

# GIS REGISTRY

## Cover Sheet

July, 2008  
(RR 5367)

### Source Property Information

BRRTS #:

ACTIVITY NAME:

PROPERTY ADDRESS:

MUNICIPALITY:

PARCEL ID #:

CLOSURE DATE:

FID #:

DATCP #:

COMM #:

#### \*WTM COORDINATES:

X:  Y:

*\* Coordinates are in  
WTM83, NAD83 (1991)*

#### WTM COORDINATES REPRESENT:

- Approximate Center Of Contaminant Source  
 Approximate Source Parcel Center

Please check as appropriate: (BRRTS Action Code)

#### Contaminated Media:

Groundwater Contamination > ES (236)

Contamination in ROW

Off-Source Contamination

*(note: for list of off-source properties  
see "Impacted Off-Source Property")*

Soil Contamination > \*RCL or \*\*SSRCL (232)

Contamination in ROW

Off-Source Contamination

*(note: for list of off-source properties  
see "Impacted Off-Source Property")*

#### Land Use Controls:

Soil: maintain industrial zoning (220)

*(note: soil contamination concentrations  
between residential and industrial levels)*

Structural Impediment (224)

Site Specific Condition (228)

Cover or Barrier (222)

*(note: maintenance plan for  
groundwater or direct contact)*

Vapor Mitigation (226)

Maintain Liability Exemption (230)

*(note: local government or economic  
development corporation)*

Monitoring wells properly abandoned? (234)

Yes  No  N/A

*\* Residual Contaminant Level*

*\*\*Site Specific Residual Contaminant Level*

This Adobe Fillable form is intended to provide a list of information that is required for evaluation for case closure. It is to be used in conjunction with Form 4400-202, Case Closure Request. The closure of a case means that the Department has determined that no further response is required at that time based on the information that has been submitted to the Department.

**NOTICE: Completion of this form is mandatory** for applications for case closure pursuant to ch. 292, Wis. Stats. and ch. NR 726, Wis. Adm. Code, including cases closed under ch. NR 746 and ch. NR 726. The Department will not consider, or act upon your application, unless all applicable sections are completed on this form and the closure fee and any other applicable fees, required under ch. NR 749, Wis. Adm. Code, Table 1 are included. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than reviewing closure requests and determining the need for additional response action. The Department may provide this information to requesters as required by Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

BRRTS #: 02-36-100407

PARCEL ID #: 052-836-401-020.00

ACTIVITY NAME: Manitowoc Ice (Equip Works)

WTM COORDINATES: X: 705574 Y: 402525

**CLOSURE DOCUMENTS** (the Department adds these items to the final GIS packet for posting on the Registry)

- Closure Letter**
- Maintenance Plan** (if activity is closed with a land use limitation or condition (land use control) under s. 292.12, Wis. Stats.)
- Conditional Closure Letter**
- Certificate of Completion (COC)** for VPLE sites

**SOURCE LEGAL DOCUMENTS**

- Deed:** The most recent deed as well as legal descriptions, for the **Source Property** (where the contamination originated). Deeds for other, off-source (off-site) properties are located in the **Notification** section.  
*Note: If a property has been purchased with a land contract and the purchaser has not yet received a deed, a copy of the land contract which includes the legal description shall be submitted instead of the most recent deed. If the property has been inherited, written documentation of the property transfer should be submitted along with the most recent deed.*
- Certified Survey Map:** A copy of the certified survey map or the relevant section of the recorded plat map for those properties where the legal description in the most recent deed refers to a certified survey map or a recorded plat map. (lots on subdivided or platted property (e.g. lot 2 of xyz subdivision)).  
**Figure #:**                      **Title:**
- Signed Statement:** A statement signed by the Responsible Party (RP), which states that he or she believes that the attached legal description accurately describes the correct contaminated property.

**MAPS** (meeting the visual aid requirements of s. NR 716.15(2)(h))

Maps must be no larger than 8.5 x 14 inches unless the map is submitted electronically.

- Location Map:** A map outlining all properties within the contaminated site boundaries on a U.S.G.S. topographic map or plat map in sufficient detail to permit easy location of all parcels. If groundwater standards are exceeded, include the location of all potable wells within 1200 feet of the site.  
*Note: Due to security reasons municipal wells are not identified on GIS Packet maps. However, the locations of these municipal wells must be identified on Case Closure Request maps.*  
**Figure #: 1**                      **Title: Site Location map**
- Detailed Site Map:** A map that shows all relevant features (buildings, roads, individual property boundaries, contaminant sources, utility lines, monitoring wells and potable wells) within the contaminated area. This map is to show the location of all contaminated public streets, and highway and railroad rights-of-way in relation to the source property and in relation to the boundaries of groundwater contamination exceeding a ch. NR 140 Enforcement Standard (ES), and/or in relation to the boundaries of soil contamination exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Levels (SSRCL) as determined under s. NR 720.09, 720.11 and 720.19.  
**Figure #: 2a & 2b**                      **Title: Site Map & Site Map- Building Layout**
- Soil Contamination Contour Map:** For sites closing with residual soil contamination, this map is to show the location of all contaminated soil and a single contour showing the horizontal extent of each area of contiguous residual soil contamination that exceeds a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL) as determined under s. NR 720.09, 720.11 and 720.19.  
**Figure #: 3 & 3B**                      **Title: Soil Analytical Data, Residual Soil Contamination**

BRRTS #: 02-36-100407

ACTIVITY NAME: Manitowoc Ice (Equip Works)

**MAPS (continued)**

- Geologic Cross-Section Map:** A map showing the source location and vertical extent of residual soil contamination exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL). If groundwater contamination exceeds a ch. NR 140 Enforcement Standard (ES) when closure is requested, show the source location and vertical extent, water table and piezometric elevations, and locations and elevations of geologic units, bedrock and confining units, if any.

**Figure #: 4**                      **Title: Cross Section Locations**

**Figure #: 5**                      **Title: Cross Sections A-A' and B-B'**

- Groundwater Isoconcentration Map:** For sites closing with residual groundwater contamination, this map shows the horizontal extent of all groundwater contamination exceeding a ch. NR140 Preventive Action Limit (PAL) and an Enforcement Standard (ES). Indicate the direction and date of groundwater flow, based on the most recent sampling data.

**Note:** This is intended to show the total area of contaminated groundwater.

**Figure #: 6**                      **Title: Groundwater Analytical Results (with ES and PAL isoconcentrations)**

- Groundwater Flow Direction Map:** A map that represents groundwater movement at the site. If the flow direction varies by more than 20° over the history of the site, submit 2 groundwater flow maps showing the maximum variation in flow direction.

**Figure #: 7**                      **Title: Groundwater Elevations- April 2006**

**Figure #: 8**                      **Title: Groundwater Elevations- October 2006**

**TABLES (meeting the requirements of s. NR 716.15(2)(h)(3))**

Tables must be no larger than 8.5 x 14 inches unless the table is submitted electronically. Tables must not contain shading and/or cross-hatching. The use of **BOLD** or *ITALICS* is acceptable.

- Soil Analytical Table:** A table showing remaining soil contamination with analytical results and collection dates.  
**Note:** This is one table of results for the contaminants of concern. Contaminants of concern are those that were found during the site investigation, that remain after remediation. It may be necessary to create a new table to meet this requirement.

**Table #: 1**                      **Title: Soil Analytical Data**

- Groundwater Analytical Table:** Table(s) that show the most recent analytical results and collection dates, for all monitoring wells and any potable wells for which samples have been collected.

**Table #: 2**                      **Title: Groundwater Analytical Results**

- Water Level Elevations:** Table(s) that show the previous four (at minimum) water level elevation measurements/dates from all monitoring wells. If present, free product is to be noted on the table.

**Table #: 3**                      **Title: Summary of Water Level Elevations**

**IMPROPERLY ABANDONED MONITORING WELLS**

For each monitoring well not properly abandoned according to requirements of s. NR 141.25 include the following documents.

**Note:** If the site is being listed on the GIS Registry for only an improperly abandoned monitoring well you will only need to submit the documents in this section for the GIS Registry Packet.

- Not Applicable**

- Site Location Map:** A map showing all surveyed monitoring wells with specific identification of the monitoring wells which have not been properly abandoned.

**Note:** If the applicable monitoring wells are distinctly identified on the Detailed Site Map this Site Location Map is not needed.

**Figure #:**                      **Title:**

- Well Construction Report:** Form 4440-113A for the applicable monitoring wells.

- Deed:** The most recent deed as well as legal descriptions for each property where a monitoring well was not properly abandoned.

- Notification Letter:** Copy of the notification letter to the affected property owner(s).

BRRTS #: 02-36-100407

ACTIVITY NAME: Manitowoc Ice (Equip Works)

## NOTIFICATIONS

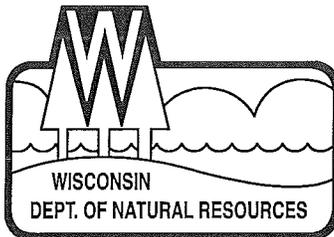
### Source Property

- Letter To Current Source Property Owner:** If the source property is owned by someone other than the person who is applying for case closure, include a copy of the letter notifying the current owner of the source property that case closure has been requested.
- Return Receipt/Signature Confirmation:** Written proof of date on which confirmation was received for notifying current source property owner.

### Off-Source Property

Group the following information per individual property and label each group according to alphabetic listing on the "Impacted Off-Source Property" attachment.

- Letter To "Off-Source" Property Owners:** Copies of all letters sent by the Responsible Party (RP) to owners of properties with groundwater exceeding an Enforcement Standard (ES), and to owners of properties that will be affected by a land use control under s. 292.12, Wis. Stats.  
**Note:** Letters sent to off-source properties regarding residual contamination must contain standard provisions in Appendix A of ch. NR 726.  
**Number of "Off-Source" Letters:**
- Return Receipt/Signature Confirmation:** Written proof of date on which confirmation was received for notifying any off-source property owner.
- Deed of "Off-Source" Property:** The most recent deed(s) as well as legal descriptions, for all affected deeded **off-source property(ies)**. This does not apply to right-of-ways.  
**Note:** If a property has been purchased with a land contract and the purchaser has not yet received a deed, a copy of the land contract which includes the legal description shall be submitted instead of the most recent deed. If the property has been inherited, written documentation of the property transfer should be submitted along with the most recent deed.
- Letter To "Governmental Unit/Right-Of-Way" Owners:** Copies of all letters sent by the Responsible Party (RP) to a city, village, municipality, state agency or any other entity responsible for maintenance of a public street, highway, or railroad right-of-way, within or partially within the contaminated area, for contamination exceeding a groundwater Enforcement Standard (ES) and/or soil exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL).  
**Number of "Governmental Unit/Right-Of-Way Owner" Letters:**



## State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor  
Matthew J. Frank, Secretary  
Ronald W. Kazmierczak, Regional Director

Northeast Region Headquarters  
2984 Shawano Avenue  
Green Bay, Wisconsin 54313-6727  
Telephone 920-662-5100  
FAX 920-662-5197  
TTY Access via relay - 711

January 27, 2009

Chris Meyer  
Manitowoc Ice, Inc.  
2110 South 26th Street  
Manitowoc, WI 54220

**SUBJECT:** Final Case Closure with Land Use Limitations or Conditions  
Site formerly known as Manitowoc Ice and Manitowoc Equipment Works,  
2110 South 26<sup>th</sup> Street, Wisconsin  
WDNR BRRTS Activity # 02-36-100470

Dear Mr. Meyer:

The Department considers this case closed and no further investigation or remediation is required at this time. Based on the correspondence and data provided, it appears that your case meets the requirements of ch. NR 726, Wisconsin Administrative Code.

On October 14, 2008, the Northeast Region Closure Committee reviewed the above referenced case for closure. This committee reviews environmental remediation cases for compliance with state laws and standards to maintain consistency in the closure of these cases. On October 16, 2008, you were notified that the Closure Committee had granted conditional closure to this case.

The conditional closure letter specified that residual soil and groundwater contamination remains at the site. The approved site closure requires maintenance of the facility building which acts as a "cap" to prevent infiltration of water that may cause the remaining residual soil and groundwater to spread.

On January 13, 2009, the Department received the following documentation indicating that you have complied with the requirements of closure:

- Abandonment forms for groundwater monitoring wells – MW-1, MW-2, MW-3R, MW-3AR, MW-4, MW-5, MW-6, MW-7, MW-8
- Building Barrier Maintenance Plan for Residual Soil in Plating Line Release Area

### GIS Registry

The conditions of case closure set out below in this letter require that your site be listed on the Remediation and Redevelopment Program's GIS Registry. The specific reasons are summarized below:

- Residual soil contamination exists that must be properly managed should it be excavated or removed
- Your facility building is considered a "cap" over contaminated soil and groundwater
- Groundwater contamination is present above Chapter NR 140 enforcement standards

Information that was submitted with your closure request application will be included on the GIS Registry. To review the sites on the GIS Registry web page, visit the RR Sites Map page at <http://dnr.wi.gov/org/aw/rr/gis/index.htm>. If your property is listed on the GIS Registry because of remaining contamination and you intend to construct or reconstruct a well, you will need prior Department approval in accordance with s. NR 812.09(4)(w), Wis. Adm. Code. To obtain approval, Form 3300-254 needs to be completed and submitted to the DNR Drinking and Groundwater program's regional water supply specialist. This form can be obtained on-line <http://dnr.wi.gov/org/water/dwg/3300254.pdf> or at the web address listed above for the GIS Registry.

### Closure Conditions

Please be aware that pursuant to s. 292.12 Wisconsin Statutes, compliance with the requirements of this letter is a responsibility to which you and any subsequent property owners must adhere. If these requirements are not followed or if additional information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety, welfare, or the environment, the Department may take enforcement action under s. 292.11 Wisconsin Statutes to ensure compliance with the specified requirements, limitations or other conditions related to the property or this case may be reopened pursuant to s. NR 726.09, Wis. Adm. Code. It is the Department's intent to conduct inspections in the future to ensure that the conditions included in this letter including compliance with referenced maintenance plans are met.

### Remaining Residual Soil Contamination

Soil samples that are representative of currently remaining residual soil contamination on this property were collected in 1996 and contained nickel in concentrations that exceed the Wisconsin and EPA maximum ingestion level of 313 milligrams per kilogram (mg/kg). Specifically, soil sample GP-6 collected at 1-2 feet measured nickel at 3,700 mg/kg and soil sample GP-4 collected at a depth of 1-2 feet measured nickel at 430 mg/kg. If soil in the locations described above is excavated in the future, the property owner at the time of excavation must sample and analyze the excavated soil to determine if residual contamination remains. If sampling confirms that contamination is present, the property owner at the time of excavation will need to determine whether the material would be considered solid or hazardous waste and ensure that any storage, treatment or disposal is in compliance with applicable statutes and rules. In addition, all current and future owners and occupants of the property need to be aware that excavation of the contaminated soil may pose an inhalation or other direct contact hazard and as a result, special precautions may need to be taken during excavation activities to prevent a health threat to humans.

### Cover or Barrier

Pursuant to s. 292.12(2)(a), Wis. Stats., the impervious cap (facility building) that currently exists in the location shown on the attached map shall be maintained in compliance with the attached **Building Barrier Maintenance Plan for Residual Soil in Plating Line Release Area**, dated January 2009, in order to minimize the infiltration of water and prevent additional groundwater contamination that would violate the groundwater quality standards in ch. NR 140, Wis. Adm. Code, and to prevent direct contact with residual soil contamination that might otherwise pose a threat to human health. The attached maintenance plan and inspection log are to be kept up-to-date and on-site, and the inspection log need only be submitted to the Department upon request.

### Remaining Residual Groundwater Contamination

Groundwater impacted by nickel contamination greater than enforcement standards (ES) set forth in ch. NR140, Wis. Adm. Code, is present on the property. Specifically groundwater from monitoring wells MW-5 and MW-8 have measured nickel concentrations above the ES of 100 micrograms/Liter (ug/L). For more detailed information regarding the locations where groundwater samples have been collected (i.e., monitoring well locations) and the associated contaminant concentrations, refer to the Remediation and Redevelopment Program's GIS Registry at the RR Sites Map page at <http://dnr.wi.gov/org/aw/rr/gis/index.htm>.

The Department appreciates your efforts to restore the environment at this site. If you have any questions regarding this closure decision or anything outlined in this letter, please contact Annette Weissbach at (920) 662-5165 or [annette.weissbach@wisconsin.gov](mailto:annette.weissbach@wisconsin.gov).

Sincerely,



Bruce Urban, Team Supervisor  
Northeast Region Remediation & Redevelopment Program

Attachment: Building Barrier Maintenance Plan for Residual Soil in Plating Line Release Area

cc: Dale Rezabek – URS Corporation, 307 South Commercial Street Suite 011, Neenah 54956

**BUILDING BARRIER MAINTENANCE PLAN  
FOR RESIDUAL SOIL IN PLATING LINE RELEASE AREA**

**January 2009**

**Manitowoc FSG Operations, Inc.**

**Property Located at:**

**2110 SOUTH 26<sup>TH</sup> STREET  
MANITOWOC, WISCONSIN**

**WDNR BRRTS # 02-36-100470**

## Introduction

This document is the Maintenance Plan for a cap (building) barrier at the above-referenced property in accordance with the requirements of s. NR 724.13(2), Wisconsin Administrative Code. The maintenance activities relate specifically to the existing concrete slab floor occupying the area over the contaminated soil on the property, located within the Manitowoc FSG Operations facility building. The contaminated soil is impacted by nickel. The location of the building barrier to be maintained in accordance with this Maintenance Plan, as well as the impacted soil are identified within the area as depicted in the attached maps (see Figure 2b, included as Exhibit A).

