	< 1
Influent	11/9/09	< 10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	7.7	0.42 J	< 1

Notes:

Units = mg/L
MCL - Maximum Contaminant Level for drinking water.
U - Estimated detection limit
J - Estimated value, value is below the reporting limit

APPENDIX A

DATA QUALITY VALIDATION MEMORANDA

CONESTOGA-ROVERS & ASSOCIATES

1801 Old Highway 8 NW, Suite #114
St. Paul, Minnesota 55112
Telephone: (651) 639-0913 Fax: (651) 639-0923
www.CRAworld.com

MEMORANDUM

TO: Chuck Ahrens; CRA

REF. NO.: 003978

FROM: Ruth Mickle/sb/2

DATE: December 14, 2009

CC: Analytical Data File

RE: **Data Quality Assessment**
October 26-28, 2009, Annual Sampling Event
Wausau Superfund Site - Wausau, Wisconsin (COC 22404-05)

The following details a data quality assessment for water samples collected October 26-28, 2009, at the Wausau Superfund Site in Wausau, Wisconsin. The samples identified in Table 1 were analyzed for Site list volatile organic compounds (VOCs).[1] The analyses were performed by TestAmerica Laboratories, Inc. (TestAmerica) in North Canton, Ohio. The quality assurance criteria were established in the Quality Assurance Project Plan (QAPP).[2]

HOLDING TIME PERIODS

The holding time period for VOC analyses is 14 days from sample collection to analysis.

On the basis of sample collection dates on the chain-of-custody forms and the analytical report provided by TestAmerica, the analyses were completed within the specified holding time period.

METHOD BLANK SAMPLES

Contamination of the samples contributed by laboratory conditions or procedures was monitored by the concurrent preparation and analyses of method blank samples. With the exception of acetone and methylene chloride, the method blank samples were free of target analytes. There were no associated methlyene chloride detections. The associated acetone data were qualified nondetect (U) , as noted in Table 2.

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1 VOC Method 8260B was derived from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW 846, Third Edition, November 1986 and updates.

2 Application of relevant quality assurance criteria was consistent with "National Functional Guidelines for Organic Data Review", October 1999.

SURROGATE COMPOUND PERCENT RECOVERIES (SURROGATE RECOVERIES)

Individual sample performance for the analyses was monitored by surrogate recoveries. The surrogate recoveries were within acceptance criteria, indicating that individual sample performance was adequate.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE (LCS/LCSD)

Overall performance for the analyses was monitored by means of a LCS/LCSD. The percent recoveries were within acceptance criteria.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) RESULTS

To assess the long-term accuracy and precision of the analytical method on various matrices, matrix spike percent recoveries and relative percent difference (RPD) of the spike recoveries were determined for the analyses. The percent recovery and RPD data for project samples were within acceptance criteria.

FIELD QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) SAMPLES

The field QA/QC associated with the sampling event consisted of one trip blank sample, one rinsate blank, two field blanks and three field duplicate sets.

To evaluate the possibility of contamination arising from sample transport, the environment, and/or shipping, a trip blank sample was submitted to the laboratory for VOC analysis. The trip blank yielded detections of acetone, methylene chloride and toluene. The associated acetone and methylene chloride data were qualified nondetect (U), as noted in Table 3. There were no associated toluene detections that were within qualification criteria; therefore, no qualification of toluene data was required based on trip blank results.

As a check for cleanliness of sampling equipment, one rinsate blank was collected as authentic sample for labeling and submission to the lab. The rinsate sample is identified in Table 1. The rinsate blank sample yielded a acetone detection. However, since the associated result was previously qualified as nondetect based on method blank results, no qualification was required based on rinsate blank results.

As a check for cleanliness of overall sampling conditions, two field blanks were collected as authentic sample for labeling and submission to the lab. The field blank samples are identified in Table 1. One field blank sample yielded a acetone detection. However, since the associated result was nondetect, no qualification was required based on field blank results. The remaining field blank data were nondetect.

Overall precision for the sampling event was monitored using field duplicate samples identified in Table 1. The RPD values for positive parameter results were found to be acceptable (RPD values less than or equal to 25 where both results are 5+ times the reporting limit), indicating an adequate level of precision was achieved.

OVERALL ASSESSMENT

The data were found to exhibit acceptable levels of accuracy and precision pertaining to the above criteria, and may be used with the qualifications noted above and in Tables 2 and 3.

TABLE 1

SAMPLE IDENTIFICATION NUMBERS
WAUSAU SUPERFUND SITE
OCTOBER 26-28, 2009 SAMPLING EVENT

Sample ID	*Sample Location*
W-091026-RA-01	CW3
W-091026-RA-02	MW10B
W-091026-RA-03	MW10B dup
W-091026-RA-04	MW10B rinsate blk
W-091026-RA-05	MW10A
W-091026-RA-06	WW4
W-091026-RA-07	WW6
W-091026-RA-08	WC5A
W-091026-RA-09	WC3B
W-091027-RA-10	CW6
W-091027-RA-11	E24A
W-091027-RA-12	FVD5
W-091027-RA-13	E37A
W-091027-RA-14	E23A
W-091027-RA-15	E22A
W-091027-RA-16	R4D
W-091027-RA-17	R4D dup
W-091027-RA-18	C2S
W-091027-RA-19	W54 field blk
W-091027-RA-20	W54
W-091027-RA-21	W53A
W-091027-RA-22	WSWD
W-091027-RA-23	IWD
W-091027-RA-24	W52
W-091027-RA-25	C4S
W-091028-RA-26	R2D
W-091028-RA-27	R2D dup
W-091028-RA-28	MW1A field blk
W-091028-RA-29	MW1A
W-091028-RA-30	W55
W-091028-RA-31	W56
W-091028-RA-32	R3D

