

FIVE-YEAR REVIEW REPORT #2 FOR THE UPLAND OPERABLE UNIT

WSPC CAMPMARINA MGP (ALT SF)

BRRTS #: 02-60-000095

EPA ID: WIR000049577

SHEBOYGAN, WISCONSIN



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4/4/23

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Table of Contents

LIST OF ABBREVIATIONS & ACRONYMS	3
I. INTRODUCTION	4
FIVE-YEAR REVIEW SUMMARY FORM.....	5
II. RESPONSE ACTION SUMMARY	6
Basis for Taking Action	7
Response Actions.....	7
Status of Implementation	8
Institutional Controls	8
III. PROGRESS SINCE THE LAST REVIEW	9
IV. FIVE-YEAR REVIEW PROCESS	10
Community Notification, Involvement & Site Interviews.....	10
Data Review.....	10
Site Inspection.....	13
V. TECHNICAL ASSESSMENT	14
QUESTION A: Is the remedy functioning as intended by the decision documents?..	14
QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?	14
QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?.....	16
VI. ISSUES/RECOMMENDATIONS	16
VII. PROTECTIVENESS STATEMENT	18
VIII. NEXT REVIEW.....	18

Appendix A – Site Maps

Appendix B - Reference List

Appendix C - Table of Hydraulic Head Elevations

Appendix D - Water Table Gradient in Central Containment Zone Since FYR 2017

Appendix E - Vertical Gradients

Appendix F1 - Site Inspection Log

Appendix F2 - Site Inspection Photographic Log

Appendix G - Table of PVOC Concentrations

LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CBSQG	Consensus Based Sediment Quality Guidelines
CERCLA	Comprehensive Environmental Response, Compensation, and Liability
CFR	Code of Federal Regulations
DNR	Wisconsin Department of Natural Resources
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FYR	Five-Year Review
GIS	Geographic Information System
HDPE	High Density Polyethylene
ICs	Institutional Controls
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
MGP	Manufactured Gas Plant
ug/kg	micrograms/kilogram
mg/kg	milligrams/kilogram
MNA	Monitored Natural Attenuation
NAPL	Non-Aqueous Phase Liquid
NCP	National Contingency Plan
NRT	Natural Resources Technology, Inc.
PAHs	Polycyclic Aromatic Hydrocarbons
PAL	Preventive Action Limit
PCB	Polychlorinated Biphenyl
PRG	Preliminary Remediation Goal
PRP	Potentially Responsible Party
PRS	Pollution Risk Services, Inc.
QAPP	Quality Assurance Project Plan
RI/FS	Remedial Investigation/Feasibility Study
RAO	Remedial Action Objective
RCL	Residual Contaminant Level
ROD	Record of Decision
ROW	Right-of-Way
RPM	Remedial Project Manager
SARA	Superfund Amendments and Reauthorization Act
SWAC	Surface Area Weighted Average Concentration
TI	Technical Impracticability
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
UU/UE	Unlimited Use and Unrestricted Exposure
VOC	Volatile Organic Compounds
VPLE	Voluntary Party Liability Exemption
WPSC	Wisconsin Public Service Corporation

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of these reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them. The Wisconsin Department of Natural Resources (DNR) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 CFR Section 300.430(f)(4)(ii)), and considering Environmental Protection Agency (EPA) policy.

The WPSC Campmarina (Alt SF) (Campmarina) Site consists of two operable units (OUs): the Upland OU (OU1) and the River OU (OU2). OU1 will be addressed in this FYR2. OU2 is not addressed in this report as the River OU2 is being written by the EPA. This is the second FYR for OU1. The triggering action for this discretionary review is EPA's OU2 FYR1 completion date. This FYR has been prepared because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

This OU1 FYR2 was led by John Feeney of the Department of Natural Resources Southeast Region. Participants included:

- Terese Van Donsel, EPA Region 5 former RPM for Campmarina, currently the Remedial Project Supervisor, Superfund and Emergency Management Division (the DNR provided a notification of the intent to perform a FYR2 to Ms. Van Donsel).
- Erin Endsley, DNR Complex Projects and Technical Resources Section Program Coordinator

The review began on July 27, 2022. The site inspection occurred on September 21, 2022.

Site Background

The Site (see Figure 1, Appendix A) was the home of a manufactured gas plant that operated from 1872 until 1929 which contaminated the soil, groundwater and sediments with manufactured gas plant residuals including coal tar, petroleum volatile organic compounds, polycyclic aromatic hydrocarbon compounds, and cyanide. In August of 1990, construction workers installing a dock for the RV camping park there at the time found coal tar in the river. On April 1, 1992, the DNR, the City of Sheboygan, and Wisconsin Public Service Corporation (WPSC, the gas plant owner's successor entity) signed a Superfund equivalency state environmental repair contract for site investigation and remediation under (at the time) section 144.442 Wis. Stats and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. ss 9601 as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

A DNR written Record of Decision (ROD) for OU1 was finalized in the spring of 2000, and remedial actions in OU1 took place in 2000 and 2001. Initial phase remedial activities consisted of unsaturated zone soil excavation, grading, thermal treatment, and material management. Second phase remedial activities consisted of installing a vertical sheet pile barrier (a Waterloo Wall™ groundwater barrier) around the affected area within Campmarina and the Center Avenue right-of-way (ROW), installation of an air sparging system, installation of a multi-layer

impervious cap, restoring the site to pre-existing grade, and redeveloping the site as a city park and river-walk. The containment system and park improvements are maintained as institutional controls under the authority of § 292.12 Wis. Stats. Groundwater quality inside and outside the containment zone continues to be sampled for monitored natural attenuation (MNA) on a long-term basis. In May of 2007, the state environmental repair contract was terminated by request of WPSC, and oversight was transferred to the EPA under an administrative order by consent. Extensive OU2 sediment remedial actions (dredging) were conducted by WPSC in 2011 and again by the Great Lakes National Program Office of the EPA from 2012 to 2013.

The site is currently a 2.6-acre park known as Campmarina Park (also called Riverside Park) with a riverwalk, basketball court, volleyball court, and a storage building for the Sheboygan Outboard Motor Club. Recently, condominiums have been built adjacent to the northeast corner of OU1. The park is comprised of three parcels with two addresses from north to south, with the northern two parcels listed on the City of Sheboygan tax records as owned by the City of Sheboygan, listed as Campmarina Park, and the southern Center Street right-of-way parcel is also listed as owned by the City of Sheboygan (see Figures 1 and 2, Appendix A):

Parcel 59281107757	0.64 acres	714 N. Water St.
Parcel 59281107761	1.46 acres	640 N. Water St.
Parcel 59281108711	0.5 acres	Center Street ROW

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: WPS Campmarina MGP (Alt SF)		
EPA ID: WIR000049577		
Region: 5	State: WI	City/County: Sheboygan/Sheboygan County
SITE STATUS		
NPL Status: Non-NPL		
Multiple OUs? Yes	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): John Feeney (State)		
Author affiliation: Department of Natural Resources		
Review period: 7/27/2022 - 11/2/2022		
Date of site inspection: 9/21/2022		
Type of review: Discretionary		
Review number: 2		

Triggering action date: 9/17/2017

Due date (five years after triggering action date): 9/17/2022

II. RESPONSE ACTION SUMMARY

The OU1 remedial action took place in 2000 and 2001. Initial phase remedial activities consisted of unsaturated soil excavation, grading, thermal treatment, and material management. About 10,500 tons of contaminated soils were excavated and thermally treated at the nearby WPSC Wildwood Sheboygan facility, then returned to the site as backfill. During remedial construction, about 8,700 tons of debris from former gas plant infrastructure were removed. Debris consisting of storm sewer lines, foundations, retaining walls, and piping were properly disposed.

Thermal treatment of soil was conducted by Dustcoating, Inc. Pre- and post-treatment soil samples were run for PAHs and BTEX. According to NRT, the remedial contractor for WPSC, average pre-treatment concentrations for total BTEX and total PAHs were 5.3 mg/kg and 231 mg/kg respectively; average post-treatment results were 0.07 mg/kg and 0.06 mg/kg respectively. Saturated soils were left in place untreated.

The second phase of remedial construction consisted of installation of the Waterloo Wall™ vertical barrier, air-sparge system, multi-layer cover/drainage/venting system, backfilling, site restoration, and park construction. The riverbank was restored with geosynthetic materials and stabilized with rip-rap. A Waterloo Wall™ is a barrier designed for groundwater containment applications consisting of sheet pile with interlocking joints that are sealed with grout. Approximately 41,300 square feet of sheet pile was driven 20 to 30 feet below land surface into a clay layer to completely encompass the remaining saturated soil and groundwater contaminated with MGP residuals.