## Building Barrier Purpose

The building over the contaminated soil serves as a barrier to prevent direct human contact with residual soil contaminants that might otherwise pose a threat to human health. This building floor and foundation also act as a partial infiltration barrier to minimize future soil-to-groundwater contaminant migration that would violate the groundwater standards in ch. NR 140, Wisconsin Administrative Code. Based on the current and future use of the property, the barrier should function as intended unless disturbed.

## Annual Inspection

The building floor overlying the soil near the old plating line and as depicted in Exhibit A will be inspected once a year, normally in the spring after all snow and ice is gone, for deterioration, cracks and other potential problems that can cause exposure to underlying soils. The inspections will be performed to evaluate damage due to settling, exposure to the weather, wear from traffic, increasing age and other factors. Any area where soils have become or are likely to become exposed will be documented. A log of the inspections and any repairs will be maintained by the property owner and is included as Exhibit B, Cap Inspection Log. The log will include recommendations for necessary repair of any areas where underlying soils are exposed. Once repairs are completed, they will be documented in the inspection log. A copy of the inspection log will be sent to the Wisconsin Department of Natural Resources (“WDNR”) project manager at least annually after every inspection.

## Maintenance Activities

If problems are noted during the annual inspections or at any other time during the year, repairs will be scheduled as soon as practical. Repairs can include concrete patching and filling operations or they can include larger resurfacing or construction operations. In the event that necessary maintenance activities are deep enough to expose underlying impacted soil, the owner must inform maintenance workers of the direct contact exposure hazard and provide them with appropriate personal protection equipment (“PPE”). The owner must also sample any soil that is excavated from the site or property prior to

disposal to ascertain if contaminants remain. The soil must be treated, stored and disposed of by the owner in accordance with applicable local, state and federal law.

In the event the building barrier overlying the soil is removed or replaced, the replacement barrier must be, at a minimum, equally impervious as the original building. Any replacement barrier will be subject to the same maintenance and inspection guidelines as outlined in this Maintenance Plan unless indicated otherwise by the WDNR or its successor as long as impacted soil remains.

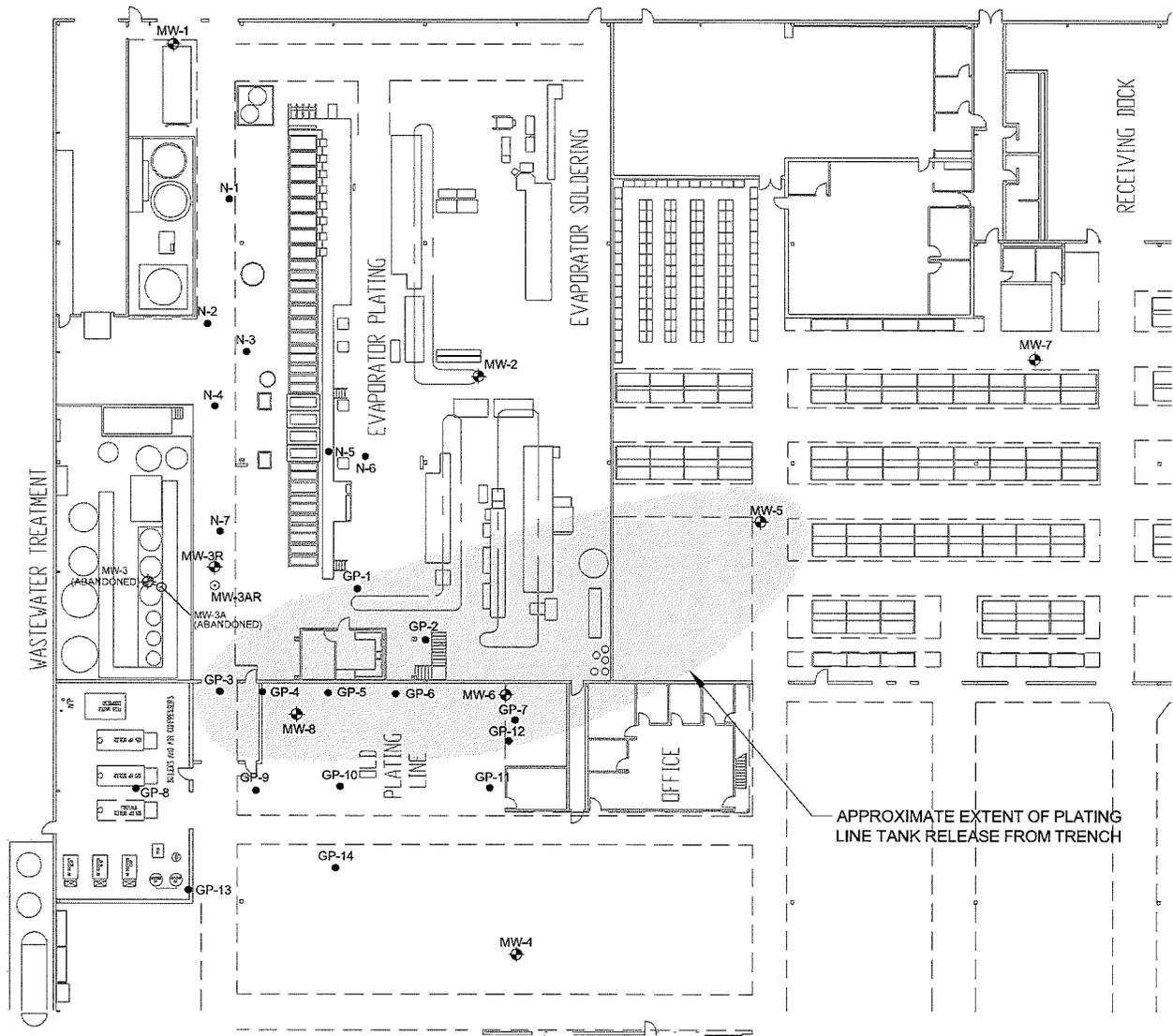
The property owner, in order to maintain the integrity of the building, will maintain a copy of this Maintenance Plan at the property or on site and make it available to all interested parties (i.e. on-site or on-property employees, contractors, future property owners, etc.) for viewing.

Amendment or Withdrawal of Maintenance Plan

This Maintenance Plan can be amended or withdrawn by the property owner and its successors with the written approval of WDNR.

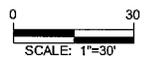
Contact Information [As of October 2008]

Site Operator:	Gerald Wendt Manitowoc FSG Operations, Inc. 2110 South 26 <sup>th</sup> Street Manitowoc, WI 54221 920-682-0161
Consultant:	Dale Rezabek, PG URS Corporation 6737 West Washington Street, Suite 2265 Milwaukee, WI 53214 414-831-4100
WDNR:	Annette Weissbach, WDNR Project Manager 2984 Shawano Ave. P.O. Box 10448 Green Bay, WI 54307-0448 920-662-5165



LEGEND

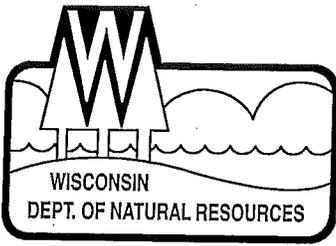
- N-6 ● GEOPROBE SOIL BORING LOCATION
- MW-3R ◆ MONITORING WELL
- MW-3AR ○ PIEZOMETER



MANITOWOC ICE, INC MANITOWOC, WISCONSIN	
FIGURE 2b SITE MAP - BUILDING LAYOUT	
DATE: JULY 2008	 8737 W. WASHINGTON STREET MILWAUKEE, WISCONSIN 53214 PHONE: 414.251.4100 FAX: 414.831.4101
JOB NO.: 25688777	
CHECKED BY: DHR	
APPROVED BY: DHR	



Me



**State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES**

Jim Doyle, Governor  
Matthew J. Frank, Secretary  
Ronald W. Kazmierczak, Regional Director

Northeast Region Headquarters  
2984 Shawano Ave., P.O. Box 10448  
Green Bay, Wisconsin 54307-0448  
Telephone 920-662-5100  
FAX 920-662-5413  
TTY Access via relay - 711

October 16, 2008

Chris Meyer  
Manitowoc FSG Operations  
2110 South 26th Street  
Manitowoc, WI 54220

Subject: Conditional Closure Decision  
With Requirements to Achieve Final Closure  
Site formerly known as Manitowoc Ice and Manitowoc Equipment Works,  
2110 South 26<sup>th</sup> Street, Wisconsin  
WDNR BRRTS Activity # 02-36-100470

Dear Mr. Meyer:

On October 14, 2008, the Northeast Region (NER) Closure Committee reviewed your request for closure of the case described above. The NER Closure Committee reviews environmental remediation cases for compliance with state rules and statutes to maintain consistency in the closure of these cases. After careful review of the closure request, the Committee has determined that the Nickel contamination on the site from the February 1996 Plating Line Release appears to have been investigated and remediated to the extent practicable under site conditions. Your case has been remediated to Department standards in accordance with s. NR 726.05, Wis. Adm. Code and will be closed if the following conditions are satisfied:

**MONITORING WELL ABANDONMENT**

The monitoring wells at the site must be properly abandoned in compliance with ch. NR 141, Wis. Adm. Code. Documentation of well abandonment must be submitted to me on Form 3300-005 found at <http://dnr.wi.gov/org/water/dwg/gw/>.

**MAINTENANCE PLAN**

Please submit a Maintenance Plan that describes how you intend to maintain the existing cap (facility building) at the site. The "cap" covers the remaining residual soil and groundwater contamination at the site and allows the site to be closed despite exceedances of standards. The Cap is to be maintained in accordance with a plan prepared and submitted to the Department pursuant to s. NR 724.13(2), Wis. Adm. Code. An example plan can be found at [http://dnr.wi.gov/org/aw/rr/technical/example\\_maintenance\\_plan.pdf](http://dnr.wi.gov/org/aw/rr/technical/example_maintenance_plan.pdf).

State Bar of Wisconsin Form 1-2003  
WARRANTY DEED

Document Number

Document Name

THIS DEED, made between Manitowoc Ice, Inc., a Wisconsin corporation

\_\_\_\_\_  
("Grantor," whether one or more),  
and Manitowoc FSG Operations, Inc., a Nevada corporation  
\_\_\_\_\_  
("Grantee," whether one or more).

Grantor, for a valuable consideration, conveys to Grantee the following described real estate, together with the rents, profits, fixtures and other appurtenant interests, in Manitowoc County, State of Wisconsin ("Property") (if more space is needed, please attach addendum):

A tract of land in the East 1/2 of the Southeast 1/4 of Section 36, Township 19 North, Range 23 East, City of Manitowoc, Manitowoc County, Wisconsin, described as follows:

Commencing at the East 1/4 Corner of said Section 36; thence South 88° 08' 06" West along the 1/4 section line 42.00 feet; thence South 1° 37' 30" East a distance of 58.04 feet to the point of real beginning; thence continue South 1° 37' 30" East along the westerly right-of-way of South 24th Street, 1349.88 feet; thence North 89° 12' 47" West a distance of 573.69 feet; thence North 1° 55' 44" West along the Easterly right-of-way of the Wisconsin Central Railroad a distance of 1281.38 feet; thence North 83° 59' 54" East along the Southerly right-of-way of Dewey Street a distance of 581.68 feet to the point of real beginning.

Said tract contains 17.41 acres of land.

Recording Area

Name and Return Address

Andrew D. Ketter, Esq.  
Quarles & Brady, LLP  
411 E. Wisconsin Ave., #2040  
Milwaukee, WI 53202

052-836-401-020.00

Parcel Identification Number (PIN)

This is not homestead property.  
(is) (is not)

Grantor warrants that the title to the Property is good, indefeasible in fee simple and free and clear of encumbrances except: municipal and zoning ordinances and agreements entered under them, recorded easements for the distribution of utility and municipal services, recorded building and use restrictions and covenants, general taxes levied in the year of closing

Dated: December 31, 2007.

MANTOWOC ICE, INC.

\_\_\_\_\_  
(SEAL) Maurice Jones (SEAL)

\*BY: Maurice Jones, Vice President

\_\_\_\_\_  
(SEAL) \_\_\_\_\_ (SEAL)

AUTHENTICATION

Signature(s) Maurice Jones

authenticated on \_\_\_\_\_

\* Andrew D. Ketter, Esq.

TITLE: MEMBER STATE BAR OF WISCONSIN

(If not, \_\_\_\_\_  
authorized by Wis. Stat. § 706.06)

THIS INSTRUMENT DRAFTED BY:

Andrew D. Ketter, Esq.

Quarles & Brady LLP

ACKNOWLEDGMENT

STATE OF WISCONSIN )  
Manitowoc ) ss.  
COUNTY )

Personally came before me on January 16, 2008  
the above named Maurice Jones

to me known to be the person who executed the foregoing  
instrument and acknowledge the same.

Steven M. Schindhelm

\* Steven M. Schindhelm

Notary Public, State of Wisconsin  
My Commission (is permanent) (expires: \_\_\_\_\_)

(Signatures may be authenticated or acknowledged. Both are not necessary.)

NOTE: THIS IS A STANDARD FORM. ANY MODIFICATIONS TO THIS FORM SHOULD BE CLEARLY IDENTIFIED.

WARRANTY DEED

© 2003 STATE BAR OF WISCONSIN

FORM NO. 1-2003

\*Type name below signatures.

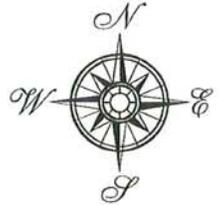


# CITY OF MANITOWOC WISCONSIN

Property Map  
for Manitowoc Co. Inc.

Prepared by City of Manitowoc  
Planning Department  
www.manitowoc.org  
Map Printed: 08/11/2006

DISCLAIMER: Maps and associated data are believed to be accurate, but are not warranted. This information is not intended for legal, survey, or other related uses. Please obtain the original recorded documents for legal or survey information.



Legend	
Property Ownername	
	MANITOWOC BERMUDA LTD
	MANITOWOC CO INC
	MANITOWOC CRANES INC
	MANITOWOC ICE INC

KINGLET DR

## Statement of Legal Property Description Accuracy

FOR

Parcel Identification Number: 052-836-401-020.00

Manitowoc Ice, Inc.  
2110 South 26<sup>th</sup> Street  
Manitowoc, Wisconsin 54220  
BRRTS No. 02-36-100407

The Manitowoc County Register of Deeds Office provided the following legal description of the above-mentioned property:

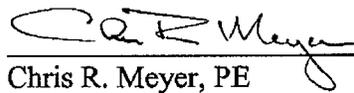
A tract of land in the East ½ of the Southeast ¼ of Section 36 Township 19 North, Range 23 East, City of Manitowoc, Manitowoc County, Wisconsin, described as follows:

Commencing at the East ¼ Corner of said Section 36; thence South 88° 08' 06" West along the ¼ section line 42.00 feet; thence South 1° 37' 30" East a distance of 58.04 feet to the point of real beginning; thence, continue South 1° 37' 30" East along the westerly right-of-way of South 26<sup>th</sup> Street, 1349.88 feet; thence North 89° 12' 47" West a distance of 573.69 feet; thence North 1° 55' 44" West along the Easterly right-of-way of the Wisconsin Central Railroad a distance of 1281.38 feet; thence North 83° 59' 54" East along the Southerly right-of-way of Dewey Street a distance of 581.68 feet to the point of real beginning.

Said tract contains 17.41 acres of land.

To the best of my knowledge, this information is accurate.

**Manitowoc Ice, Inc.**

  
Chris R. Meyer, PE

APRIL 30, 2008  
Date

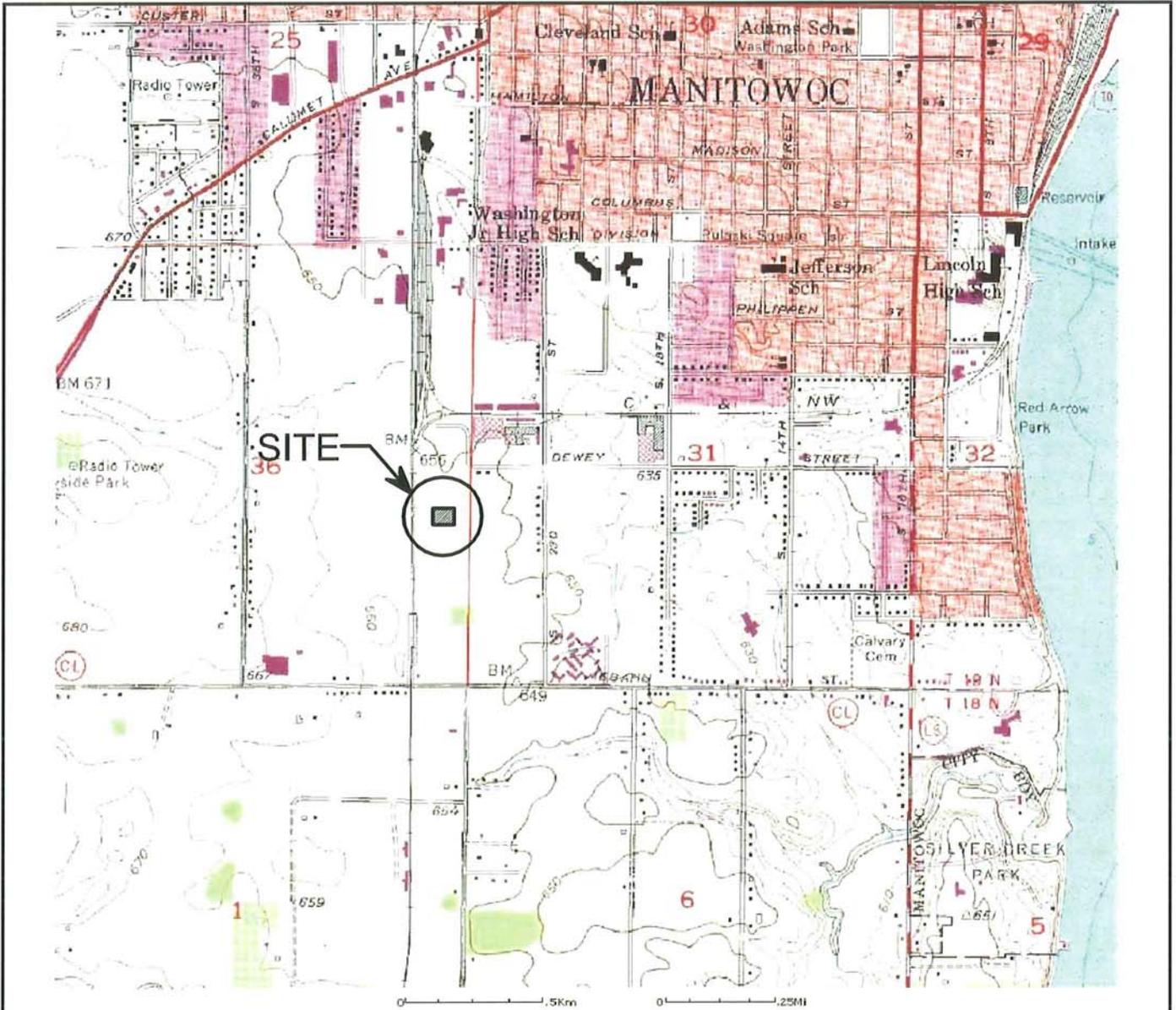


Image courtesy of the U.S. Geological Survey  
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BASE MAP SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE,  
 MANITOWOC, WISCONSIN, PHOTO REVISED 1973.