TABLE 2

QUALIFICATION OF SAMPLE DATA RESULTING FROM METHOD BLANK CONTAMINATION WAUSAU SUPERFUND SITE OCTOBER 26-28, 2009 SAMPLING EVENT

Blank ID	*Analyte*	*Blank Concentration (ug/L)*	*Associated Samples*	*Qualified Sample Result* [1]
9308598	Acetone	6.0	W-091026-RA-03	10U
9314258	Acetone	1.4	W-091027-RA-12	140U
			W-091027-RA-13	17U
			W-091027-RA-14	33U
			W-091027-RA-15	80U
			W-091027-RA-24	10U
			W-091028-RA-32	33U

Note:

[1] The sample results should be qualified as:

U - Not present at or above the associated value.

TABLE 3

QUALIFICATION OF SAMPLE DATA RESULTING FROM TRIP BLANK CONTAMINATION WAUSAU SUPERFUND SITE OCTOBER 26-28, 2009 SAMPLING EVENT

Blank ID	*Analyte*	*Blank Concentration (ug/L)*	*Associated Samples*	*Qualified Sample Result* [1]
Trip Blank	Methylene Chloride	1.5	W-091027-RA-12	14U
			W-091027-RA-13	1.7U
			W-091027-RA-14	3.3U
			W-091028-RA-32	3.3U
Trip Blank	Acetone	5.1	W-091027-RA-17	10U
			W-091027-RA-18	10U
			W-091027-RA-21	10U
			W-091027-RA-25	10U

Note:

[1] The sample results should be qualified as:

U - Not present at or above the associated value.

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MEMORANDUM

TO: Chuck Ahrens, CRA

REF. NO.: 003978-10

FROM: Ruth Mickle/sb/1

DATE: December 7, 2009

CC: Analytical Data File

RE: Data Quality Assessment
November 9, 2009 Sampling Event
Wausau Superfund Site - Wausau, Wisconsin

The following details a data quality assessment for water samples collected November 9, 2009, at the Wausau Superfund Site in Wausau, Wisconsin. The samples identified as W091109MV-484-123 (Influent) and W091109MV-485-123 (Effluent) were analyzed for Site list volatile organic compounds (VOCs).[1] The analyses were performed by TestAmerica Laboratories, Inc. (TestAmerica) in North Canton, Ohio. The quality assurance criteria were defined by the quality assurance project plan (QAPP).[2]

HOLDING TIME PERIOD

The holding time period for VOC analyses is 14 days from sample collection to completion of analyses.

On the basis of the sample collection date on the chain-of-custody form and the analytical report provided by TestAmerica, the analyses were completed within the specified holding time period.

SURROGATE COMPOUND PERCENT RECOVERIES (SURROGATE RECOVERIES)

Individual sample performance for VOC analyses was monitored using surrogate recoveries. The surrogate recoveries were within acceptance criteria.

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1 VOC Method 8260B was derived from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, November 1986 and updates.

2 Application of quality assurance criteria was consistent with "National Functional Guidelines for Organic Data Review", October 1999.

METHOD BLANK SAMPLE

Contamination of samples contributed by laboratory conditions or procedures was monitored by the concurrent preparation and analysis of a method blank sample. The method blank yielded a methylene chloride detection. Since the associated sample data were nondetect for this parameter, no data qualification was required. The method blank was free of the remaining target analytes.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE (LCS/LCSD)

Overall performance of the analyses was monitored by means of LCS/LCSD data. The LCS recovery and RPD data for the analyses were within control limits criteria, indicating that overall performance was adequate.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) RESULTS

To assess the long-term accuracy and precision of the analytical method on various matrices, matrix spike percent recoveries and relative percent difference (RPD) of the spike recoveries were determined for the analyses. Since the MS/MSD spike sample data were derived from non-project samples, no evaluation of accuracy or precision was made based on the MS/MSD data.

FIELD QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) SAMPLES

The field QA/QC associated with the sampling event consisted of a trip blank sample.

To evaluate the possibility of contamination arising from sample transport, the environment, and/or shipping, a trip blank sample was submitted to the laboratory for VOC analysis. The trip blank yielded a acetone detection. Since the associated sample data were nondetect for this parameter, no data qualification was required. The trip blank was free of the remaining target analytes.

OVERALL ASSESSMENT

The data were found to exhibit acceptable levels of accuracy and precision and may be used without qualification.

APPENDIX B

PAVEMENT COVER AND BUILDING BARRIER MAINTENANCE INSPECTION REPORT

PAVEMENT INSPECTION RECORD **(Public/Regulatory/Pavement Inspection)**

Inspection of paved surfaces overlying contaminated soil annual inspection record.

May 10, 2007 inspection done by Art Flashinski. Surfaces were intact.

April 15, 2008 inspection by Art Flashinski. A few cracks along the building had developed and were packed with asphalt-sand mix.

The cracks were repaired (filled in) during the last week of April.

April 2009 inspection by Art Flashinski. The same condition as end of April 2008.

August 2009. The entire paved area was removed and repaved. This included the road on the West side of the property paved by the City of Wausau.