The base of the cover system is a geo-composite/geonet fiber under a six-inch perforated venting/drainage pipe surrounded by a filter gravel trench that goes around the interior perimeter of the sheet pile. Above that is six inches of thermally treated material, followed by a 40 mil high density polyethylene (HDPE) layer that was welded at the joints, and booted and welded to the monitoring wells. Above that is a foot of compacted thermally treated material covered by a geo-composite fabric marker layer, followed by another foot of thermally treated material amended with organic material, with a final minimum one-foot clean imported soil cover. The exterior of the barrier wall has an exterior perimeter drainage piping system similar to the interior perimeter drainage/venting piping.

A low-flow air-sparge system was installed consisting of 18 low-flow air-sparge wells and associated piping inside the containment wall. Electricals and mechanicals for this system were housed in a building constructed by WPSC on site. The building was to be donated to the Sheboygan Outboard Motor Club upon system shutdown which occurred with DNR approval after June of 2013, as NRT determined that the measured emissions from the system showed that the system had reached its limit of effectiveness.

Groundwater has been sampled long-term for VOCs, PAHs, cyanide, natural attenuation parameters, and groundwater elevations since before the upland remedy was put in place. Wells and piezometers that have been sampled for PVOCs, PAHs, and cyanide from 1995 to 1998 include monitoring wells MW-701 to MW-709, and piezometers PZ701 to PZ-703. Due to OU1 remedial activities, monitoring wells MW-702 to MW-704 were abandoned, while MW701 and

MW-707 were abandoned then replaced. Air-sparge well BW06 was sampled for eight rounds from May of 2004 to December of 2013. Air-sparge well BW15 was sampled once. Tables 4a and 4b below list the sampling programs since FYR1.

Sampling for cyanide and metals in groundwater was conducted for the 1995 site investigation. Metals sampled included arsenic, barium, chromium, lead, and silver. The Wis. Admin. Code ch. NR 140 Preventive Action Limit (PAL) was exceeded with respect to free (dissociable) cyanide in wells MW-702, MW-704, and MW707. A follow up sample taken a month later had PAL exceedances in the same wells with the exception of MW-702, which was below the standard. Sampling in 1998 had no free cyanide PAL exceedances, with the exception of MW-701. As none of the selected metals were detected above the ESs in 1995, no additional metals sampling was done. Cyanide monitoring continued with no ES exceedances in any well. Cyanide was dropped from the program in 2005. Groundwater monitoring is still being done as of the date of this report, and the last update report with groundwater data included was received by the DNR on July 21, 2022.

Basis for Taking Action

Table 1. Contaminants of Concern by Pathway

Pathway	COCs
Soil	Coal Tar, PVOCs, PAHs, and Cyanide
Groundwater	PVOCs, PAHs
Sediment	Not addressed by this FYR
Soil Vapor	BTEX, Naphthalene

Potential receptors and pathways at OU1 are park users who could be exposed through the direct contact pathway by ingestion or inhalation of contaminated soil; condominium/apartment dwellers who could be exposed through the vapor intrusion pathway, particularly as new condominiums are built close to the site, as in the case with new condominiums built in 2021 adjacent to the northeast corner of OU1. Groundwater consumption is not considered to be a potential pathway of concern, as Sheboygan gets its potable water supply from Lake Michigan.

Response Actions

- No pre-ROD CERCLA or non-CERCLA removal activities occurred at the Site.
- Remedial action options considered in the State issued ROD included:
 - Excavation and disposal of contaminated media.
 - Excavation and off-site treatment of contaminated media.
 - Full source-area encapsulation of contaminated media with low-flow air-sparging.
- Remedy components of the selected remedial action selected in the ROD include:
 - Excavation and off-site thermal treatment of highly impacted soils followed by return of the treated material to backfill the excavation.
 - A vertical barrier wall surrounding contaminated soils with a multi-component cover and drainage system.

- A low-flow air-sparge system within the containment barrier.
- Long term MNA sampling of groundwater.
- Remedy components that have been modified in an ESD include:
 - Shut down of the air-sparge system.
 - Institutional controls for cover maintenance imposed under the authority of Wis. Stats. § 292.12.
- Selected ARARs include:
 - Soil performance standard based on maintenance of a cover.
 - Groundwater standards tabulated in Wis. Admin. Code ch. NR 140. The State ROD states that the standards would take a very long time to meet based on a monitored natural attenuation remedy.

Status of Implementation

In June of 2013, the DNR approved shutdown of the air sparge system. The DNR imposed institutional controls at that time on the Upland OU in the form of a GIS registry requirement under the authority of Wis Stats § 292.12 in a letter to WPSC dated June 6, 2013. This letter and a copy of the maintenance plan for the OU1 is posted on the DNR’s public database.

On May 30, 2013, NRT submitted a case closure request on behalf of WPSC to DNR for OU1. That September, the DNR denied case closure and sent WPSC a letter that included a list of questions and concerns regarding Wis. Admin. Code ch. NR 726 case closure. WPSC and DNR had a follow-up meeting on October 1, 2013, to discuss responses to the letter, but a written response to the DNR’s concerns was not submitted.

In 2014, EPA did not finalize the draft OU1 ROD due to the unlikelihood of the site ever attaining groundwater ARARs inside the containment barrier. WPSC submitted a technical infeasibility waiver request for areas inside the containment barrier for the groundwater media. That year, NRT submitted a Technical Infeasibility (TI) Report to present an argument for EPA issuance of non-attainment of the groundwater ARARs (a TI Waiver), and to request a technical infeasibility exemption to those ARARs inside the containment zone. Presently, EPA and DNR are discussing deferral of both OU1 and OU2 back to the State for oversight.

WPSC’s current consultant, Ramboll, conducts ongoing long-term MNA groundwater sampling at the site. The program includes sampling a select set of monitoring wells and piezometers in June and December for PAHs, BTEX, natural attenuation and field parameters. WPSC submits monthly progress reports to the EPA.

Institutional Controls

Table 1: Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
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Soil & Groundwater	Yes	Yes	OU1	Cover and Barrier Maintenance	Maintenance Plan 5/17/2013
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Figure 3, Appendix A shows the area in which the cover and barrier maintenance institutional controls (ICs) apply. This map may be accessed on the DNR’s public database, the Bureau of Remediation and Redevelopment Tracking System (BRRTS) on the Web, by searching BRRTS #: 02-60-000095, Document Module 20130606_56_CO_Packet, Page 12 of the .pdf. The maintenance plan, which includes a description of the required maintenance activities, is contained in the same document, pages 99-119 of the pdf.

Current IC Compliance and IC Follow up Actions Needed

The City of Sheboygan inspects the state of the barrier and cover system, visually from the ground surface. The DNR has not requested copies of the maintenance inspection log or looked at it where it is kept on site.

In the last FYR the DNR recommended that WPSC develop a means to inspect the integrity of the below-ground containment system (the Waterloo Wall™ vertical containment barriers and the drainage systems). It is the DNR’s understanding that this maintenance item has not been implemented.

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

Table 2: Protectiveness Determinations/Statements from the 2018 DNR FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	Remedy is protective based on the following lines of evidence: (a) Gradient inside groundwater barrier system decreased by a factor of three post remediation and has remained steady; shows much reduced contaminant transport), (b) Stable contaminant concentrations in groundwater over the 24+ year monitoring period, (c) The upgradient groundwater flow pattern shows diversion around groundwater barrier system.

Table 3: Status of Recommendations from the DNR 2018 FYR

OU #1	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
	Potential future corrosive failure of the groundwater containment system.	Implement solution to monitor the degree of corrosion of the groundwater containment wall (Waterloo Wall TM)	Under Discussion	Not Implemented	NA
	Possible minor rebound in groundwater contaminant concentrations in certain wells since shutdown of the air-sparge system	Continue long-term groundwater monitoring	Ongoing	Implemented	NA
	Potential for leakage of groundwater from the containment barrier.	Continue to collect groundwater elevation data to assess the gradient inside the containment barrier, and the groundwater flow pattern outside the barrier.	Ongoing	Implemented	NA

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was made available, stating that there is a FYR of the Campmarina OUI and inviting the public to submit any comments within 30 days to the DNR. The notice was posted to the DNR’s webpage on September 30, 2022, and it was published in the Sheboygan Press on October 2, 2022. A RR Report (the DNR Remediation and Redevelopment Program’s Webpage) and a list server notification (GovD) was also sent out on October 2, 2022, with the same request. The EPA was notified in a letter dated September 27, 2022. Copies of this letter were sent to WPSC and the City of Sheboygan. The results of the review and the report will be made available at the Site information repository located on the DNR’s public database, BRRTS on the Web.