QUADRANGLE  
 LOCATION



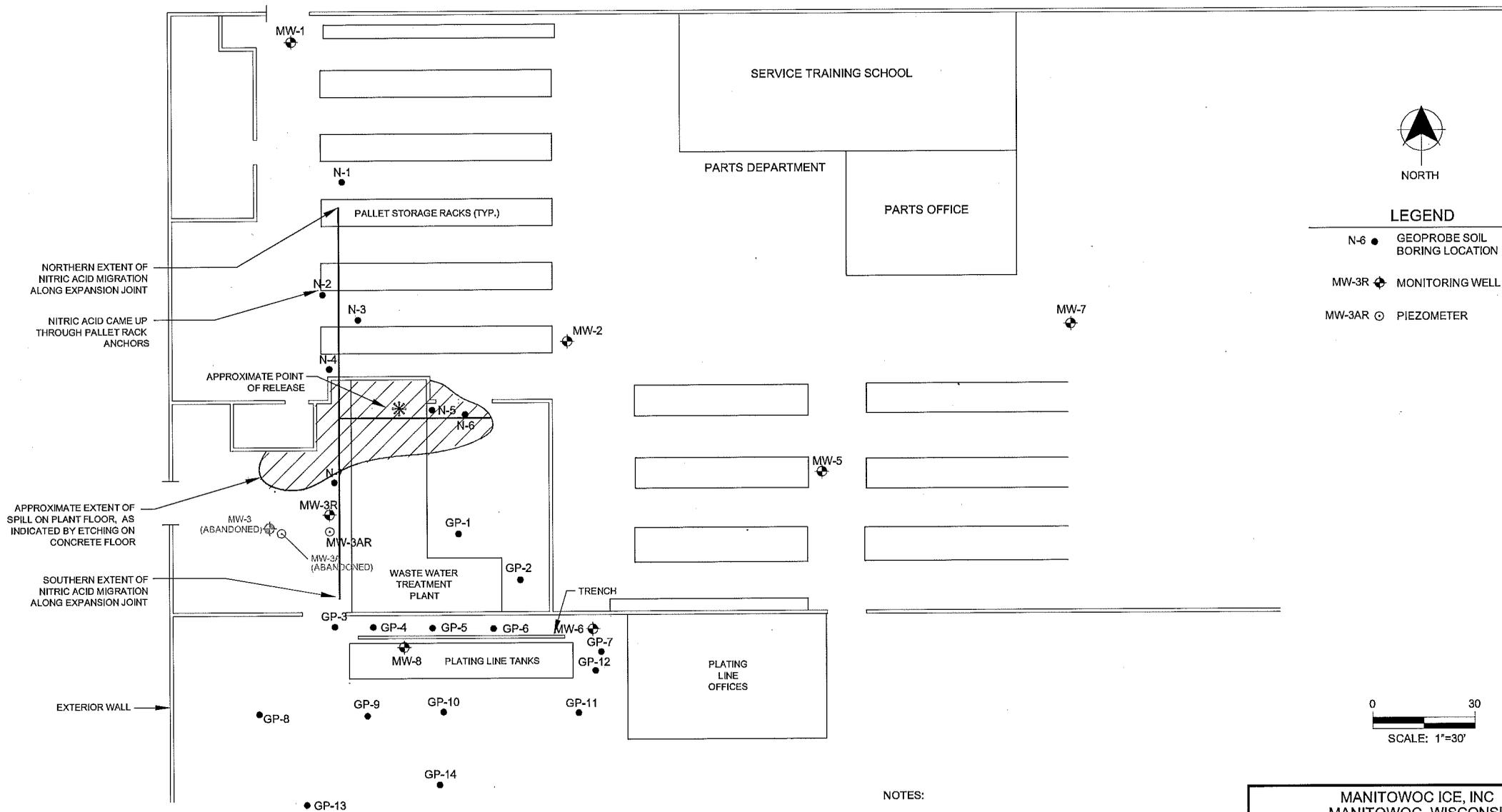
NORTH



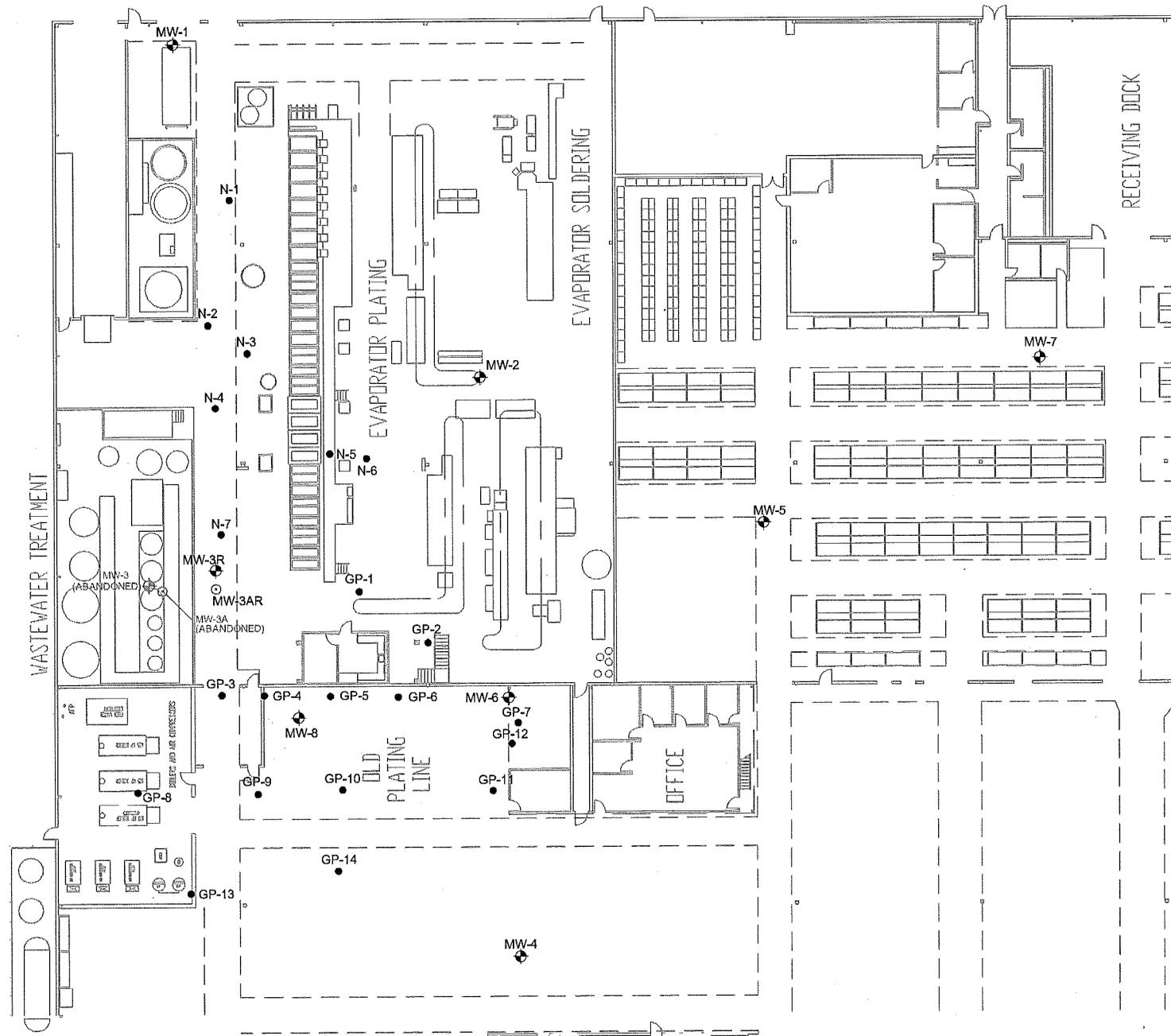
SCALE IN FEET

MANITOWOC ICE, INC MANITOWOC, WISCONSIN	
FIGURE 1 SITE LOCATION MAP	
DATE: JULY 2008	 6737 W. WASHINGTON STREET, SUITE 2265 MILWAUKEE, WISCONSIN 53225 PHONE: 414.831.4100 FAX: 414.831.4101
JOB NO.: 25688777	
CHECKED BY: KDM	
APPROVED BY: KDM	

P:\GEO\25688777 Mani\ewoc\c\delivered\BLES\July 2008\Figure 2a - Site Map.dwg User:renee\_1link Aug 11, 2008 12:41pm



<b>MANITOWOC ICE, INC</b> <b>MANITOWOC, WISCONSIN</b>	
<b>FIGURE 2a</b> <b>SITE MAP</b>	
DATE: JULY 2008	 <small>6737 W. WASHINGTON STREET          MILWAUKEE, WISCONSIN 53214          PHONE: 414.831.4100          FAX: 414.831.4101</small>
JOB NO.: 25688777	
CHECKED BY: HR	
APPROVED BY: KDM	

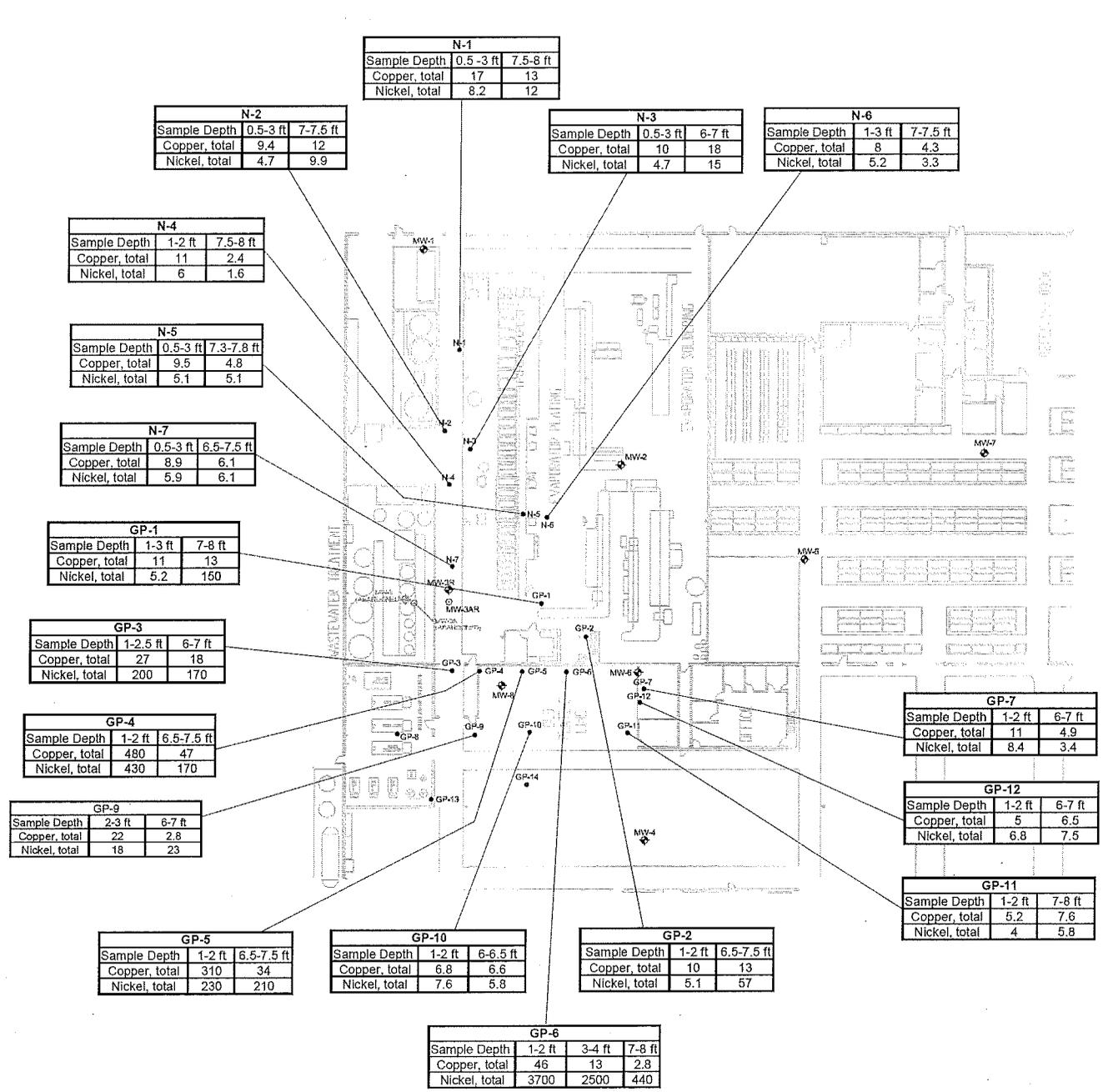


**LEGEND**

- N-6 ● GEOPROBE SOIL BORING LOCATION
- MW-3R ◈ MONITORING WELL
- MW-3AR ○ PIEZOMETER



MANITOWOC ICE, INC MANITOWOC, WISCONSIN	
FIGURE 2b SITE MAP - BUILDING LAYOUT	
DATE: JULY 2008	6737 W. WASHINGTON STREET MILWAUKEE, WISCONSIN 53214 PHONE: 414.831.4100 FAX: 414.831.4101
JOB NO.: 25688777	
CHECKED BY: HR	
APPROVED BY: KDM	



**LEGEND**

- N-6 ● GEOPROBE SOIL BORING LOCATION
- MW-3R ◈ MONITORING WELL
- MW-3AR ⊙ PIEZOMETER

**NOTES:**

1. SOIL SAMPLES TAKEN IN JUNE, 1996
2. ALL UNITS REPORTED IN mg/kg

	PRG <sup>1</sup>	PRG <sup>2</sup>	SSL <sup>3</sup>
COPPER, TOTAL	3,100	41,000	NS
NICKEL, SOLUBLE SALTS	1,600	20,000	NS

PRG<sup>1</sup> USEPA REGION 9 PRELIMINARY REMEDIATION GOAL FOR DIRECT EXPOSURE PATHWAY-BASED RESIDENTIAL LAND USE (5/20/08)

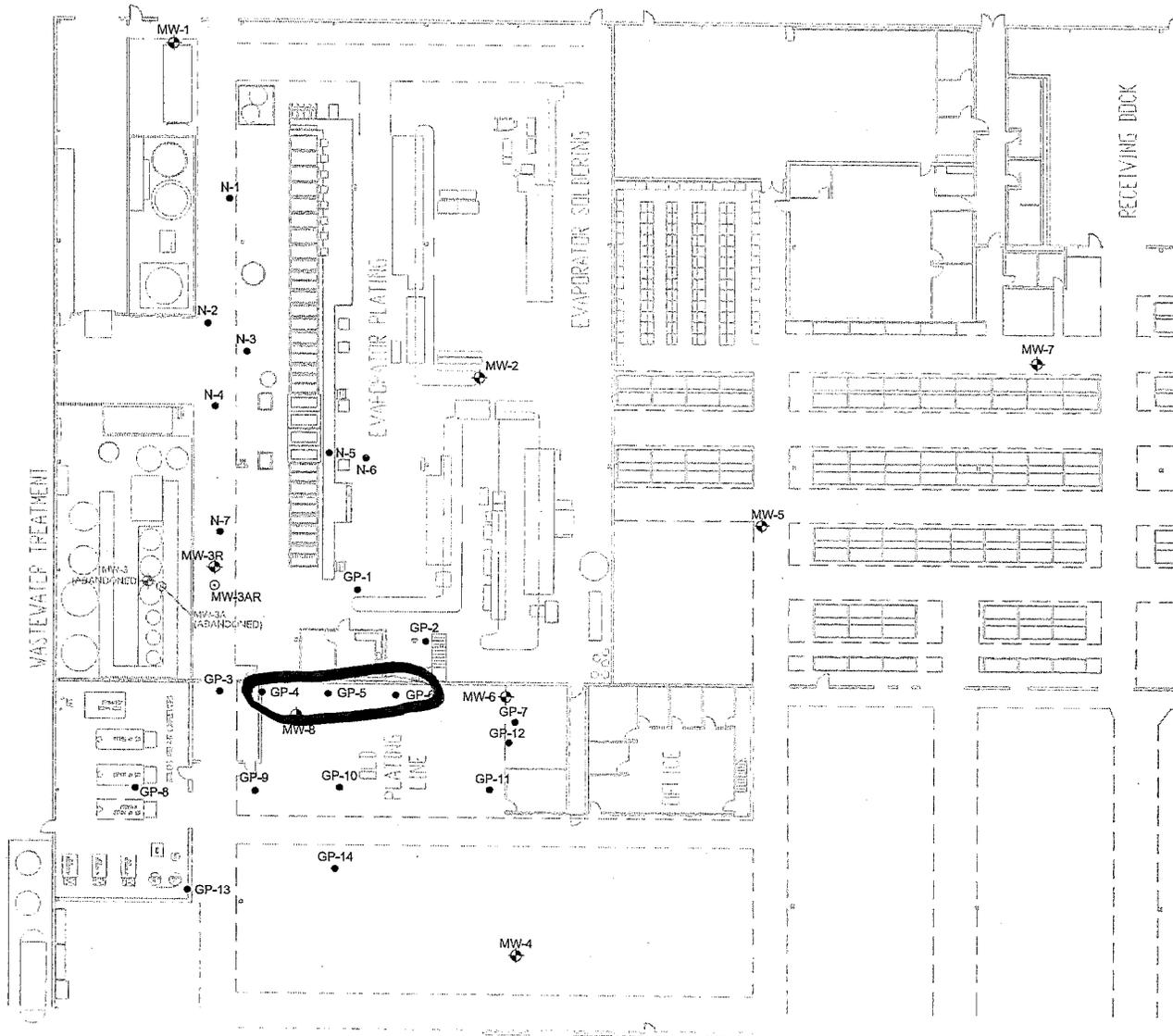
PRG<sup>2</sup> USEPA REGION 9 PRELIMINARY REMEDIATION GOAL FOR DIRECT EXPOSURE PATHWAY-BASED INDUSTRIAL LAND USE (5/20/08)

SSL<sup>3</sup> USEPA SOIL SCREENING LEVEL BASED ON MIGRATION TO GROUNDWATER PATHWAY DAF (DILUTION ATTENUATION FACTOR) OF 20.

NS NO STANDARD

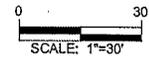


MANITOWOC ICE, INC MANITOWOC, WISCONSIN	
FIGURE 3 SOIL ANALYTICAL DATA	
DATE: JULY 2008	 6737 W. WASHINGTON STREET MILWAUKEE, WISCONSIN 53214 PHONE: 414.631.4100 FAX: 414.831.4101
JOB NO.: 25688777	
CHECKED BY: HR	
APPROVED BY: KDM	



**LEGEND**

- N-6 ● GEOPROBE SOIL BORING LOCATION
- MW-3R ◈ MONITORING WELL
- MW-3AR ○ PIEZOMETER



MANITOWOC ICE, INC MANITOWOC, WISCONSIN	
FIGURE 3B RESIDUAL SOIL CONTAMINATION	
DATE: JULY 2008	 <small>8737 W. WASHINGTON STREET                  MILWAUKEE, WISCONSIN 53214                  PHONE: 414.831.1100                  FAX: 414.831.4101</small>
JOB NO: 25688777	
CHECKED BY: HR	
APPROVED BY: KDM	



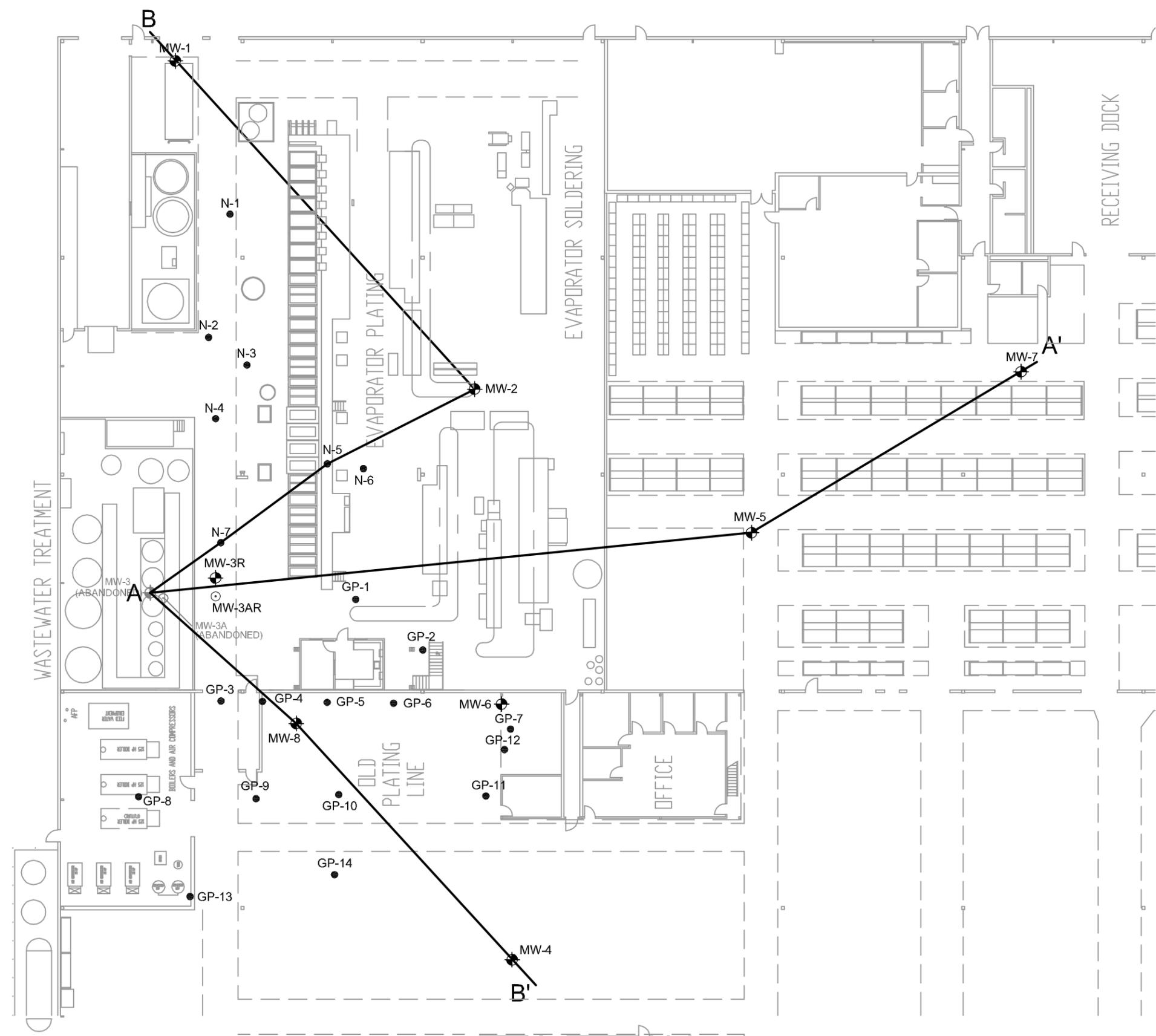
NORTH

LEGEND

- MW-3R  MONITORING WELL
- MW-3AR  PIEZOMETER
- N-6  GEOPROBE SOIL BORING
- A—A'  CROSS SECTION LINE



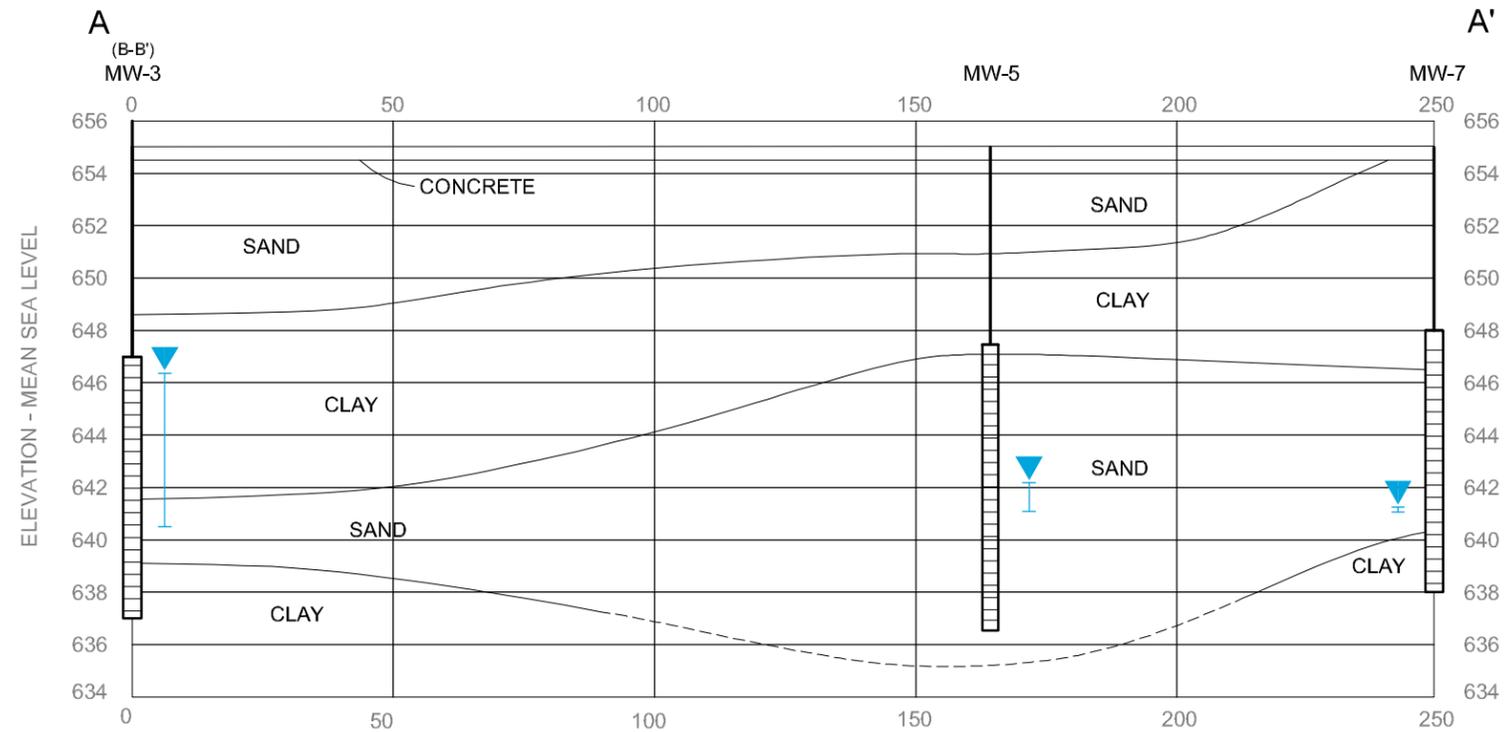
SCALE: 1"=30'



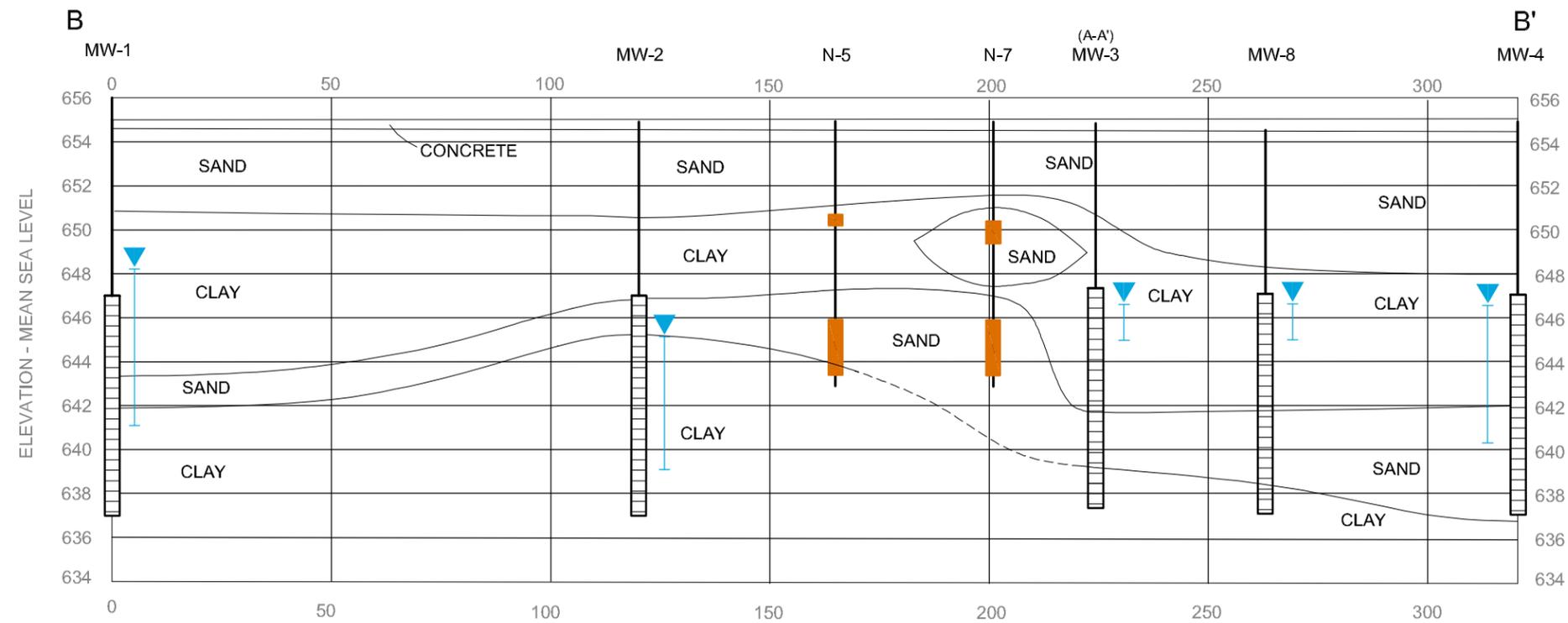
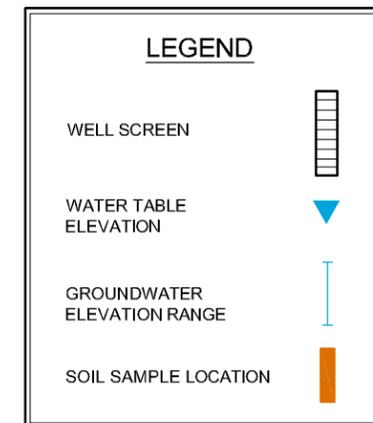
NOTE: FLOOR ELEVATION IS 655.0.

MANITOWOC ICE, INC MANITOWOC, WISCONSIN	
FIGURE 4 CROSS SECTION LOCATIONS	
DATE: JULY 2008	 6737 W. WASHINGTON STREET MILWAUKEE, WISCONSIN 53214 PHONE: 414.831.4100 FAX: 414.831.4101
JOB NO.: 25688777	
CHECKED BY: HR	
APPROVED BY: KDM	

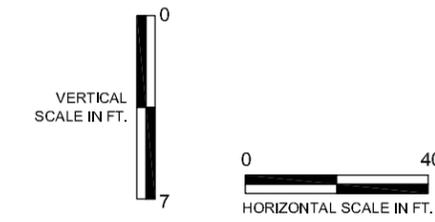
P:\GED\25688777 Manitowoc Ice\DELIVERABLES\July 2008\Figure 5 - Cross Sections A and B.dwg User:renee\_flink Aug 12, 2008 - 1:28pm



SUBSURFACE CROSS SECTION A-A'



SUBSURFACE CROSS SECTION B-B'



<b>MANITOWOC ICE, INC</b> <b>MANITOWOC, WISCONSIN</b>	
<b>FIGURE 5</b> <b>CROSS SECTIONS A-A' AND B-B'</b>	
DATE: JULY 2008	 6737 W. WASHINGTON STREET MILWAUKEE, WISCONSIN 53214 PHONE: 414.831.4100 FAX: 414.831.4101
JOB NO.: 25688777	
CHECKED BY: HR	
APPROVED BY: KDM	



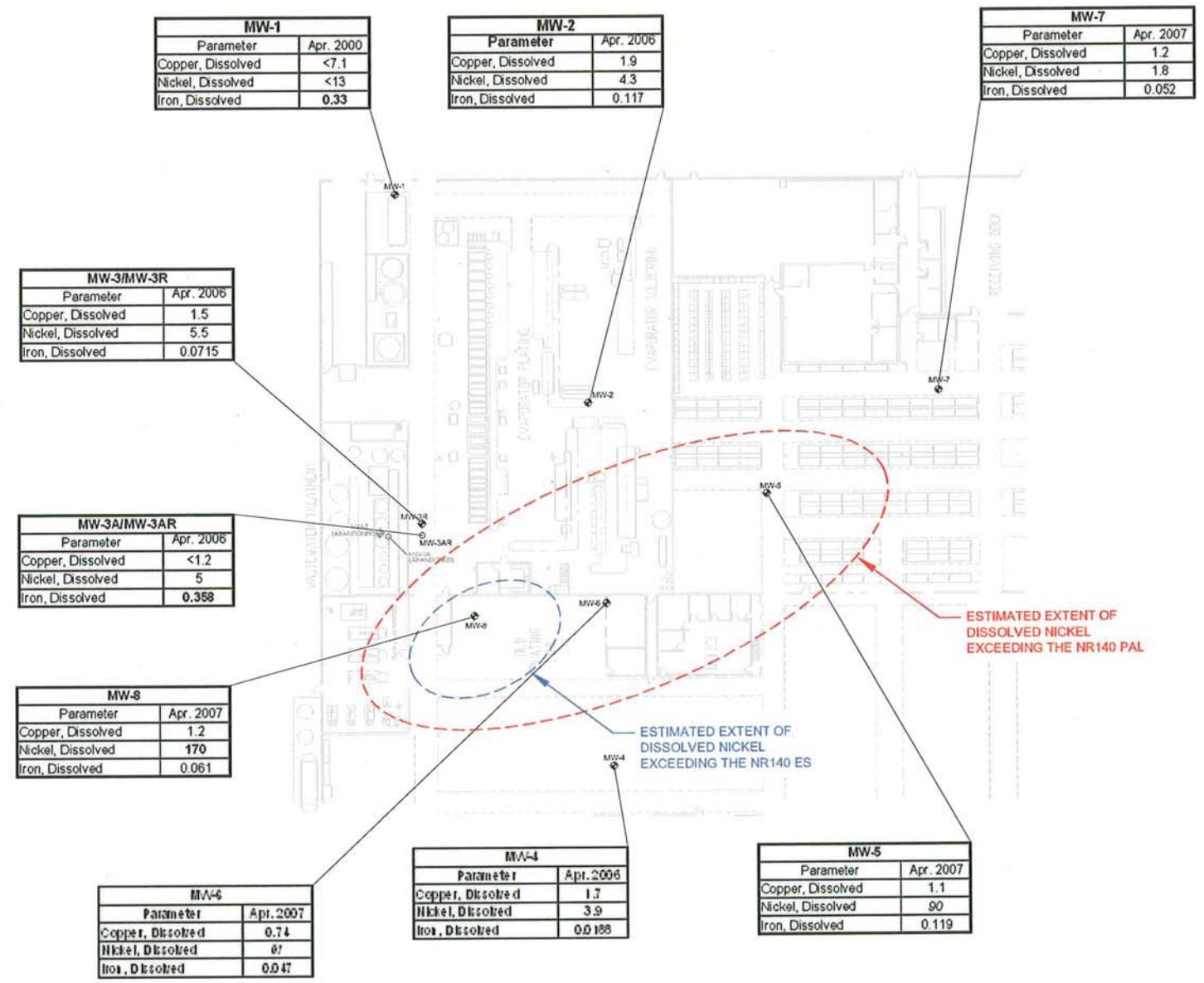
**LEGEND**

- MW-3R MONITORING WELL
- MW-3AR PIEZOMETER

- NOTES:
1. SOIL SAMPLE DATE REFLECTS LAST SAMPLE TAKEN AT THIS WELL.
  2. ALL UNITS REPORTED IN µg/L.