Data Review

WPSC’s consultant, Ramboll, samples groundwater from select wells in December and June of each year for PAHs, BTEX, natural attenuation, and field parameters according to the programs summarized in Table 4a and Table 4b. Twice each year WPSC submits tabulated groundwater sampling results attached to a monthly progress report to the EPA. The DNR receives copies of these reports in January or February, then again in July or August. The DNR also receives, twice a year, copies of tabulated groundwater results with attached laboratory analytical reports that are sent to the City of Sheboygan in accordance with Wis. Admin. Code § NR 716.14 which requires sample results reporting to the property owner and the DNR within 10 days of receiving laboratory data. In July of 2021 Ramboll started electronically submitting the copies of the EPA and City of Sheboygan reports to the DNR through the DNR’s Web Submittal Portal.

Table 4a: 2X Annual Sampling Program since FYR1, December 2017 to June 2018

Well or Piezometer	TPAH	PAH	BTEX	Natural Attenuation Parameters	Field Parameters	Depth to Groundwater
MW-701R	X	X	X	X	X	X
SG-703						X
MW-705						X
MW-706	X	X	X	X	X	X
MW-707R	X	X	X	X	X	X
MW-708	X	X	X	X	X	X
MW-709R	X	X	X	X	X	X
PZ-701	X	X	X	X	X	X
PZ-702	X	X	X	X	X	X
PZ-703	X	X	X	X	X	X

*Abandoned Wells: MW-701, MW-702, MW-703, MW-704, MW-707, MW-709

Since FYR1 total PAH (TPAH) analysis was dropped from the program after June of 2018. Points EB01 and TB01 were added to the program, but only sampled for BTEX in December of 2018, December of 2019, and June of 2020, with Point EB01 also being sampled for BTEX in December of 2020. Depth to groundwater measurements for monitoring well MW-705 were dropped from the program after December of 2019. Elevation measurements for river level using staff gauge SG-703 (a staff gauge for measuring the river elevation) were dropped after December of 2020.

Table 4b: 2X Annual Sampling Program Beginning December 2018

Well or Piezometer	PAHs	BTEX	Natural Attenuation Parameters	Field Parameters	Depth to Groundwater
MW-701R	X	X	X	X	X
MW-705					
MW-706	X	X	X	X	X
MW-707R	X	X	X	X	X
MW-708	X	X	X	X	X
MW-709R	X	X	X	X	X
PZ-701	X	X	X	X	X
PZ-702	X	X	X	X	X
PZ-703	X	X	X	X	X

Abandoned Wells: MW-701, MW-702, MW-703, MW-704, MW-707, MW-709

WPSC has not submitted copies of groundwater flow maps or contaminant concentration performance charts as part of the twice annual EPA or City of Sheboygan reports. The last groundwater flow maps and performance charts in DNR’s files are from NRT, dated March 13, 2014. For this FYR2, the DNR calculated head elevations based on depth to groundwater measurements provided in the twice annual EPA update reports (WPSC, February 26, 2018, to July 21, 2022) and top of casing evaluations from various reports provided by WPSC’s consultants. These are tabulated and attached in Appendix C.

Groundwater flow on the upland side of the containment barrier has historically been to the northwest, indicating a flow of groundwater around the Waterloo Wall™ barrier. On December 18, 2017, that was clearly the case; however, since that time, water table levels have been slightly higher in MW-709R than in MW-705 making it less clear how the groundwater is flowing near the northwest section of the barrier in 2018 to 2021. Further, the water table elevation has only been measured in MW-705 sporadically since 2019.

Water table gradients within the central containment barrier since FYR1 as measured between monitoring wells MW-706 and MW-701R have mostly been away from the river, except for December 13, 2018, and June 14, 2021. In contrast, water table gradients within the central portion of the containment barrier have historically been mostly towards the river. Compared to historic data, the gradient values have been about the same, to showing a decrease, fluctuating mostly between near zero to -0.03, and (still) greatly decreased since the construction of the containment barrier, except for on December 13, 2018, when a gradient towards river of 0.046 was measured. Appendix D has tabulated groundwater table gradients between these two wells.

Vertical gradients, as measured in the well nests, (with the piezometers being screened about 20 feet lower than the monitoring well screens) within the containment barrier, are tabulated in Appendix E. Well nest MW-707R/PZ-703 at the southeast, downriver end the containment barrier, had a consistently upward gradient, while the MW-701R/PZ-701

nest (central riverside) had a consistently downward gradient except when measured on December 13, 2018. Nest MW-706/PZ-702 (central shore-side) had a fluctuating up or down vertical gradient. Groundwater flow direction as measured in the piezometers is consistently toward the river, unlike the water table flow.

Groundwater contaminant concentrations in monitoring wells and piezometers in the sampling program fluctuate seasonally but have been stable. The upgradient wells MW-708, and MW-709R outside the barrier wall have been consistently clean or at very low levels of detections. Upgradient monitoring well MW-705, located between those two wells, has also been historically clean and was dropped from the program.

Monitoring well MW-706, located central and on the upgradient side within the containment barrier had the highest concentrations of contaminants since FYR1 with benzene ranging from 6,170 ug/l in June of 2018 to a low of 2,510 ug/l in December of 2021. Naphthalene concentrations in this well had a high of 2,270 ug/l, also in June of 2018, to a low of 667 ug/l in December of 2018. The central downgradient monitoring well within the containment barrier, MW-701R, had benzene concentrations ranging from 4,220 ug/l to 2,920 ug/l and naphthalene concentrations ranging from 1,500 ug/l to 762 ug/l since FYR1. Monitoring MW-707R in the southeast end within the containment barrier, near the river, had benzene concentrations ranging from 3,100 ug/l to 269 ug/l and naphthalene concentrations from 471 ug/l to 7.3 ug/l since FYR1.

The only piezometer with significant contaminant concentrations is PZ-703, which is nested with monitoring well MW-707R. PZ-703 had benzene concentrations ranging from 429 ug/l to 188 ug/l and naphthalene concentrations from 0.28 ug/l to 0.026J ug/l since FYR1, consistent with a historic pattern of having much lower concentrations than at the water table above it.

Natural attenuation parameters have been collected according to the sampling program tables above. In general, oxygen, sulfate, and nitrate levels are lower, and the methane levels are higher inside the containment system, indicating natural attenuation is occurring.

Site Inspection

An inspection of OU1 was conducted on September 21, 2022. The inspection was conducted by John Feeney of the DNR. The purpose of the inspection was to visually assess the protectiveness of the remedy. The site inspection log and photo log can be found in Appendix F1 and F2.

The visible portions of the cover were in good shape. There was adequate sod cover with no exposed soil and no erosion occurring on the slope towards the river except for a small bare spot northwest of the basketball court that appeared to be recently re-seeded with grass. The pavement of sidewalks, courtyards, stairs and river walk were all in good repair. There were no open or broken monitoring well covers. The pavement surrounding PZ-703 was observed to be in need of repair (see Photo 8, Appendix F2). The site was

dry and appeared well drained. The riprap on the shoreline had good coverage of the shore with no exposed soil between blocks. There were no visible blobs of sheen on or floating up from the water column as was common before remedial actions took place in the river, OU2. Since FYR1, a condominium complex (see Photos 2 and 4, Appendix F2) had been built adjacent to the northeast corner of the site. No additional condominiums have been built since FYR1 to the south of OU1 on the land that was slated for that purpose. Boat Island was not under flood conditions and looked to be in good maintenance.

V. TECHNICAL ASSESSMENT

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

Question A Summary:

Remedial Action Performance

- The containment barrier continues to function as designed to prevent migration of subsurface contaminants in the groundwater.
- Monitored natural attenuation groundwater data demonstrates stable contaminant concentrations.
- The cover system has been well maintained to prevent exposure from the direct contact pathway.
- The air-sparge system was shut down in 2013 with DNR approval after having reached the limit of its effectiveness.
- The current MNA program should be evaluated to determine if the points that were dropped should be re-added, or if other changes are warranted.

System Operations/O&M

- The current method of annual surface inspection should be supplemented by a means of checking, such as periodic tracer testing, for worsening subsurface defects, corrosion, or failure of the containment barrier.

Implementation of Institutional Controls and Other Measures

- Institutional controls were imposed on OU1 in 2013 under the authority of §. 292.12 Wis. Stats. and have been effectively maintained in accordance with those restrictions.