Parameter	Unit	Limits	
		PAL	ES
Copper, Dissolved	µg/L	130	1,300
Nickel, Dissolved	µg/L	20	100
Iron, Dissolved	mg/L	0.15	0.3

- 90 VALUE EXCEEDS PAL
- 108 VALUE EXCEEDS ES
- NS NOT ANALYZED
- < LESS THAN DETECTION LIMIT



MW-1	
Parameter	Apr. 2000
Copper, Dissolved	<7.1
Nickel, Dissolved	<13
Iron, Dissolved	0.33

MW-2	
Parameter	Apr. 2006
Copper, Dissolved	1.9
Nickel, Dissolved	4.3
Iron, Dissolved	0.117

MW-7	
Parameter	Apr. 2007
Copper, Dissolved	1.2
Nickel, Dissolved	1.8
Iron, Dissolved	0.052

MW-3/MW-3R	
Parameter	Apr. 2006
Copper, Dissolved	1.5
Nickel, Dissolved	5.5
Iron, Dissolved	0.0715

MW-3A/MW-3AR	
Parameter	Apr. 2006
Copper, Dissolved	<1.2
Nickel, Dissolved	5
Iron, Dissolved	0.358

MW-8	
Parameter	Apr. 2007
Copper, Dissolved	1.2
Nickel, Dissolved	170
Iron, Dissolved	0.061

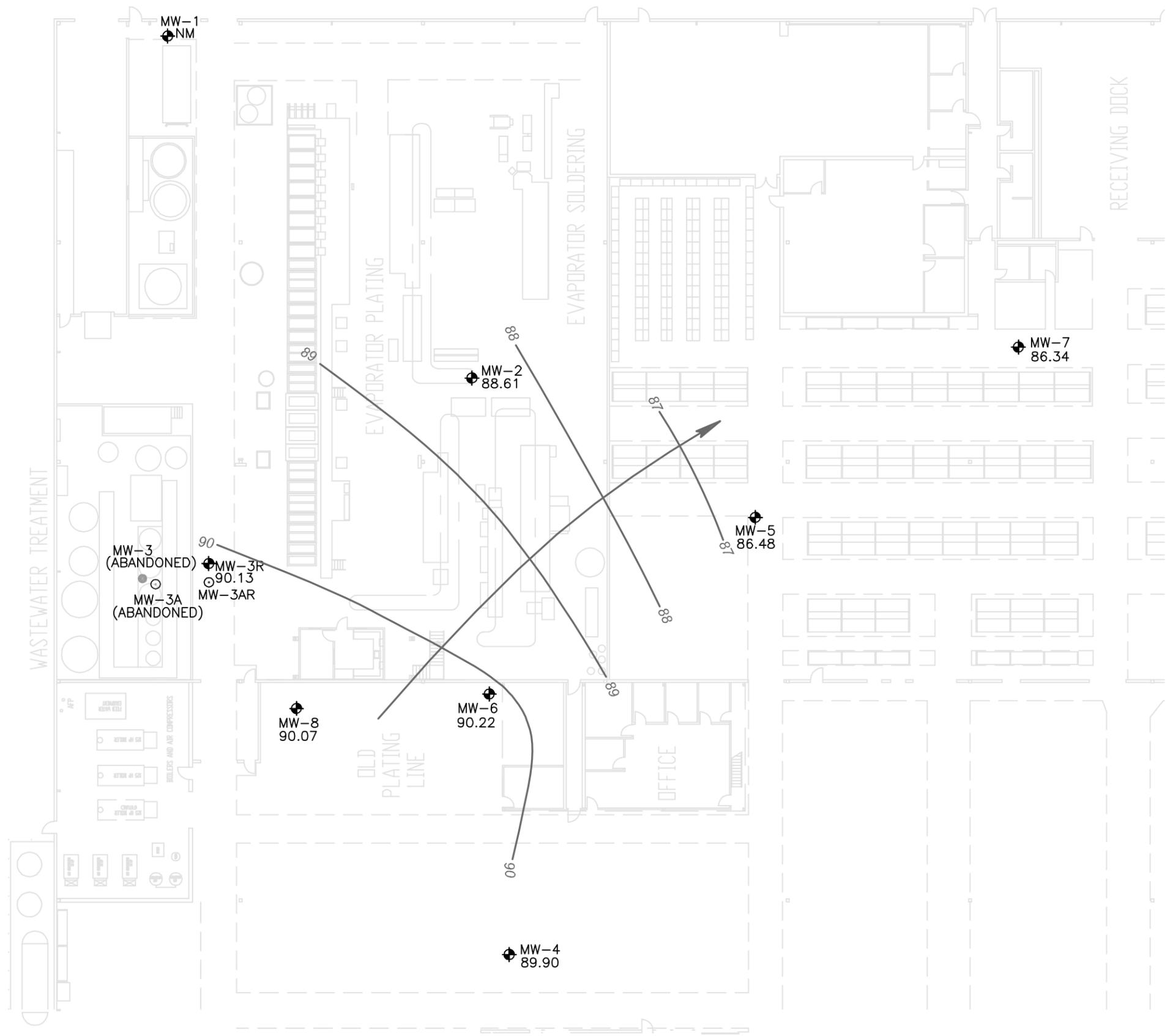
MW-6	
Parameter	Apr. 2007
Copper, Dissolved	0.74
Nickel, Dissolved	07
Iron, Dissolved	0.047

MW-4	
Parameter	Apr. 2006
Copper, Dissolved	1.7
Nickel, Dissolved	3.9
Iron, Dissolved	0.0188

MW-5	
Parameter	Apr. 2007
Copper, Dissolved	1.1
Nickel, Dissolved	90
Iron, Dissolved	0.119

MANITOWOC ICE, INC MANITOWOC, WISCONSIN	
FIGURE 6 GROUNDWATER ANALYTICAL RESULTS	
DATE: JULY 2008	6737 W. WASHINGTON STREET MILWAUKEE, WISCONSIN 53214 PHONE: 414.831.4100 FAX: 414.831.4101
JOB NO.: 25688777	
CHECKED BY: HR	
APPROVED BY: KDM	

P:\GED\25688777 Manitowoc Ice\DELIVERABLES\July 2008\Figure 7 GW Elev April 2006.dwg User:renee\_ffink Aug 11, 2008 - 2:29pm



**LEGEND**

- MW-3R MONITORING WELL
- 86.34 GROUNDWATER ELEVATION
- 89 GROUNDWATER ELEVATION CONTOUR (FT.)
- GROUNDWATER FLOW DIRECTION

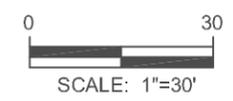
NOTES: GROUNDWATER ELEVATIONS MEASURED IN APRIL 2006.

MW-3 AND MW-3A ABANDONED IN AUGUST 1999.

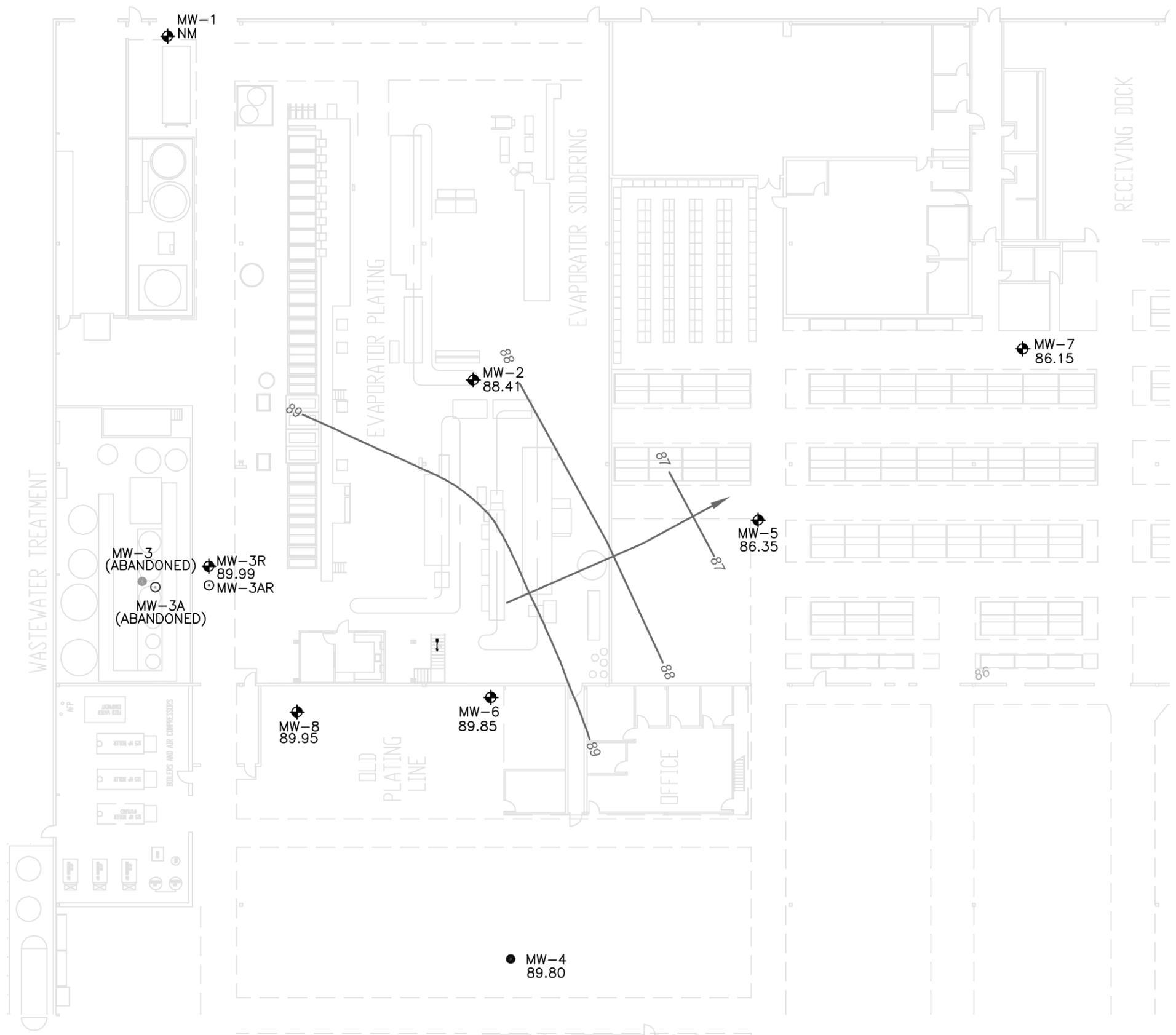
MW-3R AND MW-3AR INSTALLED IN AUGUST 1999.

MW-7 AND MW-8 INSTALLED IN APRIL 2003.

MW-1 HAS EQUIPMENT COVERING THE WELL COVER AND CANNOT BE SAMPLED.



<b>MANITOWOC ICE, INC MANITOWOC, WISCONSIN</b>	
<b>FIGURE 7 GROUNDWATER ELEVATIONS - APRIL 2006</b>	
DATE: JULY 2008	 <small>6737 W. WASHINGTON STREET, SUITE 2265 MILWAUKEE, WISCONSIN 53225 PHONE: 414.831.4100 FAX: 414.831.4101</small>
JOB NO.: 25688777	
CHECKED BY: HR	
APPROVED BY: KDM	



**LEGEND**

- MW-3R MONITORING WELL
- 86.34 GROUNDWATER ELEVATION
- 89 GROUNDWATER ELEVATION CONTOUR (FT.)
- GROUNDWATER FLOW DIRECTION

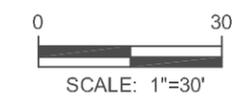
NOTES: GROUNDWATER ELEVATIONS MEASURED IN OCTOBER 2006.

MW-3 AND MW-3A ABANDONED IN AUGUST 1999.

MW-3R AND MW-3AR INSTALLED IN AUGUST 1999.

MW-7 AND MW-8 INSTALLED IN APRIL 2003.

MW-1 HAS EQUIPMENT COVERING THE WELL COVER AND CANNOT BE SAMPLED.



<b>MANITOWOC ICE, INC</b> <b>MANITOWOC, WISCONSIN</b>	
<b>FIGURE 8</b> <b>GROUNDWATER ELEVATIONS - OCTOBER 2006</b>	
DATE: JULY 2008	 6737 W. WASHINGTON STREET, SUITE 2265 MILWAUKEE, WISCONSIN 53225 PHONE: 414.831.4100 FAX: 414.831.4101
JOB NO.: 25688777	
CHECKED BY: HR	
APPROVED BY: KDM	

**Table 1**  
**Soil Analytical Data**  
 Manitoowoc Ice, Inc.  
 Manitoowoc, Wisconsin

Sample Number	Depth (ft BGS)	Sample Date	Copper (mg/L)	Cyanide	Nickel	Nitrogen, Ammonia	Nitrogen, NO <sub>2</sub> , NO <sub>3</sub>	Total Kjeldahl Nitrogen	Organic Nitrogen	Total Nitrogen	Total Organic Carbon	Solids (%)
GP-1	1'-3'	2/13/03	11	ND	5.2	ND	11	85	85	96	1,600	95
	7'-8'		13	ND	150	ND	18	100	100	118	1,400	93.1
GP-2	1'-2'	2/13/03	10	ND	5.1	2.5	19	65	62.5	84	10,000	97.4
	6.5'-7.5'		13	ND	57	3.2	47	220	217.8	267	1,800	87.5
GP-3	1'-2.5'	2/13/03	27	ND	200	410	38	480	70	587	4,500	93.1
	6'-7'		18	ND	170	330	70	360	30	690	3,300	90.3
GP-4	1'-2'	2/13/03	480	230	430	490	52	610	120	662	ND	90.3
	6.5'-7.5'		47	3.0	170	250	42	430	180	472	5,700	90.9
GP-5	1'-2'	2/13/03	310	100	230	260	50	440	180	490	1,800	91.9
	6.5'-7.5'		34	0.64	210	310	6.9	330	20	640	710	85.2
GP-6	1'-2'	2/13/03	46	0.27	3,700	730	630	1,100	370	1,830	1,500	88.6
	3'-4'		13	ND	2,500	700	10	820	120	830	590	90.5
	7'-8'		2.8	ND	440	440	13	190	--	203	330	92.5
GP-7	1'-2'	2/13/03	11	ND	8.4	8.4	4.9	70	64	74.9	1,500	90.8
	6'-7'		4.9	ND	3.4	3.4	8.6	ND	ND	8.6	1,900	92.1
GP-8												
GP-9	2'-3'	2/13/03	22	ND	18	18	36	1,500	1,495	1,536	9,500	78.9
	6'-7'		2.8	ND	23	23	10	36	23	46	310	93.6
GP-10	1'-2'	2/13/03	6.8	ND	7.6	7.6	11	46	43.5	57	1,400	95.9
	6'-6.5		6.6	ND	5.8	5.8	7.2	82	79.5	89.2	760	95.3
GP-11	1'-2'	2/13/03	5.2	ND	4.0	4.0	2.6	42	39.4	44.6	2,000	93.8
	7'-8'		7.6	ND	5.8	5.8	7.4	20	16.7	27.4	280	94.2
GP-12	1'-2'	2/13/03	5.0	ND	6.8	6.8	ND	22	19.4	22	460	93
	6'-7'		6.5	ND	7.5	7.5	2.4	520	390	522.4	340	88
GP-13												
GP-14												
US EPA Rgion 9 Direct Contact			no standard	20,000	20,000	no standard	no standard	no standard	no standard	no standard	no standard	NA
NR 720 Residual Contaminant Limits												
NR 746.06 (2)(b) Soil Screening Limits												
NR 746.06 (2)(c) Direct Contact Limits												

**Table 2**  
**Groundwater Analytical Results**  
 Manitowoc Ice, Inc.  
 Manitowoc, Wisconsin

MW-1

Parameter	Units	Jan.1997	Apr. 1997	Oct.1997	Apr. 1998	Apr. 1999	Oct. 1999	Apr. 2000	PAL	ES
<i>Public Health Groundwater Quality Standard Constituents</i>										
Copper, total	µg/L	18	10	3.3	<4.8>	47	24	45	NS	NS
Copper, dissolved	µg/L	<1.7	9.5	<2.0	<2.0	<2.2	4.5	<7.1	130	1,300
Cyanide, total	mg/L	<0.0046	0.001	0.001	<0.003>	<0.001	<0.001	<0.001	0.04	0.2
Nickel, total	µg/L	11	<9.1	11	<8.7	<b>35</b>	14	<b>44</b>	NS	NS
Nickel, dissolved	µg/L	<1.8>	<9.1	<8.7	<8.7	<8.7	<9.7	<13	20	100
Nitrogen , NO <sub>2</sub> +NO <sub>3</sub> as N	mg/L	<b>4.8</b>	<b>6.2</b>	<b>4.9</b>	<b>6.7</b>	<b>9.2</b>	<b>9.5</b>	<b>8.7</b>	2	10
<i>Public Welfare Groundwater Quality Standard Constituents</i>										
Iron, total	mg/L	<b>5.6</b>	<b>7.28</b>	--	<b>3.4</b>	<b>30</b>	<b>9.4</b>	<b>28</b>	NS	NS
Iron, dissolved	mg/L	--	--	--	--	<0.0089	0.058	<b>0.33</b>	0.15	0.3
<i>Indicator Parameter Groundwater Quality Standard Constituents</i>										
Alkalinity, total as CaCO <sub>3</sub>	mg/L	330	409	--	372	377	326	291	100 <sup>1</sup>	--
Hardness, total as CaCO <sub>3</sub>	mg/L	580	739	--	664	756	355	767	100 <sup>1</sup>	--
Calcium, total	mg/L	140	170	--	157	303	142	307	25 <sup>1</sup>	--
Magnesium, total	mg/L	57	77	--	66	135	60	121	25 <sup>1</sup>	--
Nitrogen, ammonia as N	mg/L	0.063	<0.3	<0.3	<0.11	<0.079	<0.079	<0.12	2 <sup>1</sup>	--
Nitrogen, Kjeldahl as N	mg/L	0.45	<0.4	<0.4	<0.32>	<0.5	0.97	1	2 <sup>1</sup>	--
Organic Nitrogen	mg/L	0.387	--	--	<0.21	--	<0.891	<0.88	--	--
Nitrogen, total as N	mg/L	5.25	6.2	4.9	7.02	9.2	10.47	9.7	5 <sup>1</sup>	--
Total Dissolved Solids	mg/L	1,000	1,190	1,120	1,240	1,100	1,000	892	200 <sup>1</sup>	--
Total Organic Carbon	mg/L	--	--	--	--	4.9	12	1,870	--	--
pH - field	pH Units	7.5	--	6.52	6.32	6.91	7.09	6.57	±1 <sup>1</sup>	--
Temp. - field	°F	66.4	--	36.1	62.2	64.4	64.4	57.2	10 <sup>1</sup>	--
Specific Cond.- field	µmhos/cm	1,610	--	2,100	2,160	--	1,718	1,567	200 <sup>1</sup>	--
Dissolved Oxygen	mg/L	--	--	--	--	2.1	2.9	2.7	--	--
Oxidation Reduction Potential	mV	--	--	--	--	93	98	101	--	--

< Less than Limit of Detection (LOD), or Method Detection Limit (MDL).

<> or J Less than Limit of Quantitation (LOQ) or Practical Quantitation Limit (PQL), but greater than LOD or MDL

Concentrations exceeding the Enforcement Standard (ES) are in **BOLD**, and concentrations exceeding the Preventive Action Limit (PAL) are in *italics*.

NS = No Standard

<sup>1</sup> Minimum increase over background condition allowed before exceeding the PAL per Wisconsin Administrative Code NR 141.20 requirements.

Site specific PALs have not been established.

Organic nitrogen is the difference between TKN and ammonia.

Total nitrogen is the sum of TKN and NO<sub>2</sub> + NO<sub>3</sub>

\*Ammonia was detected at a higher value than TKN. The laboratory reports these results as anomalous, and may be attributed to sample dilution

**Table 2**  
**Groundwater Analytical Results**  
 Manitowoc Ice, Inc.  
 Manitowoc, Wisconsin

MW-2

Parameter	Units	Jan. 1997	Apr. 1997	Oct. 1997	Apr. 1998	Oct. 1998	Apr. 1999	Oct. 1999	Apr. 2000	Oct. 2000	Apr. 2001	Oct. 2001	Apr. 2002	Oct. 2002	Apr. 2003	Oct. 2003	Apr. 2004	Oct. 2004	Apr. 2005	Oct. 2005	Apr. 2006	Oct. 2006	PAL	ES	
<b>Public Health Groundwater Quality Standard Constituents</b>																									
Copper, total	µg/L	6.4	21	20	110	60	47	33	58	24	30	23	32 J	23	63	29	4.5	14	46	22	8.3	--	NS	NS	
Copper, dissolved	µg/L	<1.7	<2.0	<2.0	<2.0	5.2	3.5	9.9	<7.1	<7.1	<5.2	<5.2	<20	27	<4	<3.9>	1.5	5.9	1	1	1.9	--	130	1,300	
Cyanide, total	mg/L	<0.0046	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	0.003 J	0.004	<0.015	<0.015	<0.0016	<0.0037	<0.0037	<0.0037	<0.005	--	0.04	0.2	
Nickel, total	µg/L	6.6	18	<8.7	71	56	31	24	48	14	48	14	<20	16	39	14	7.1	7.8	36	17	8.9	--	NS	NS	
Nickel, dissolved	µg/L	2.9	<9.1	<8.7	<8.7	15	9.7	<8.7	<13	<13	<13	<13	<20	50	2.1	3.3	<2.7	<4.4	<4.4	6.5	4.3	--	20	100	
Nitrogen, NO <sub>2</sub> +NO <sub>3</sub> as N	mg/L	<0.023	<0.01	<0.01	<0.004	<0.004	<0.0046	<0.14	<0.069	<0.069	<0.11	<0.11	<0.023	<0.050	<0.075	<0.10	<0.063	<0.063	<0.061	<0.061	<0.02	--	2	10	
<b>Public Welfare Groundwater Quality Standard Constituents</b>																									
Iron, total	mg/L	2.7	15	--	75	34	25	15	33	9.9	18	15	11	11	34	6.3	1.5	0.65		1.2	0.372	--	NS	NS	
Iron, dissolved	mg/L	--	--	--	--	--	0.017	0.027	0.2	0.37	0.31	0.12	0.24 J	0.5	0.17	0.036	<0.023	<0.018	0.085	0.014	0.117	--	0.15	0.3	
<b>Indicator Parameter Groundwater Quality Standard Constituents</b>																									
Alkalinity, total as CaCO <sub>3</sub>	mg/L	340	436	--	400	367	377	316	296	394	367	395	363	360	340	340	370	370	380	340	347	--	100 <sup>1</sup>	--	
Hardness, total as CaCO <sub>3</sub>	mg/L	750	874	--	2,780	1,490	803	610	944	611	646	590	1,000	870	1,600	860	740	680	780	690	649	--	100 <sup>1</sup>	--	
Calcium, total	mg/L	180	177	--	641	340	322	244	189	245	259	236	224	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--	
Magnesium, total	mg/L	74	105	--	287	155	149	113	162	116	119	103	108	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--	
Nitrogen, ammonia as N	mg/L	0.072	<0.3	<0.3	<0.11	<0.11	<0.079	<0.079	<0.12	<0.12	<0.21	<0.21	0.48 J	--	--	--	--	--	--	--	--	--	2 <sup>1</sup>	--	
Nitrogen, Kjeldahl as N	mg/L	0.6	<0.4	0.4	0.33	0.24	0.93	0.87	0.8	<0.61	0.65	0.38	<0.32	--	--	--	--	--	--	--	--	--	2 <sup>1</sup>	--	
Organic Nitrogen	mg/L	0.528	--	<0.1	<0.22	<0.13	<0.851	<0.791	<0.68	--	<0.44	<0.17	--	--	--	--	--	--	--	--	--	--	--	--	
Nitrogen, total as N	mg/L	0.6	--	0.4	0.33	0.24	0.93	0.87	0.8	--	0.65	0.38	<0.32	--	--	--	--	--	--	--	--	--	5 <sup>1</sup>	--	
Total Dissolved Solids	mg/L	920	918	844	906	776	914	916	842	880	18	808	900	850	860	860	1800	780	860	820	934	--	200 <sup>1</sup>	--	
Total Organic Carbon	mg/L	--	--	--	--	--	4.9	6.4	1,760	3.7	37	59	2.4	--	--	--	--	--	--	--	--	--	--	--	
pH - field	pH Units	7.34	--	6.63	6.67	7.53	6.73	6.8	6.81	6.95	6.73	7.11	6.75	7.11	6.89	7.05	7.02	7.06	7.05	7.12	7.11	--	±1 <sup>1</sup>	--	
Temp. - field	°F	67.6	--	43.3	63.5	66.2	66.2	62.6	64.4	68	62.6	68	68	68	66	68	66	66	66	66	64	65	--	10 <sup>1</sup>	--
Specific Cond. - field	µmhos/c	1,240	--	1,410	1,321	1,389	--	1,417	1,463	1,371	1,557	1,438	1,350	1,439	1,490	1,483	1,254	1,150	1,261	1,120	1,306	--	200 <sup>1</sup>	--	
Dissolved Oxygen	mg/L	--	--	--	--	--	2.6	2.8	2.4	2.5	2.1	3.8	2.5	2.8	3.1	2.5	2.4	2.5	2.8	2.8	3.1	--	--	--	
Oxidation Reduction Potential	mV	--	--	--	--	--	94	97	99	18.5	5.1	4	-20.8	-8.8	-15.2	142	121	109	113	52	128	--	--	--	

< Less than Limit of Detection (LOD), or Method Detection Limit (MDL).

<> or J Less than Limit of Quantitation (LOQ) or Practical Quantitation Limit (PQL), but greater than LOD or MDL

Concentrations exceeding the Enforcement Standard (ES) are in **BOLD**, and concentrations exceeding the Preventive Action Limit (PAL) are in *italics*.

NS = No Standard

<sup>1</sup> Minimum increase over background condition allowed before exceeding the PAL per Wisconsin Administrative Code NR 141.20 requirements.

Site specific PALs have not been established.

Organic nitrogen is the difference between TKN and ammonia.

Total nitrogen is the sum of TKN and NO<sub>2</sub> + NO<sub>3</sub>

**Table 2**  
**Groundwater Analytical Results**  
 Manitowoc Ice, Inc.  
 Manitowoc, Wisconsin

MW-3/MW-3R

Parameter	Units	Jan. 1997	Apr. 1997	Oct. 1997	Apr. 1998	Oct. 1998	Apr. 1999	Oct. 1999	Apr. 2000	Oct. 2000	Apr. 2001	Oct. 2001	Apr. 2002	Oct. 2002	Apr. 2003	Oct. 2003	Apr. 2004	Oct. 2004	Apr. 2005	Oct. 2005	Apr. 2006	Oct. 2006	PAL	ES
<b>Public Health Groundwater Quality Standard Constituents</b>																								
Copper, total	µg/L	21	33	20	20	39	24	54	57	33	31	41	30 J	18	58	17	4.4	7.6	6.5	8.8	6.7	--	NS	NS
Copper, dissolved	µg/L	<1.7	<2.0	2.4	<2.0	<2.0	<2.0	11	<7.1	9.6	<5.2	<5.2	<20	3	<4	<4	<1.2	0.75	1.4	1.2	1.5	--	130	1,300
Cyanide, total	mg/L	<0.0046	<0.001	<0.001	<0.001>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.014	<0.0014	<0.015	<0.015	<0.0016	<0.0037	<0.0037	<0.0037	<0.005	--	0.04	0.2
Nickel, total	µg/L	12	12	12	<8.7	20	22	15	32	17	16	23	<20	7.9	26	8.9	5.5	7.0	5.1	7.7	4.0	--	NS	NS
Nickel, dissolved	µg/L	3.3	<9.1	<8.7	<8.7	<8.7	62	<8.7	18	15	<13	<13	<20	2.9	7.3	3.1	2.9	5.1	<4.4	5.5	5.5	--	20	100
Nitrogen, NO <sub>2</sub> +NO <sub>3</sub> as N	mg/L	<0.065>	0.11	<0.01	0.69	0.045	2.3	<0.14	<0.069	<0.0069	<0.11	<0.11	<0.023	0.08	<0.075	<0.10	<0.063	<0.063	0.24	<0.061	0.06	--	2	10
<b>Public Welfare Groundwater Quality Standard Constituents</b>																								
Iron, total	mg/L	5.9	13	--	22	42	31	10	16	5.5	7.5	7	11	3.2	14	4.5	1.3	1.5	--	2.1	2.35	--	NS	NS
Iron, dissolved	mg/L	--	--	--	--	--	0.14	0.11	0.25	0.36	0.3	0.29	0.16 J	0.34	0.17	0.42	0.05	0.99	0.031	0.93	0.0715	--	0.15	0.3
<b>Indicator Parameter Groundwater Quality Standard Constituents</b>																								
Alkalinity, total as CaCO <sub>3</sub>	mg/L	340	426	--	415	383	401	459	441	627	444	445	454	400	460	400	440	440	440	410	421	--	100 <sup>1</sup>	--
Hardness, total as CaCO <sub>3</sub>	mg/L	1400	1250	--	1210	1570	626	719	937	597	498	540	848	720	890	770	680	600	560	600	552	--	100 <sup>1</sup>	--
Calcium, total	mg/L	300	241	--	270	348	251	288	375	239	200	216	191	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--
Magnesium, total	mg/L	160	156	--	129	170	121	139	168	112	91	90	90	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--
Nitrogen, ammonia as N	mg/L	0.23	<0.3	<0.3	<0.11	<0.11	<0.079	<0.079	<0.12	<0.12	<0.21	<0.21	0.64 J	--	--	--	--	--	--	--	--	--	2 <sup>1</sup>	--
Nitrogen, Kjeldahl as N	mg/L	<0.79>	<0.4	<0.4	<0.31>	<0.24	1	0.82	0.89	<0.61	0.88	0.6	0.51 J	--	--	--	--	--	--	--	--	--	2 <sup>1</sup>	--
Organic Nitrogen	mg/L	0.56>	--	--	<0.20>	<0.13	<0.921	<0.741	<0.77	--	<0.67	<0.39	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, total as N	mg/L	0.85	0.11	<0.4	1	0.045	3.3	0.82	0.89	--	0.88	0.6	0.51 J	--	--	--	--	--	--	--	--	--	5 <sup>1</sup>	--
Total Dissolved Solids	mg/L	2,300	2,140	1,890	1,790	1,600	1,580	1,560	1,400	1,330	1,180	1,170	1,100	1,100	1,100	1,200	1,900	1,000	1,000	980	912	--	200 <sup>1</sup>	--
Total Organic Carbon	mg/L	--	--	--	--	--	4.4	21	4.5	7.9	53	86	3.4	--	--	--	--	--	--	--	--	--	--	--
pH - field	pH nits	6.7	--	6.27	6.42	7.06	7.31	6.74	6.75	6.84	6.91	7.26	7.04	7.1	6.97	6.82	6.9	6.89	6.68	7.04	6.72	--	±1 <sup>1</sup>	--
Temp. - field	°F	64.5	--	50.4	59.9	64.4	64.4	64.4	60.8	68	64.4	68	66.2	66.2	64	66	66	66	66	66	63	--	10 <sup>1</sup>	--
Specific Cond. - field	µmhos/c	3,170	--	3,440	2,690	2,300	--	2,700	2,380	2,280	2,110	1,970	1,837	2,040	1,707	2,020	1,573	1,501	1,578	1,340	1,502	--	200 <sup>1</sup>	--
Dissolved Oxygen	mg/L	--	--	--	--	--	2.6	1.9	2.3	2.6	2.2	2.8	3	2.4	3.2	3.0	3.1	3.2	3.3	3.2	3.6	--	--	--
Oxidation Reduction Potential	mV	--	--	--	--	--	50	95	76	32	23	-7.4	-8.3	-23	-14.8	-10.1	-13.2	-14.5	-18.2	-18	-202	--	--	--

< Less than Limit of Detection (LOD), or Method Detection Limit (MDL).

<> or J Less than Limit of Quantitation (LOQ) or Practical Quantitation Limit (PQL), but greater than LOD or MDL

Concentrations exceeding the Enforcement Standard (ES) are in **BOLD**, and concentrations exceeding the Preventive Action Limit (PAL) are in *italics*.

NS = No Standard

<sup>1</sup> Minimum increase over background condition allowed before exceeding the PAL per Wisconsin Administrative Code NR 141.20 requirements.

Site specific PALs have not been established.

Organic nitrogen is the difference between TKN and ammonia.

Total nitrogen is the sum of TKN and NO<sub>2</sub> + NO<sub>3</sub>.