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

Question B Summary:

Yes. The exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection are still valid. In addition, there have been no changes in the physical conditions of OU1 that would affect the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

ARARs evaluated during this FYR that currently must be met include Wis. Admin. Code ch. NR 140, (Enforcement Standards and Preventative Action Levels) and the Safe Drinking Water Act MCL levels (40 CFR 141.11-141.16). The State's ROD specified a natural attenuation remedy with a reasonable period of time cited to meet groundwater ARARs. There have been no changes in these ARARs, and no new standards or to-be-considered requirements that affect the protectiveness of the remedy.

The exposure assumptions used to develop the remedial alternatives evaluation in the RI/FS included both current exposures and potential future exposures (park users). There have been no changes in the toxicity factors for the contaminants of concern that were used in the risk assessment. These assumptions are conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No change to these assumptions or the cleanup levels developed from them is warranted. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. The monitored natural attenuation groundwater remedy is progressing as expected.

The DNR requires that all sites complete an evaluation for the potential presence of emerging contaminants, particularly PFAS and 1,4 dioxane. Neither compound is expected to be a contaminant of concern at a manufactured gas plant facility. It is unlikely the compounds exist at OU1.

Changes in Exposure Pathways

Condominiums were built adjacent to OU1 since FYR1. A screening level vapor risk assessment from potential vapor intrusion into the adjacent dwellings can be done (see Table 5 below) using current information from monitoring well data and considerations listed in Wisconsin's guidance document, RR-800, *Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin*. The wells closest to the new condominium, MW-709, MW-705, and MW-708 are outside the containment barrier and have only low-level detections of PVOCs with no exceedances of the Wis. Admin. Code ch. NR 140 Preventive Action Limit or Enforcement Standards. MW-705 has not been in the sampling program since FYR1, however it had been historically below ARARs from 2002 to 2008, (NRT, March 19, 2014). There are no utility corridors that pass through, under, or over the containment zone towards the condominiums. There have been no petroleum odors reported to the DNR. Since there are no screening considerations present, the new condominiums are considered to screen-out for vapor intrusion risk.

Table 5: Vapor Intrusion Screening Analysis for the Adjacent Condominiums Built Since FYR1 from DNR Guidance Document RR-800

Screening Consideration Petroleum Type Contamination	Yes/No
Building has less than 15-feet vertical separation ^(a) or 30-feet horizontal separation from NAPL	No
Building has less than 5-feet of vertical separation ^(a) from groundwater with benzene > 1 mg/L.	No
Groundwater with concentrations above Wis. Admin. Code § NR 140 PAL has entered the building or is in contact with the building's foundation.	No
Building has less than 5-foot (vertical ^(a) and horizontal) separation distance from petroleum contaminated soil with the potential for off-gassing ^(c) .	No
Petroleum vapors are present in utilities that transect a petroleum source area.	No
Petroleum odors are present in building near petroleum source area.	No

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

No. No other information has come to light during the FYR process that could call into question the protectiveness of the remedy. The WDNR is not aware of potential issues related to climate change or natural disasters at OU1.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations	
OU(s) without Issues/Recommendations Identified in the Five-Year Review:	
Upland OU (OU1)	

Issues and Recommendations Identified in the Five-Year Review:

OU(s): OU1	Issue Category: Operations and Maintenance
-------------------	---

Issue: Potential future corrosive failure of the groundwater containment system.				
Recommendation: (1) Implement solution to monitor the degree of corrosion (if any of significance) of the groundwater containment wall (Waterloo Wall TM). (2) Continue to collect groundwater elevation data to assess the gradient inside the containment barrier, and the groundwater flow pattern outside the barrier.				
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA/State	10/20/2027

OU(s): OU1	Issue Category: Monitoring			
	Issue: PFAS and 1,4 Dioxane have not been previously assessed as emerging contaminants.			
	Recommendation: Complete an evaluation of the historic potential for PFAS and 1-4 Dioxane use and determine if sampling is necessary based on that review.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
Yes	Yes	PRP	EPA/State	10/20/2027

OU(s): OU1	Issue Category: Monitoring			
	Issue: The monitoring program has undergone changes without DNR review. Current monthly reports and twice annual groundwater reports to the EPA are not adequate to document the effectiveness of the remediation.			
	Recommendation: Submit periodic groundwater monitoring, and O&M report in accordance with Wis. Admin. Code ch. §§ NR 724.02(b), NR724.12(1) and NR724.12(2) with performance data, interpretations, and recommendations.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA/State	10/20/2027

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)		
<i>Operable Unit: OUI</i>	<i>Protectiveness Determination:</i> Short-term Protective	<i>Planned Addendum Completion Date:</i> NA
<i>Protectiveness Statement:</i> The remedy is considered protective in the short-term based on the following lines of evidence: (a) Gradient inside groundwater barrier system decreased by a factor of three post remediation and has decreased further since FYR1, (b) Stable contaminant concentrations in groundwater over the 24+ year monitoring period, (c) The upgradient groundwater flow pattern shows diversion around groundwater barrier system. Additional monitoring is needed to assess whether any corrosion of the groundwater containment barrier could affect long-term protectiveness, and the current groundwater monitoring and reporting frequency needs to be reviewed.		

VIII. NEXT REVIEW

The next FYR report for the Campmarina Superfund Alternative Site is required five years from the completion date of this review.

APPENDIX A – SITE MAPS

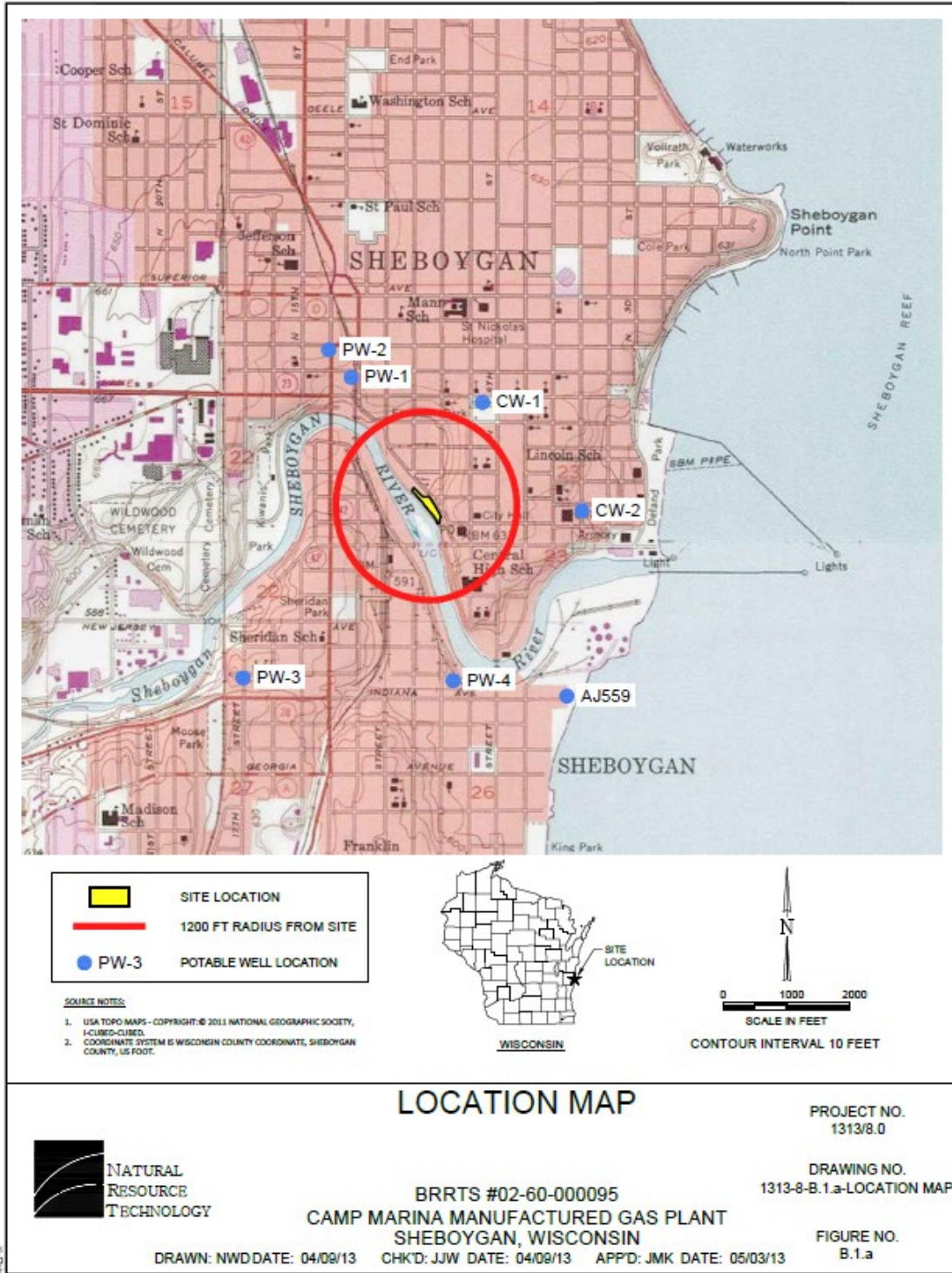


Figure 1. Site location map from NRT, May 17, 2013.