\*Ammonia was detected at a higher value than TKN. The laboratory reports these results as anomalous, and may be attributed to sample dilution

**Table 2**  
**Groundwater Analytical Results**  
 Manitoowoc Ice, Inc.  
 Manitoowoc, Wisconsin

MW-3A/MW-3AR

Parameter	Units	Jan. 1997	Apr.1997	Oct.1997	Apr. 1998	Oct. 1998	Apr. 1999	Oct. 1999	Apr. 2000	Oct. 2000	Apr. 2001	Oct. 2001	Apr. 2002	Oct. 2002	Apr. 2003	Oct. 2003	Apr. 2004	Oct. 2004	Apr. 2005	Oct. 2005	Apr. 2006	Oct. 2006	PAL	ES	
<b>Public Health Groundwater Quality Standard Constituents</b>																									
Copper, total	µg/L	97	56	33	116	300	254	709	311	243	281	150	76	92	100	67	<1.2	14	3.9	28	13.5	--	130	1,300	
Copper, dissolved	µg/L	<1.7	<2.0	<2.0	<2.0	<2.0	8.1	6	<7.1	11	<5.2	6	<20	4	6.3	4.8	2.8	2.4	1.3	0.86	<1.2	--	NS	NS	
Cyanide, total	mg/L	<0.0046	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.014	0.003	<0.015	<0.015	<0.0016	<0.0037	<0.0037	<0.0037	<0.005	--	0.04	0.2	
Nickel, total	µg/L	72	39	<8.7	73	174	394	446	213	171	181	121	76	78	74	49	6.9	10	4.6	20	10.7	--	NS	NS	
Nickel, dissolved	µg/L	<2.5>	<9.1	<8.7	<8.7	<8.7	558	<8.7	38	34	14	<13	<20	5	15	10	3.9	5.6	<4.4	4	5	--	20	100	
Nitrogen, NO <sub>2</sub> +NO <sub>3</sub> as	mg/L	<0.046>	0.01	<0.01	<0.006>	<0.004	2.3	<0.14	<0.069	<0.069	<0.11	<0.11	<0.023	<0.050	<0.075	<0.10	0.26	<0.063	<0.061	<0.061	0.03	--	2	10	
<b>Public Welfare Groundwater Quality Standard Constituents</b>																									
Iron, total	mg/L	55	24	--	67	162	150	376	162	131	144	68	40	45	50	21	0.49	0.72	--	0.95	0.925	--	NS	NS	
Iron, dissolved	mg/L	--	--	--	--	--	0.019	0.057	0.38	0.44	0.47	0.25	0.23 J	0.25	0.29	0.098	0.04	0.3	0.26	0.24	0.358	--	0.15	0.3	
<b>Indicator Parameter Groundwater Quality Standard Constituents</b>																									
Alkalinity, total as mCO <sub>2</sub>	mg/L	400	301	--	268	234	247	193	307	369	448	434	427	410	430	560	430	420	430	400	398	--	100 <sup>1</sup>	--	
Hardness, total as CaCO <sub>3</sub>	mg/L	1,300	733	--	2,010	4,850	2,830	7,260	3,360	3,020	2,900	1,450	1,700	2,600	1,700	1,000	610	580	470	500	521	--	100 <sup>1</sup>	--	
Calcium, total	mg/L	330	163	--	449	1,100	1,130	2,910	1,350	1,210	1,160	581	373	--	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--
Magnesium, total	mg/L	110	79	--	216	510	508	1,280	600	483	513	245	186	--	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--
Nitrogen, ammonia as N	mg/L	0.17	<0.3	<0.3	<0.11	<0.11	0.79	<0.079	0.21	0.25	0.33	0.29	0.96 J	--	--	--	--	--	--	--	--	--	--	2 <sup>1</sup>	--
Nitrogen, Kjeldahl as N	mg/L	<0.31	0.7	1	<0.30>	0.32	3.3	5.4	1.8	1.8	0.88	1.3	1.1 J	--	--	--	--	--	--	--	--	--	--	2 <sup>1</sup>	--
Organic Nitrogen	mg/L	--	<0.4	<0.7	<0.19	<0.21	2.51	<5.321	1.59	1.55	0.55	1.01	0.14	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, total as N	mg/L	<0.10	0.71	1	0.306	0.32	5.6	5.4	1.8	1.8	0.88	1.3	1.1 J	--	--	--	--	--	--	--	--	--	--	5 <sup>1</sup>	--
Total Dissolved Solids	mg/L	280	424	394	394	226	324	624	1,380	4,050	1,480	1,360	1,300	1,200	1,200	1,100	2,000	1,200	1,000	980	950	--	200 <sup>1</sup>	--	
Total Organic Carbon	mg/L	--	--	--	--	--	6.4	17	5.6	8.8	135	94	5	--	--	--	--	--	--	--	--	--	--	--	--
pH - field	pH Units	7.87	--	6.72	6.83	7.87	7.99	7.2	6.8	6.74	6.96	7.03	6.92	6.99	6.91	7.07	7.1	7.13	7.1	7.18	7.28	--	±1 <sup>1</sup>	--	
Temp. - field	°F	61.3	--	41.2	58.6	60.8	60.8	60.8	57.2	62.6	60.8	62.6	60.8	62.6	59	64	64	66	68	64	65	--	10 <sup>1</sup>	--	
Specific Cond. - field	µmhos/c	423	--	499	463	510	--	732	2,200	2,560	2,520	2,220	2,070	2,140	1,970	1,990	1,645	1,492	1,636	1,280	1,661	--	200 <sup>1</sup>	--	
Dissolved Oxygen	mg/L	--	--	--	--	--	1.9	2.1	1.7	2.9	2.4	3.1	3.2	1.8	2.5	3.1	3.3	3.4	3.5	3.6	3.6	--	--	--	
Oxidation Reduction Potential	mV	--	--	--	--	--	66	123	96	10.1	4	-19.9	-27	-25.1	-19.7	96	98	100	103	71	151	--	--	--	

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Total nitrogen is the sum of TKN and NO<sub>2</sub> + NO<sub>3</sub>

\*Ammonia was detected at a higher value than TKN. The laboratory reports these results as anomalous, and may be attributed to sample dilution

**Table 2**  
**Groundwater Analytical Results**  
 Maniwotoc Ice, Inc.  
 Maniwotoc, Wisconsin

MW-4

Parameter	Units	Jan.1997	Apr.1997	Oct.1997	Apr. 1998	Oct. 1998	Apr. 1999	Oct. 1999	Apr. 2000	Oct. 2000	Apr. 2001	Oct. 2001	Apr. 2002	Oct. 2002	Apr. 2003	Oct. 2003	Apr. 2004	Oct. 2004	Apr. 2005	Oct. 2005	Apr. 2006	Oct. 2006	PAL	ES	
<b>Public Health Groundwater Quality Standard Constituents</b>																									
Copper, total	µg/L	22	12	12	44	70	65	34	51	69	68	35	52 J	83	140	97	5.8	25	11	96	15.2	--	NS	NS	
Copper, dissolved	µg/L	<1.7	<2.0	<2.0	<2.0	<2.0	7.3	21	<7.1	8.8	<5.2	<6.7	<20	4.1	<2.3>	<2.9>	1.9	2.8	2.2	1.6	1.7	--	130	1,300	
Cyanide, total	mg/L	<0.0046	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.002	<0.001	<0.001	<0.014	0.007	<0.015	<0.015	<0.0016	<0.0037	<0.0037	<0.0037	<0.005	--	0.04	0.2	
Nickel, total	µg/L	13	<9.1	<8.7	<8.7	<b>107</b>	<i>34</i>	14	39	<i>53</i>	<i>62</i>	<i>23</i>	<i>44</i>	<b>110</b>	<b>170</b>	<i>49</i>	5.4	19	8.6	53	<i>14</i>	--	NS	NS	
Nickel, dissolved	µg/L	<2.2>	<9.1	<8.7	<8.7	<b>23</b>	<8.7	<8.7	18	<i>47</i>	<13	<13	<20	2.2	7.5	2.4	<2.7	<4.4	<4.4	<1.5	3.9	--	20	100	
Nitrogen, NO <sub>2</sub> +NO <sub>3</sub> as N	mg/L	0.095	0.2	0.52	0.27	0.48	0.61	0.57	1.7	1.9	2.3	2.2	2.3	1.9	<i>3.4</i>	1.1	0.37	0.11	<i>4.6</i>	<i>2.4</i>	<i>0.9</i>	--	2	10	
<b>Public Welfare Groundwater Quality Standard Constituents</b>																									
Iron, total	mg/L	7.5	2.36	--	5.1	17	16	4.6	13	11	28	15	19	22	33	11	1.5	2.7		14	4.17	--	NS	NS	
Iron, dissolved	mg/L	--	--	--	--	--	0.093	0.01	<b>0.3</b>	<i>0.2</i>	<b>0.38</b>	<i>0.23</i>	<i>0.20 J</i>	<i>0.37</i>	<b>0.79</b>	<i>0.26</i>	<0.023	<0.018	<0.018	<0.012	0.0188	--	0.15	0.3	
<b>Indicator Parameter Groundwater Quality Standard Constituents</b>																									
Alkalinity, total as CaCO <sub>3</sub>	mg/L	390	422	--	393	362	370	307	289	369	364	376	333	320	290	360	340	330	290	240	267	--	100 <sup>1</sup>	--	
Hardness, total as CaCO <sub>3</sub>	mg/L	660	423	--	669	1,010	705	356	594	584	765	673	1,370	1,300	1,500	1,100	460	520	520	980	768	--	100 <sup>1</sup>	--	
Calcium, total	mg/L	170	105	--	167	252	282	143	238	234	306	270	329	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--	
Magnesium, total	mg/L	58	39	--	61	93	110	52	86	89	123	94	134	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--	
Nitrogen, ammonia as N	mg/L	0.074	<0.3	<0.3	<0.11	1.2	<0.079	<0.079	<0.12	<0.12	<0.21	<0.21	0.30 J	--	--	--	--	--	--	--	--	--	2 <sup>1</sup>	--	
Nitrogen, Kjeldahl as N	mg/L	<0.22>	<0.4	<0.4	<0.24	2.5	<0.5	0.53	0.74	<0.61	0.57	0.44	<0.32	--	--	--	--	--	--	--	--	--	2 <sup>1</sup>	--	
Organic Nitrogen	mg/L	--	--	--	--	1.3	--	0.53	<0.62	--	<0.36	<0.23	--	--	--	--	--	--	--	--	--	--	--	--	
Nitrogen, total as N	mg/L	0.31	0.2	0.52	0.27	2.98	0.61	1.1	2.44	1.9	2.87	2.64	2.3	--	--	--	--	--	--	--	--	--	5 <sup>1</sup>	--	
Total Dissolved Solids	mg/L	780	774	698	780	768	882	746	770	822	752	778	870	710	790	660	1400	640	760	600	662	--	200 <sup>1</sup>	--	
Total Organic Carbon	mg/L	--	--	--	--	--	5.7	17	4.7	6.4	46	68	3.8	--	--	--	--	--	--	--	--	--	--	--	
pH - field	pH Units	7.49	--	6.61	6.49	7.4	6.78	7.01	6.75	6.57	6.56	6.96	6.91	7	6.71	7.18	7.22	7.19	7.18	7.32	7.36	--	±1 <sup>1</sup>	--	
Temp. - field	°F	69.6	--	44.8	63	68	68	66.2	64.4	69.8	66.2	68	68	68	61	68	66	64	66	66	66	66	--	10 <sup>1</sup>	--
Specific Cond. - field	µmhos/cm	1,180	--	1,210	1,162	1,407	--	1,504	1,163	1,285	1,267	1,271	1,301	1,150	1,164	1,170	1,069	978	1,102	1,012	1,147	--	200 <sup>1</sup>	--	
Dissolved Oxygen	mg/L	--	--	--	--	--	2.6	3.8	3.3	3.7	3.1	4.1	3.5	3.9	3.8	2.5	2.7	2.8	2.6	3.1	2.7	--	--	--	
Oxidation Reduction Potential	mV	--	--	--	--	--	83	95	90	1.5	2.5	-17.7	-25.8	-15.1	-26.9	162	148	121	128	123	92	--	--	--	

< Less than Limit of Detection (LOD), or Method Detection Limit (MDL).

<> or J Less than Limit of Quantitation (LOQ) or Practical Quantitation Limit (PQL), but greater than LOD or MDL

Concentrations exceeding the Enforcement Standard (ES) are in **BOLD**, and concentrations exceeding the Preventive Action Limit (PAL) are in *italics*.

NS = No Standard

<sup>1</sup> Minimum increase over background condition allowed before exceeding the PAL per Wisconsin Administrative Code NR 141.20 requirements.

Site specific PALs have not been established.

Organic nitrogen is the difference between TKN and ammonia.

Total nitrogen is the sum of TKN and NO<sub>2</sub> + NO<sub>3</sub>

\*Ammonia was detected at a higher value than TKN. The laboratory reports these results as anomalous, and may be attributed to sample dilution

**Table 2**  
**Groundwater Analytical Results**  
 Manitoowoc Ice, Inc.  
 Manitoowoc, Wisconsin

MW-5

Parameter	Units	Oct. 1998	Apr. 1999	Oct. 1999	Apr. 2000	Oct. 2000	Apr. 2001	Oct. 2001	Apr. 2002	Oct. 2002	Apr. 2003	Oct. 2003	Apr. 2004	Oct. 2004	Apr. 2005	Oct. 2005	Apr. 2006	Oct. 2006	Apr. 2007	PAL	ES
<i>Public Health Groundwater Quality Standard Constituents</i>																					
Copper, total	µg/L	34	56	38	72	43	57	28	50 J	38	62	140	14	8.5	11	56	5	14	29	NS	NS
Copper, dissolved	µg/L	3.8	<2.0	4.5	<7.9	<7.9	<5.2	<5.2	<20	4	<4	<4	<1.2	2.2	1.8	1.7	<1.2	<1.2	1.1	130	1,300
Cyanide, total	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.014	0.003	<0.015	<0.015	<0.0016	<0.0037	<0.0037	<0.0037	<0.005	<0.005	0.01	0.04	0.2
Nickel, total	µg/L	41	34	27	53	56	52	104	111	130	71	120	110	130	160	150	105	123	108	NS	NS
Nickel, dissolved	µg/L	24	17	27	23	15	27	96	100	110	57	71	100	130	180	140	112	121	90	20	100
Nitrogen, NO <sub>2</sub> +NO <sub>3</sub> as N	mg/L	0.024	<0.0046	<0.14	<0.069	<0.069	<0.11	<0.11	<0.23	<0.50	<0.075	<0.10	<0.063	<0.063	0.13	<0.061	<0.02	<0.02	<0.10	2	10
<i>Public Welfare Groundwater Quality Standard Constituents</i>																					
Iron, total	mg/L	14	25	9.4	30	14	24	8.6	23	10	13	35	3.8	1.8	2.3	14	2.03	4.78		NS	NS
Iron, dissolved	mg/L	--	<0.024	0.067	0.23	0.24	0.26	0.2	0.050 J	0.18	0.20	0.072	0.062	0.021	0.12	0.61	0.571	0.661	0.119	0.15	0.3
<i>Indicator Parameter Groundwater Quality Standard Constituents</i>																					
Alkalinity, total as CaCO <sub>3</sub>	mg/L	421	426	439	376	662	487	842	662	500	560	530	660	780	800	650	634	737	494	100 <sup>1</sup>	--
Hardness, total as CaCO <sub>3</sub>	mg/L	1,180	1,330	754	1,240	893	1,100	685	1,610	1,400	1,500	4,200	810	710	680	2,700	687	690	879	100 <sup>1</sup>	--
Calcium, total	mg/L	273	533	302	497	358	441	274	353	--	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--
Magnesium, total	mg/L	121	248	134	222	168	201	123	176	--	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--
Nitrogen, ammonia as N	mg/L	<0.11	<0.079	<0.079	<0.12	<0.12	<0.21	<0.21	2.7*	--	<0.070>	0.20	<0.11	<0.32	<0.20	<0.20	--	0.08	0.12	2 <sup>1</sup>	--
Nitrogen, Kjeldahl as N	mg/L	0.36	0.75	0.62	1.8	<0.61	0.4	0.82	0.91 J	--	1.2	0.92	1.6	0.92	0.58	0.55	--	0.54	<0.24	2 <sup>1</sup>	--
Organic Nitrogen	mg/L	<0.25	<0.671	<0.541	<1.68	--	<0.19	<0.61	--	--	1.13	0.72	1.6	0.92	0.58	0.58	--	--	--	--	--
Nitrogen, total as N	mg/L	0.384	0.75	0.62	1.8	--	0.4	0.82	0.91 J	--	1.2	0.92	1.6	0.92	0.71	0.58	--	--	--	5 <sup>1</sup>	--
Total Dissolved Solids	mg/L	1,040	1,180	1,330	1,170	1,450	1,310	1,510	1,500	1,400	1,400	1,300	3,700	1,300	1,400	1,300	1,288	1,320	1,348	200 <sup>1</sup>	--
Total Organic Carbon	mg/L	--	6.7	15	5.6	5.3	53	76	4.9	--	--	--	--	--	--	--	--	--	--	--	--
pH - field	pH Units	7.62	7.06	6.85	6.57	6.66	7.06	7.01	6.97	7.17	6.96	7.26	7.31	7.26	7.33	7.24	7.4	7.47	7.38	±1 <sup>1</sup>	--
Temp. - field	°F	66.2	66.2	66.2	64.4	68	64.4	66.2	66.2	66.2	64	68	68	66	66	68	65	65	61	10 <sup>1</sup>	--
Specific Cond. field	µmhos/cm	1,646	--	1,953	1,733	2,220	2,110	2,330	2,280	2,530	2,100	2,070	1,722	2,012	1,691	2,090	1,766	1,836	1,913	200 <sup>1</sup>	--
Dissolved Oxygen	mg/L	--	2.6	3	2.7	3.4	2.9	3.9	3.4	3.1	2.6	1.2	1.1	1.6	1.4	1.2	1.5	1.2	1	--	--
Oxidation Reduction Potential	mV	--	74	91	81	9	-6.5	-15	-21.5	1.5	-5.9	-70	-52	-50	-61	-41	168	181	127	--	--

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Site specific PALs have not been established.

Organic nitrogen is the difference between TKN and ammonia.

Total nitrogen is the sum of TKN and NO<sub>2</sub> + NO<sub>3</sub>.

\*Ammonia was detected at a higher value than TKN. The laboratory reports these results as anomalous, and may be attributed to sample dilution.

**Table 2**  
**Groundwater Analytical Results**  
 Manitowoc Ice, Inc.  
 Manitowoc, Wisconsin

MW-6

Parameter	Units	Oct. 1998	Apr. 1999	Oct. 1999	Apr. 2000	Oct. 2000	Apr. 2001	Oct. 2001	Apr. 2002	Oct. 2002	Apr. 2003	Oct. 2003	Apr. 2004	Oct. 2004	Apr. 2005	Oct. 2005	Apr. 2006	Oct. 2006	Apr. 2007	PAL	ES
<i>Public Health Groundwater Quality Standard Constituents</i>																					
Copper, total	µg/L	31	37	57	33	18	14	16	22 J	21	17	32	<1.2	5.6	1.6	7.1	2	7.4	6.3	NS	NS
Copper, dissolved	µg/L	4.6	2.6	10	<7.1	<7.9	<5.8	<5.8	<20	2.5	<4	<4	<1.2	1.4	0.81	0.84	<1.2	<1.2	0.74	130	1,300
Cyanide, total	mg/L	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.014	0.002	<0.015	<0.015	<0.0016	<0.0037	<0.0037	<0.0037	<0.005	<0.005	<0.004	0.04	0.2
Nickel, total	µg/L	670	913	990	584	283	290	290	250	89	110	120	310	170	48	50	102	51	81	NS	NS
Nickel, dissolved	µg/L	830	741	445	330	322	185	131	110	100	80	120	180	47	48	47	105	76	61	20	100
Nitrogen, NO <sub>2</sub> +NO <sub>3</sub> as N	mg/L	0.082	0.019	0.14	<0.069	0.15	<0.11	<0.11	34	0.15	<0.075	0.16	<0.063	<0.063	<0.061	3.5	0.04	0.11	<0.10	2	10
<i>JO</i>																					
Iron, total	mg/L	7.6	7.4	11	12	2	1.6	2.5	5.9	1.8	4.1	2	0.57	0.68	0.5	3.8	0.445	0.99		NS	NS
Iron, dissolved	mg/L	--	0.18	0.18	0.77	0.4	0.27	0.28	0.24 J	0.14	0.06	0.018	<0.023	0.036	<0.018	0.013	0.0245	<10	0.047	0.15	0.3
<i>Indicator Parameter Groundwater Quality Standard Constituents</i>																					
Alkalinity, total as CaCO <sub>3</sub>	mg/L	3,450	3,930	2,170	1,980	1,030	1,300	1,140	983	820	750	1200	1200	800	800	490	995	858	757	100 <sup>1</sup>	--
Hardness, total as CaCO <sub>3</sub>	mg/L	346	132	87	93	51	54	43	297	280	350	280	250	120	240	320	298	160	230	100 <sup>1</sup>	--
Calcium, total	mg/L	63	53	35	37	20	22	17	22	--	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--
Magnesium, total	mg/L	35	43	31	53	54	50	38	58	--	--	--	--	--	--	--	--	--	--	25 <sup>1</sup>	--
Nitrogen, ammonia as N	mg/L	411	380	377	248	182	155	115*	61	85	61*	110*	170	170	58	38	85	0.05	108	2 <sup>1</sup>	--
Nitrogen, Kjeldahl as N	mg/L	573	459	441	289	204	158	107	130	110	56	100	170	170	68	33	126	141	105	2 <sup>1</sup>	--
Organic Nitrogen	mg/L	162	79	64	41	22	3	--	69	25	--	--	--	--	10	--	--	--	--	--	--
Nitrogen, total as N	mg/L	573.1	459.02	441.14	289	204.15	158	107	164	110.15	56	100.16	170	170	68	41.5	--	--	--	5 <sup>1</sup>	--
Total Dissolved Solids	mg/L	4,670	4,770	2,640	2,400	1,440	1,500	1,370	1,100	910	1000	1400	5800	840	860	710	1234	980	1012	200 <sup>1</sup>	--
Total Organic Carbon	mg/L	--	62	17	13	12	103	90	7	--	--	--	--	--	--	--	--	--	--	--	--
pH - field	pH Units	7.42	7.52	7.9	8.1	7.9	7.56	7.78	7.89	7.78	7.26	7.03	7.03	7.03	7.06	7.14	7.1	7.15	7.1	≠1 <sup>1</sup>	--
Temp. - field	°F	68	68	68	64.4	69.8	66.2	68	66.2	68	66	68	68	66	68	68	63	63	59	10 <sup>1</sup>	--
Specific Cond. - field	µmhos/cm	8,080	--	5,330	5,030	3,170	3,440	2,810	3,150	2,310	1,831	2,420	2,323	2,133	2,413	2,250	2,562	2,805	2,927	200 <sup>1</sup>	--
Dissolved Oxygen	mg/L	--	1.2	0.9	0.9	0.9	1.1	1.5	1.4	1.1	1.6	2.6	2.7	2	2.1	2.4	2.2	2	2.1	--	--
Oxidation Reduction Potential	mV	--	-235	-260	-234	-34.2	-33.4	-41.8	-51.2	-30.9	-38.7	-224	-210	-198	-160	-170	-75	-72	-50	--	--

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\*Ammonia was detected at a higher value than TKN. The laboratory reports these results as anomalous, and may be attributed to sample dilution

**Table 2**  
**Groundwater Analytical Results**  
 Manitowoc Ice, Inc.  
 Manitowoc, Wisconsin

MW-7

Parameter	Units	Apr. 2003	Oct. 2003	Apr. 2004	Oct. 2004	Apr. 2005	Oct. 2005	Apr. 2006	Oct. 2006	Apr. 2007	PAL	ES
<b>Public Health Groundwater Quality Standard Constituents</b>												
Copper, total	µg/L	18	23	14	16	3.4	19	3.7	8.4	11	NS	NS
Copper, dissolved	µg/L	<1.3	<1.3	<1.2	0.97	1.7	1.3	1.2	<1.2	1.2	130	1,300
Cyanide, total	mg/L	<0.005	<0.005	<0.0016	<0.0037	<0.0037	<0.0037	<0.005	<0.005	<0.004	0.04	0.2
Nickel, total	µg/L	14	<b>20</b>	<b>24</b>	8.2	4.7	10	3.4	11	14	NS	NS
Nickel, dissolved	µg/L	4.7	3.3	13	<4.4	<4.4	2	1.4	1.2	1.8	20	100
Nitrogen, NO <sub>2</sub> +NO <sub>3</sub> as N	mg/L	0.23	<0.05	<0.063	<0.063	<0.061	<0.061	0.05	0.04	<0.10	2	10
<b>Public Welfare Groundwater Quality Standard Constituents</b>												
Iron, total	mg/L	17	28	33	12	5	18	3.97	20.7	12.9	NS	NS
Iron, dissolved	mg/L	0.038	0.087	<0.023	0.021	<0.018	<0.012	0.0121	<10	0.052	0.15	0.3
<b>Indicator Parameter Groundwater Quality Standard Constituents</b>												
Alkalinity, total as CaCO <sub>3</sub>	mg/L	300	340	350	350	350	320	326	377	286	100 <sup>1</sup>	--
Hardness, total as CaCO <sub>3</sub>	mg/L	650	1000	780	600	550	680	562	550	537	100 <sup>1</sup>	--
Total Dissolved Solids	mg/L	1300	830	1400	770	810	770	878	800	816	200 <sup>1</sup>	--
pH - field	pH Units	6.81	6.86	6.91	6.96	6.85	6.99	6.99	7.08	7.06	±1 <sup>1</sup>	--
Temp. - field	°F	66.2	68	68	68	68	66	65	61	61	10 <sup>1</sup>	--
Specific Cond.- field	µmhos/cm	1,447	1529	1356	1128	1406	1240	1518	1616	1707	200 <sup>1</sup>	--
Dissolved Oxygen	mg/L	3.8	2.8	2.9	2.9	3	2.7	3.2	3	3.2	--	--
Oxidation Reduction Potential	mV	-11.9	6.5	10	10	18	22	38	68	28	--	--

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\*Ammonia was detected at a higher value than TKN. The laboratory reports these results as anomalous, and may be attributed to sample dilution.

**Table 2**  
**Groundwater Analytical Results**  
 Manitowoc Ice, Inc.  
 Manitowoc, Wisconsin

MW-8

Parameter	Units	Apr. 2003	Oct. 2003	Apr. 2004	Oct. 2004	Apr. 2005	Oct. 2005	Apr. 2006	Oct. 2006	Apr. 2007	PAL	ES
<i>Public Health Groundwater Quality Standard Constituents</i>												
Copper, total	µg/L	110	<b>160</b>	2.4	11	2.6	11	2.7	4.7	11	NS	NS
Copper, dissolved	µg/L	<3.3>	<1.3	<1.2	1	1.2	1	1.2	1.2	1.2	130	1,300
Cyanide, total	mg/L	<0.005	<0.005	<0.0016	<0.0037	<0.0037	<0.0037	<0.005	<0.005	0.005	0.04	0.2
Nickel, total	µg/L	<b>1100</b>	<b>2300</b>	<b>130</b>	<b>780</b>	<b>430</b>	<b>1900</b>	<b>353</b>	<b>916</b>	<b>278</b>	NS	NS
Nickel, dissolved	µg/L	<b>72</b>	<b>32</b>	<b>41</b>	<b>93</b>	<b>380</b>	<b>1400</b>	<b>269</b>	<b>740</b>	<b>170</b>	20	100
Nitrogen, NO <sub>2</sub> +NO <sub>3</sub> as N	mg/L	<0.75	<0.05	0.27	0.24	3.8	<b>23</b>	<b>2.9</b>	<b>19</b>	3.8	2	10
<i>Public Welfare Groundwater Quality Standard Constituents</i>												
Iron, total	mg/L	<b>73</b>	<b>47</b>	<b>1.8</b>	<b>4.4</b>	<b>0.43</b>	<b>8.7</b>	<b>1.78</b>	<b>4.74</b>	<b>4.45</b>	NS	NS
Iron, dissolved	mg/L	0.054	0.054	<0.023	<0.018	<0.018	0.018	0.0416	<10	0.061	0.15	0.3
<i>Indicator Parameter Groundwater Quality Standard Constituents</i>												
Alkalinity, total as CaCO <sub>3</sub>	mg/L	670	610	560	630	860	680	459	611	427	100 <sup>1</sup>	--
Hardness, total as CaCO <sub>3</sub>	mg/L	3100	1900	410	300	210	380	374	280	319	100 <sup>1</sup>	--
Nitrogen, ammonia as N	mg/L	69*	65*	56	160	150	160	51	105	41	2 <sup>1</sup>	--
Nitrogen, Kjeldahl as N	mg/L	62	61	60	170	170	140	46	134	39	2 <sup>1</sup>	--
Organic Nitrogen	mg/L	--	--	4	10	20	--	--	--	--	-	--
Nitrogen, total as N	mg/L	62	61	60.27	170.24	173.8	183	--	--	--	5 <sup>1</sup>	--
Total Dissolved Solids	mg/L	1,300	1,100	2,500	1,100	1,500	1,200	719	932	680	200 <sup>1</sup>	--
pH - field	pH Units	6.94	7.26	7.32	7.15	7.29	7.3	7.32	7.2	7.21	±1 <sup>1</sup>	--
Temp. - field	°F	66.2	68	68	66	68	66	63	63	63	10 <sup>1</sup>	--
Specific Cond.- field	µmhos/cm	1,880	2150	1839	2830	1905	3120	2102	2181	2288	200 <sup>1</sup>	--
Dissolved Oxygen	mg/L	2.5	1.8	1.6	1.7	1.8	1.6	1.7	1.5	1.7	--	--
Oxidation Reduction Potential	mV	-32.9	-194	-189	-221	-280	-90	-272	-181	-162	--	--

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**Table 3**  
**Summary of Water Level Elevations**  
 Manitowoc Ice, Inc.  
 Manitowoc, Wisconsin

Well Location/ Date	MW-1		MW-2		MW-3/MW-3R <sup>1</sup>		MW-3A/MW-3AR <sup>1</sup>		MW-4		MW-5		MW-6		MW-7 <sup>2</sup>		MW-8 <sup>2</sup>	
	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation
Reference Elevation	99.47		99.22		99.44/99.48		99.45/99.57		99.51		99.55		99.53		99.59		99.50	
1/6/97	9.48	89.99	11.73	87.43	10.09	89.35	--	--	10.92	88.59	--	--	--	--	--	--	--	--
1/22/97	13.63	85.84	15.75	83.47	14.19	85.25	18.43	81.02	14.86	84.65	--	--	--	--	--	--	--	--
4/28/97	7.74	91.73	11.08	88.14	9.1	90.34	13.55	85.9	10.22	89.29	--	--	--	--	--	--	--	--
5/22/97	8.78	90.69	11.92	87.3	9.87	89.57	26.9	72.55	11.04	88.47	--	--	--	--	--	--	--	--
6/30/97	7.52	91.95	10.83	88.39	8.62	90.82	13.54	85.91	9.92	89.59	--	--	--	--	--	--	--	--
7/17/97	8.98	90.49	11.87	87.35	9.81	89.63	14.62	84.83	10.88	88.63	--	--	--	--	--	--	--	--
8/21/97	9.57	89.9	12.12	87.1	10.27	89.17	14.82	84.63	11.24	88.27	--	--	--	--	--	--	--	--
9/18/97	9.72	89.75	12.27	86.95	10.49	88.95	14.98	84.47	11.37	88.14	--	--	--	--	--	--	--	--
10/16/97	9.43	90.04	11.49	87.73	9.84	89.6	14.18	85.27	10.58	88.93	--	--	--	--	--	--	--	--
1/19/98	10.06	89.41	12.02	87.2	10.65	88.79	14.65	84.8	11.24	88.27	--	--	--	--	--	--	--	--
2/12/98	9.72	89.75	12.08	87.14	10.68	88.76	14.76	84.69	11.32	88.19	--	--	--	--	--	--	--	--
3/17/98	7.6	91.87	11.37	87.85	9.3	90.14	13.95	85.5	10.6	88.91	--	--	--	--	--	--	--	--
4/15/98	6.97	92.5	10.88	88.34	8.45	90.99	13.37	86.08	9.96	89.55	--	--	--	--	--	--	--	--
10/29/98	8.78	90.69	11.17	88.05	9.34	90.1	13.63	85.82	10.1	89.41	13.53	86.02	10.02	89.51	--	--	--	--
4/14/99	7.18	92.29	10.93	88.29	8.65	90.79	13.48	85.97	9.89	89.62	13.45	86.1	9.8	89.73	--	--	--	--
10/13/99	8.47	91	10.87	88.35	9.43	90.05	15.29	84.28	9.65	89.86	13.34	86.21	9.65	89.88	--	--	--	--
4/11/00	8.33	91.14	11.14	88.08	9.74	89.74	13.06	86.51	9.96	89.55	13.4	86.15	9.9	89.63	--	--	--	--
10/26/00	--	--	10.3	88.92	8.73	90.75	11.37	88.20	8.98	90.53	12.95	86.6	8.93	90.6	--	--	--	--
4/16/01	--	--	10.47	88.75	8.70	90.78	10.98	88.59	9.02	90.49	13.25	86.3	9	90.53	--	--	--	--
10/25/01	--	--	10.21	89.01	8.52	90.96	11.1	88.47	8.72	90.79	12.9	86.65	8.68	90.85	--	--	--	--
4/10/02	--	--	10.47	88.75	8.7	90.78	10.98	88.59	9.02	90.49	13.25	86.3	9	90.53	--	--	--	--
10/17/02	--	--	10.69	88.53	8.9	90.58	11.37	88.20	9.06	90.45	13.2	86.35	9.05	90.48	--	--	--	--
4/22/03	--	--	11.25	87.97	9.7	89.78	11.82	87.75	9.88	89.63	13.6	85.95	9.8	89.73	13.9	85.69	9.69	89.81
10/20/03	--	--	11.28	87.94	9.94	89.54	12.08	87.49	10.1	89.41	13.52	86.03	10.03	89.5	13.72	85.87	9.95	89.55
4/29/04	--	--	10.65	88.57	9.26	90.22	11.21	88.36	9.58	89.93	13.13	86.42	9.56	89.97	13.3	86.29	9.39	90.11
10/28/04	--	--	10.96	88.26	9.38	90.10	11.59	87.98	9.54	89.97	11.28	88.27	9.50	90.03	13.48	86.11	9.34	90.16
4/25/05	--	--	10.19	89.03	11.34	88.14	11.18	88.39	8.52	90.99	12.98	86.57	8.51	91.02	13.23	86.36	8.38	91.12
10/5/05	--	--	11.13	88.09	9.72	89.76	11.89	87.68	9.89	89.62	13.46	86.09	9.80	89.73	13.68	85.91	9.71	89.79
4/25/06	--	--	10.61	88.61	9.35	90.13	11.42	88.15	9.61	89.9	13.07	86.48	9.31	90.22	13.25	86.34	9.43	90.07
10/16/06	--	--	10.81	88.41	9.49	89.99	11.4	88.17	9.71	89.8	13.2	86.35	9.68	89.85	13.44	86.15	9.55	89.95
4/12/07	--	--	10.48	88.74	8.82	90.66	10.9	88.67	9.04	90.47	12.91	86.64	9.04	90.49	13.11	86.48	8.91	90.59

1 - Replacement wells MW-3R and MW-3AR were installed and re-surveyed in August 1999.  
 2 - Wells MW-7 and MW-8 were installed in April 2003.