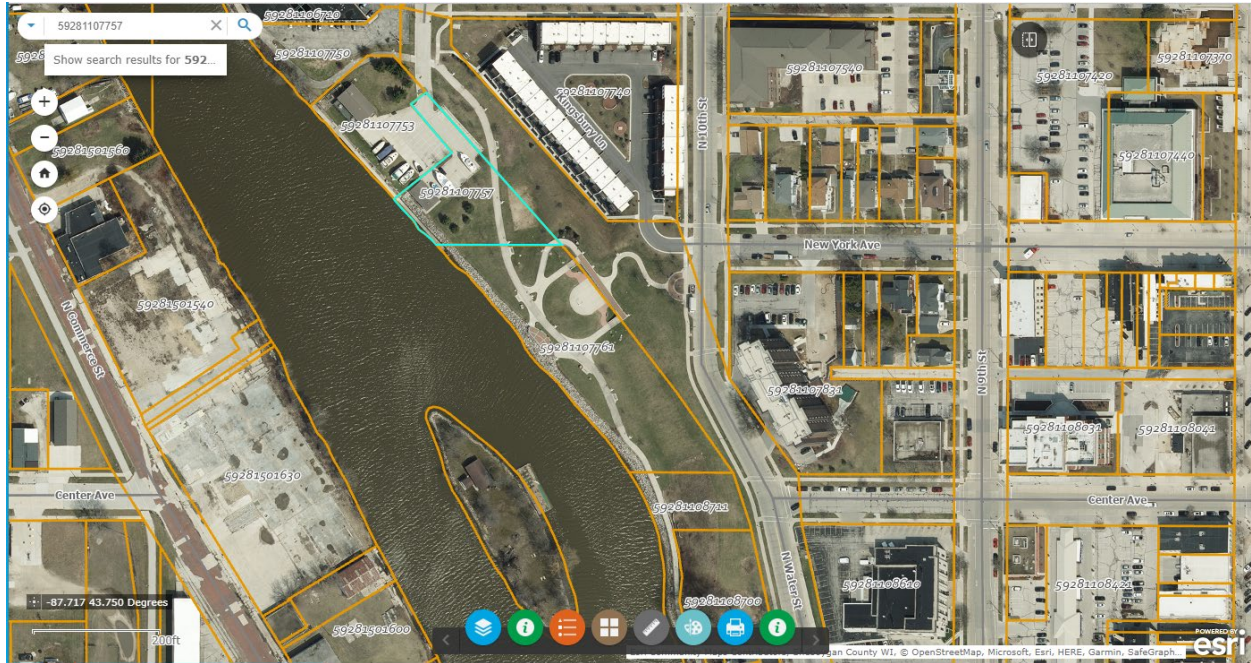


Figure 2. Parcel map from the Sheboygan County GIS Website at [Sheboygan County IMap \(arcgis.com\)](https://arcgis.com). The Campmarina site is located on Parcel 59281107757, 714 N. Water St.; Parcel 59281107761, 640 N. Water St.; and Parcel 59281108711, the Center Street ROW. The OU1 containment zone is central to the figure. The new condominiums are shown center near the top. Also pictured is Boat Island.

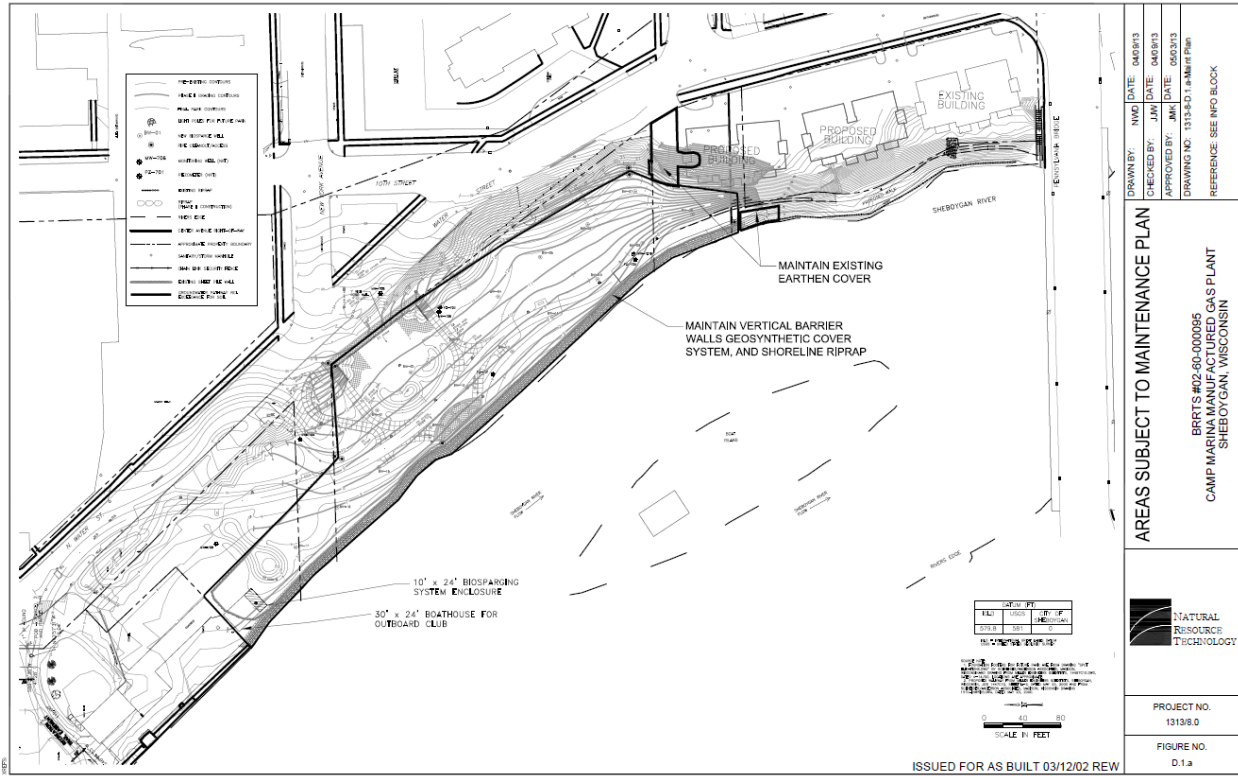


Figure 3. Site diagram from NRT, May 17, 2013, showing the areas subject to cover, barrier, and rip-rap maintenance institutional controls.

Appendix B, Reference List

- Natural Resources Technology, Inc., May 17, 2013, Campmarina Former MGP Maintenance Plan, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20130606_56_CO_Packet.
- Natural Resources Technology, Inc., March 13, 2014, Groundwater Quality Data Transmittal, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20140319_43_Ann_2013.
- Wisconsin Public Service Corporation, February 26, 2018, *January 2018 Monthly Progress Report*, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20180226_43_GW_Mon_Update.
- Wisconsin Public Service Corporation, July 25, 2018, *June 2018 Monthly Progress Report*, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20180725_43_GW_Mon_Update.
- Wisconsin Public Service Corporation, February 22, 2019, *January 2019 Monthly Progress Report*, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20190222_43_GW_Mon_Update.
- Wisconsin Public Service Corporation, August 22, 2019, *July 2019 Monthly Progress Report*, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20190822_43_GW_Mon_Update.
- Wisconsin Public Service Corporation, January 23, 2020, *December 2019 Monthly Progress Report*, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20200123_43_GW_Mon_Update.
- Wisconsin Public Service Corporation, July 24, 2020, *June 2020 Monthly Progress Report*, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20200724_43_GW_Mon_Update.
- Wisconsin Public Service Corporation, January 22, 2021, *December 2020 2018 Monthly Progress Report*, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20210122_43_GW_Mon_Update.
- Wisconsin Public Service Corporation, July 20, 2021, *June 2021 Monthly Progress Report*, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20210720_43_GW_Mon_Update.
- Wisconsin Public Service Corporation, January 19, 2021, *December 2021 Monthly Progress Report*, at [WDNR EM/RR BOTW \(wi.gov\)](#): 20220119_43_Status_Rpt_December_2021
- Wisconsin Public Service Corporation, July 21, 2022, *June 2022 Monthly Progress Report*, at [WDNR EM/RR BOTW \(wi.gov\)](#): 2020220721_43_Status_Report.

Appendix C

Hydraulic Head Elevations Since FYR1 2017

Well/Piezometer	TOC Elevation Feet	Measurement Date	Depth to Water Feet	Head Elevation Feet
MW-701R	590.47	December 18, 2017	5.92	584.55
		June 4, 2018	5.33	585.14
		December 13, 2018	8.14	582.33
		June 17, 2019	5.02	585.45
		December 3, 2019	5.76	584.71
		June 8, 2020	5.43	585.04
		December 11, 2020	6.26	584.21
		June 14, 2021	5.07	585.40
		December 2, 2021	5.52	584.95
		June 2, 2022	5.20	585.27
SG-703	582.03	December 18, 2017	1.68	
		June 4, 2018	1.11	
		December 13, 2018	1.20	
		June 17, 2019	-	
		December 3, 2019	0.45	
		June 8, 2020	-	
		December 11, 2020	1.33	
		June 14, 2021	-	
		December 2, 2021	-	
		June 2, 2022	-	
MW-705	589.91	December 18, 2017	3.36	586.55
		June 4, 2018	5.87	584.04
		December 13, 2018	5.60	584.31
		June 17, 2019	-	
		December 3, 2019	5.7	584.21
		June 8, 2020	-	
		December 11, 2020	5.68	584.23
		June 14, 2021	-	
		December 2, 2021	-	
		June 2, 2022	-	
MW-706	591.34	December 18, 2017	7.91	583.43
		June 4, 2018	7.98	583.36
		December 13, 2018	5.20	586.14
		June 17, 2019	7.74	583.60
		December 3, 2019	7.43	583.91
		June 8, 2020	7.61	583.73
		December 11, 2020	8.40	582.94
		June 14, 2021	5.42	585.92
		December 2, 2021	8.73	582.61
		June 2, 2022	8.07	583.27

Well	TOC Elevation Feet	Measurement Date	Depth to Water Feet	Head Elevation
MW-707R	587.78	December 18, 2017	4.72	583.06
		June 4, 2018	4.13	583.65
		December 13, 2018	4.11	583.67
		June 17, 2019	3.8	583.98
		December 3, 2019	3.81	583.97
		June 8, 2020	3.83	583.95
		December 11, 2020	4.04	583.74
		June 14, 2021	4.09	583.69
		December 2, 2021	4.42	583.36
		June 2, 2022	4.15	583.63
MW-708	606.09	December 18, 2017	11.01	595.08
		June 4, 2018	10.04	596.05
		December 13, 2018	9.86	596.23
		June 17, 2019	9.98	596.11
		December 3, 2019	8.45	597.64
		June 8, 2020	9.65	596.44
		December 11, 2020	10.30	595.79
		June 14, 2021	10.32	595.77
		December 2, 2021	10.80	595.29
		June 2, 2022	10.03	596.06
MW-709R	588.81	December 18, 2017	4.44	584.37
		June 4, 2018	4.33	584.48
		December 13, 2018	4.24	584.57
		June 17, 2019	4.34	584.47
		December 3, 2019	4.2	584.61
		June 8, 2020	4.10	584.71
		December 11, 2020	4.31	584.50
		June 14, 2021	4.51	584.30
		December 2, 2021	4.92	583.89
		June 2, 2022	4.47	584.34
PZ-701	588.89	December 18, 2017	5.89	583.00
		June 4, 2018	5.26	583.63
		December 13, 2018	6.07	582.82
		June 17, 2019	4.87	584.02
		December 3, 2019	4.82	584.07
		June 8, 2020	-	-
		December 11, 2020	5.27	583.62
		June 14, 2021	5.19	583.70
		December 2, 2021	5.34	583.55
		June 2, 2022	4.97	583.92
PZ-702	591.16	December 18, 2017	6.69	584.47
		June 4, 2018	6.43	584.73
		December 13, 2018	5.69	585.47

Well	TOC Elevation Feet	Measurement Date	Depth to Water Feet	Groundwater/SW Elevation
		June 17, 2019	6.04	585.12
		December 3, 2019	5.71	585.45
		June 8, 2020	5.72	585.44
		December 11, 2020	7.06	584.10
		June 14, 2021	6.54	584.62
		December 2, 2021	6.45	584.71
		June 2, 2022	6.23	584.93
PZ-703	589.22	December 18, 2017	4.73	584.49
		June 4, 2018	4.34	584.88
		December 13, 2018	4.04	585.18
		June 17, 2019	3.96	585.26
		December 3, 2019	3.97	585.25
		June 8, 2020	3.64	585.58
		December 11, 2020	4.32	584.90
		June 14, 2021	4.50	584.72
		December 2, 2021	4.99	584.23
		June 2, 2022	4.39	584.83

The reference documents may be found on the DNR's Bureau of Remediation and Redevelopment's Tracking System (BRRTS) public database at EM/RR BOTW (wi.gov) using the tracking number 02-60-000095:

TOC elevations were found in the following documents as listed on BRRTS:

- 19960628_29_Phase_II, Page 57
- 20030304_151_RADR_Appendix_E_to_Y, Pages 69 – 74. The TOC datum for MW-709R is not on the construction report, but it is listed in 20031231_92_OM, Pages 18-21

The following documents contained the most recent groundwater flow maps as listed on BRRTS:

- 20041222_92_OM, Pages 10-11
- 20051128_92_OM, Pages 10-11
- 20110329_43_Ann_2010, Pages 6-7
- 20140319_43_Ann_2013, Pages 6-7

After 2014, groundwater data has been submitted as copies sent to DNR in EPA monthly updates and 10-day sampling notifications to the City of Sheboygan. The following documents were used to calculate groundwater elevations since FYR1 as listed on BRRTS:

- 20180226_43_GW_Mon_Update
- 20180725_43_GW_Mon_Update
- 20190222_43_GW_Mon_Update
- 20190822_43_GW_Mon_Update
- 20190822_43_GW_Mon_Update
- 20200123_43_GW_Mon_Update

- 20200724_43_GW_Mon_Update
- 20210122_43_GW_Mon_Update
- 20210720_43_GW_Mon_Update
- 20220119_43_Status_Rpt_December_2021
- 20220721_43_Status_Rpt

Appendix D

Water Table Gradient in Central Containment Zone Since FYR 2017

Date	Groundwater Elevation MW-706 Feet	Groundwater Elevation MW-701R Feet	Difference Feet	Gradient
December 18, 2017	583.43	584.55	-1.12	-0.014
June 4, 2018	583.36	585.14	-1.78	-0.021
December 13, 2018	586.14	582.33	3.81	0.046
June 17, 2019	583.60	585.45	-1.85	-0.022
December 3, 2019	583.91	584.71	-0.80	-0.001
June 8, 2020	583.73	585.04	-1.31	-0.016
December 11, 2020	582.94	584.21	-1.27	-0.012
June 14, 2021	585.92	585.40	0.52	0.006
December 2, 2021	582.61	584.95	-2.93	-0.029
June 2, 2022	583.27	585.27	-2.00	-0.024

- Gradient indicates towards river

The reference documents may be found on the DNR’s Bureau of Remediation and Redevelopment’s Tracking System (BRRTS) public database at EM/RR BOTW (wi.gov) using the tracking number 02-60-000095:

TOC elevations were found in the following documents as listed on BRRTS:

- 19960628_29_Phase_II, Page 57
- 20030304_151_RADR_Appendix_E_to_Y, Pages 69 – 74. The TOC datum for MW-709R is not on the construction report, but it is listed in 20031231_92_OM, Pages 18-21

The following documents contained the most recent groundwater flow maps as listed on BRRTS:

- 20041222_92_OM, Pages 10-11
- 20051128_92_OM, Pages 10-11
- 20110329_43_Ann_2010, Pages 6-7
- 20140319_43_Ann_2013, Pages 6-7

After 2014, groundwater data has been submitted as copies sent to DNR in EPA monthly updates and 10-day sampling notifications to the City of Sheboygan. The following documents were used to calculate groundwater elevations since FYR1 as listed on BRRTS:

- 20180226_43_GW_Mon_Update
- 20180725_43_GW_Mon_Update
- 20190222_43_GW_Mon_Update
- 20190822_43_GW_Mon_Update
- 20190822_43_GW_Mon_Update
- 20200123_43_GW_Mon_Update
- 20200724_43_GW_Mon_Update
- 20210122_43_GW_Mon_Update
- 20210720_43_GW_Mon_Update

- 20220119_43_Status_Rpt_December_2021
- 20220721_43_Status_Rpt

Appendix E

Vertical Gradients In the Containment Barrier Since FYR 2017

Well Nest	Date	Vertical Gradient	Piezometers Gradient Direction	Wells Gradient Direction
MW-701R/PZ-701	December 18, 2017	down	river	shore
	June 4, 2018	down	river	shore
	December 13, 2018	up	river	river
	June 17, 2019	down	river	shore
	December 3, 2019	down	river	shore
	June 8, 2020	-	-	shore
	December 11, 2020	down	river	shore
	June 14, 2021	down	river	river
	December 2, 2021	down	river	shore
	June 2, 2022	down	river	shore
MW-706/PZ-702	December 18, 2017	up	river	shore
	June 4, 2018	up	river	shore
	December 13, 2018	down	river	river
	June 17, 2019	up	river	shore
	December 3, 2019	up	river	shore
	June 8, 2020	up	-	shore
	December 11, 2020	down	river	shore
	June 14, 2021	down	river	river
	December 2, 2021	up	river	shore
	June 2, 2022	up	river	shore
MW-707R/PZ-703	December 18, 2017	up	river	shore
	June 4, 2018	up	river	shore
	December 13, 2018	up	river	river
	June 17, 2019	up	river	shore
	December 3, 2019	up	river	shore
	June 8, 2020	up	-	shore
	December 11, 2020	up	river	shore
	June 14, 2021	up	river	river
	December 2, 2021	up	river	shore
	June 2, 2022	up	river	shore

- Not measured

The reference documents may be found on the DNR's Bureau of Remediation and Redevelopment's Tracking System (BRRTS) public database at EM/RR BOTW (wi.gov) using the tracking number 02-60-000095:

TOC elevations were found in the following documents as listed on BRRTS:

- 19960628_29_Phase_II, Page 57

- 20030304_151_RADR_Appendix_E_to_Y, Pages 69 – 74. The TOC datum for MW-709R is not on the construction report, but it is listed in 20031231_92_OM, Pages 18-21

The following documents contained the most recent groundwater flow maps as listed on BRRTS:

- 20041222_92_OM, Pages 10-11
- 20051128_92_OM, Pages 10-11
- 20110329_43_Ann_2010, Pages 6-7
- 20140319_43_Ann_2013, Pages 6-7

After 2014, groundwater data has been submitted as copies sent to DNR in EPA monthly updates and 10-day sampling notifications to the City of Sheboygan. The following documents were used to calculate groundwater elevations since FYR1 as listed on BRRTS:

- 20180226_43_GW_Mon_Update
- 20180725_43_GW_Mon_Update
- 20190222_43_GW_Mon_Update
- 20190822_43_GW_Mon_Update
- 20190822_43_GW_Mon_Update
- 20200123_43_GW_Mon_Update
- 20200724_43_GW_Mon_Update
- 20210122_43_GW_Mon_Update
- 20210720_43_GW_Mon_Update
- 20220119_43_Status_Rpt_December_2021
- 20220721_43_Status_Rpt

Five-Year Review Site Inspection Checklist

Purpose of the Checklist

The site inspection checklist provides a useful method for collecting important information during the site inspection portion of the five-year review. The checklist serves as a reminder of what information should be gathered and provides the means of checking off information obtained and reviewed, or information not available or applicable. The checklist is divided into sections as follows:

- I. Site Information
- II. Interviews
- III. On-site Documents & Records Verified
- IV. O&M Costs
- V. Access and Institutional Controls
- VI. General Site Conditions
- VII. Landfill Covers
- VIII. Vertical Barrier Walls
- IX. Groundwater/Surface Water Remedies
- X. Other Remedies
- XI. Overall Observations

Some data and information identified in the checklist may or may not be available at the site depending on how the site is managed. Sampling results, costs, and maintenance reports may be kept on site or may be kept in the offices of the contractor or at State offices. In cases where the information is not kept at the site, the item should not be checked as “not applicable,” but rather it should be obtained from the office or agency where it is maintained. If this is known in advance, it may be possible to obtain the information before the site inspection.

This checklist was developed by EPA and the U.S. Army Corps of Engineers (USACE). It focuses on the two most common types of remedies that are subject to five-year reviews: landfill covers, and groundwater pump and treat remedies. Sections of the checklist are also provided for some other remedies. The sections on general site conditions would be applicable to a wider variety of remedies. The checklist should be modified to suit your needs when inspecting other types of remedies, as appropriate.

The checklist may be completed and attached to the Five-Year Review report to document site status. Please note that the checklist is not meant to be completely definitive or restrictive; additional information may be supplemented if the reviewer deems necessary. Also note that actual site conditions should be documented with photographs whenever possible.

Using the Checklist for Types of Remedies

The checklist has sections designed to capture information concerning the main types of remedies which are found at sites requiring five-year reviews. These remedies are landfill covers (Section VII of the checklist) and groundwater and surface water remedies (Section IX of the checklist). The primary elements and appurtenances for these remedies are listed in sections which can be checked off as the facility is inspected. The opportunity is also provided to note site conditions, write comments on the facilities, and attach any additional pertinent information. If a site includes remedies beyond these, such as soil vapor extraction or soil landfarming, the information should be gathered in a similar manner and attached to the checklist.

Considering Operation and Maintenance Costs

Unexpectedly widely varying or unexpectedly high O&M costs may be early indicators of remedy problems. For this reason, it is important to obtain a record of the original O&M cost estimate and of annual O&M costs during the years for which costs incurred are available. Section IV of the checklist provides a place for documenting annual costs and for commenting on unanticipated or unusually high O&M costs. A more detailed categorization of costs may be attached to the checklist if available. Examples of categories of O&M costs are listed below.

Operating Labor - This includes all wages, salaries, training, overhead, and fringe benefits associated with the labor needed for operation of the facilities and equipment associated with the remedial actions.

Maintenance Equipment and Materials - This includes the costs for equipment, parts, and other materials required to perform routine maintenance of facilities and equipment associated with a remedial action.

Maintenance Labor - This includes the costs for labor required to perform routine maintenance of facilities and for equipment associated with a remedial action.

Auxiliary Materials and Energy - This includes items such as chemicals and utilities which can include electricity, telephone, natural gas, water, and fuel. Auxiliary materials include other expendable materials such as chemicals used during plant operations.

Purchased Services - This includes items such as sampling costs, laboratory fees, and other professional services for which the need can be predicted.

Administrative Costs - This includes all costs associated with administration of O&M not included under other categories, such as labor overhead.

Insurance, Taxes and Licenses - This includes items such as liability and sudden and accidental insurance, real estate taxes on purchased land or right-of-way, licensing fees for certain technologies, and permit renewal and reporting costs.

Other Costs - This includes all other items which do not fit into any of the above categories.

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Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION															
Site name: <u>Camp Marina</u>	Date of inspection: <u>9/21/2022</u>														
Location and Region:	EPA ID: <u>B12273#</u> <u>02600095</u>														
Agency, office, or company leading the five-year review:	Weather/temperature: <u>70, Sunny to partly cloudy</u>														
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> Landfill cover/containment</td> <td><input checked="" type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input type="checkbox"/> Access controls</td> <td><input checked="" type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input checked="" type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td colspan="2"><input checked="" type="checkbox"/> Other: <u>Air-sparge system shut off in 2016.</u></td> </tr> <tr> <td colspan="2"><u>cover drainage system</u></td> </tr> </table>		<input checked="" type="checkbox"/> Landfill cover/containment	<input checked="" type="checkbox"/> Monitored natural attenuation	<input type="checkbox"/> Access controls	<input checked="" type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input checked="" type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input checked="" type="checkbox"/> Other: <u>Air-sparge system shut off in 2016.</u>		<u>cover drainage system</u>	
<input checked="" type="checkbox"/> Landfill cover/containment	<input checked="" type="checkbox"/> Monitored natural attenuation														
<input type="checkbox"/> Access controls	<input checked="" type="checkbox"/> Groundwater containment														
<input checked="" type="checkbox"/> Institutional controls	<input checked="" type="checkbox"/> Vertical barrier walls														
<input type="checkbox"/> Groundwater pump and treatment															
<input type="checkbox"/> Surface water collection and treatment															
<input checked="" type="checkbox"/> Other: <u>Air-sparge system shut off in 2016.</u>															
<u>cover drainage system</u>															
Attachments: <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached															
II. INTERVIEWS (Check all that apply) <u>NA</u>															
1. O&M site manager _____ <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> </tr> </table> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____		Name	Title	Date											
Name	Title	Date													

2. O&M staff NA
Name _____ Title _____ Date _____
Interviewed at site at office by phone Phone no. _____
Problems, suggestions; Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency EPA
Contact _____
Name _____ Title _____ Date _____ Phone no. _____
Problems; suggestions; Report attached _____

Agency City of Sheboygan
Contact _____
Name _____ Title _____ Date _____ Phone no. _____
Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name _____ Title _____ Date _____ Phone no. _____
Problems; suggestions; Report attached _____

Agency _____
Contact _____
Name _____ Title _____ Date _____ Phone no. _____
Problems; suggestions; Report attached _____

4. **Other interviews** (optional) Report attached. NA

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)			
1.	O&M Documents <input checked="" type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input checked="" type="checkbox"/> Maintenance logs Remarks <i>Cover maintenance plan posted on DNR's public data base. Maintenance log to be kept on-site not verified.</i>	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	Site-Specific Health and Safety Plan <input type="checkbox"/> Contingency plan/emergency response plan Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	O&M and OSHA Training Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
5.	Gas Generation Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
6.	Settlement Monument Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks <i>Data tables posted on DNR's public database.</i>	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> N/A
8.	Leachate Extraction Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A

IV. O&M COSTS																																																	
1.	O&M Organization <input type="checkbox"/> State in-house <input type="checkbox"/> Contractor for State <input type="checkbox"/> PRP in-house <input type="checkbox"/> Contractor for PRP <input type="checkbox"/> Federal Facility in-house <input type="checkbox"/> Contractor for Federal Facility <input checked="" type="checkbox"/> Other <u>RP and city of Sheboygan would have those records. Not on file with the DNR.</u>																																																
2.	O&M Cost Records <u>Not on file with the DNR</u> <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> Funding mechanism/agreement in place Original O&M cost estimate _____ <input type="checkbox"/> Breakdown attached Total annual cost by year for review period if available <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">From _____</td> <td style="width: 15%;">To _____</td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td>From _____</td> <td>To _____</td> <td></td> <td></td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> <tr> <td style="text-align: center;">Date</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Total cost</td> <td></td> <td></td> <td><input type="checkbox"/> Breakdown attached</td> </tr> </table>	From _____	To _____				<input type="checkbox"/> Breakdown attached	Date	Date	Total cost			<input type="checkbox"/> Breakdown attached	From _____	To _____				<input type="checkbox"/> Breakdown attached	Date	Date	Total cost			<input type="checkbox"/> Breakdown attached	From _____	To _____				<input type="checkbox"/> Breakdown attached	Date	Date	Total cost			<input type="checkbox"/> Breakdown attached	From _____	To _____				<input type="checkbox"/> Breakdown attached	Date	Date	Total cost			<input type="checkbox"/> Breakdown attached
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Date	Date	Total cost			<input type="checkbox"/> Breakdown attached																																												
3.	Unanticipated or Unusually High O&M Costs During Review Period Describe costs and reasons: <u>Not on file with the DNR.</u> _____ _____ _____ _____																																																
V. ACCESS AND INSTITUTIONAL CONTROLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A																																																	
A. Fencing																																																	
1.	Fencing damaged <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Gates secured <input type="checkbox"/> N/A Remarks <u>fencing for safety from falls in good repair.</u>																																																
B. Other Access Restrictions																																																	
1.	Signs and other security measures <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A Remarks _____																																																

C. Institutional Controls (ICs)			
1.	Implementation and enforcement		
	Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
	Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
	Type of monitoring (e.g., self-reporting, drive by) <u>Caf/Gover inspections annually</u>		
	Frequency _____		
	Responsible party/agency <u>WPC WPSC</u>		
	Contact _____		
	Name	Title	Date Phone no.
	Reporting is up-to-date	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
	Reports are verified by the lead agency	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
	Specific requirements in deed or decision documents have been met	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
	Violations have been reported	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
	Other problems or suggestions: <input type="checkbox"/> Report attached		

2.	Adequacy	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A
	Remarks _____		

D. General			
1.	Vandalism/trespassing	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident
	Remarks _____		

2.	Land use changes on site	<input type="checkbox"/> N/A	
	Remarks <u>New condominiums built adjacent to site on the northeast side.</u>		

3.	Land use changes off site	<input type="checkbox"/> N/A	
	Remarks <u>See above comment.</u>		

VI. GENERAL SITE CONDITIONS			
A. Roads	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A	
1.	Roads damaged	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Roads adequate <input checked="" type="checkbox"/> N/A
	Remarks _____		

B. Other Site Conditions			
Remarks <u>No oil blebs in river.</u>			
VII. LANDFILL COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
A. Landfill Surface			
1.	Settlement (Low spots) Areal extent _____ Remarks <u>It all looks good</u>	<input type="checkbox"/> Location shown on site map Depth _____	<input type="checkbox"/> Settlement not evident
2.	Cracks Lengths _____ Widths _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depths _____	<input checked="" type="checkbox"/> Cracking not evident
3.	Erosion Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depth _____	<input checked="" type="checkbox"/> Erosion not evident
4.	Holes Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depth _____	<input checked="" type="checkbox"/> Holes not evident
5.	Vegetative Cover <input checked="" type="checkbox"/> Grass <input type="checkbox"/> Cover properly established <input checked="" type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram), Remarks <u>It all looks good.</u>		<input type="checkbox"/> No signs of stress
6.	Alternative Cover (armored rock, concrete, etc.) <input type="checkbox"/> N/A Remarks <u>Pavements all in good repair. Rip-rap in good shape</u>		
7.	Bulges Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Height _____	<input checked="" type="checkbox"/> Bulges not evident

8.	Wet Areas/Water Damage <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input checked="" type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map	Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____
9.	Slope Instability <input type="checkbox"/> Slides Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of slope instability
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A or okay
2.	Bench Breached Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A or okay
3.	Bench Overtopped Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A or okay
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of settlement
2.	Material Degradation Material type _____ Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of degradation
3.	Erosion Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of erosion

4.	Undercutting Areal extent _____ Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of undercutting
5.	Obstructions Type _____ <input type="checkbox"/> Location shown on site map Size _____ Remarks _____	<input checked="" type="checkbox"/> No obstructions Areal extent _____
6.	Excessive Vegetative Growth Type _____ <input checked="" type="checkbox"/> No evidence of excessive growth <input type="checkbox"/> Vegetation in channels does not obstruct flow <input type="checkbox"/> Location shown on site map Remarks _____	Areal extent _____
D. Cover Penetrations <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A <i>ball court recently re-seeded.</i>		
1.	Gas Vents <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration <input checked="" type="checkbox"/> N/A Remarks _____	<input type="checkbox"/> Active <input type="checkbox"/> Passive <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance
2.	Gas Monitoring Probes <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks _____	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
3.	Monitoring Wells (within surface area of landfill) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks _____	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A
4.	Leachate Extraction Wells <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks _____	<input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A
5.	Settlement Monuments Remarks _____	<input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A

Two small bare spots in grass by the basket + ball court. Bare spot south of basket.

Concrete @ PZ-703 needs repair. See photo.

All look well maintained. Covers not removed for this inspection to check locks - flush mounts all.

PZ-703

Pavement at PZ-703 needs repair.

E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
2.	Gas Collection Wells, Manifolds and Piping <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____	
F. Cover Drainage Layer <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	Outlet Pipes Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks <u>Not visible</u> _____ _____	
2.	Outlet Rock Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks <u>Location not visible</u> _____ _____	
G. Detention/Sedimentation Ponds <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Siltation Areal extent _____ Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____ _____	
2.	Erosion Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____ _____	
3.	Outlet Works <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	
4.	Dam <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	

H. Retaining Walls		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Deformations	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement _____	Vertical displacement _____	
	Rotational displacement _____		
	Remarks _____		
2.	Degradation	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Degradation not evident
	Remarks _____		
I. Perimeter Ditches/Off-Site Discharge		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Vegetation does not impede flow		
	Areal extent _____	Type _____	
	Remarks _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
	Areal extent _____	Depth _____	
	Remarks _____		
4.	Discharge Structure	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> N/A
	Remarks _____		
VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Settlement	<input checked="" type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Settlement not evident
	Areal extent _____	Depth _____	
	Remarks _____		
2.	Performance Monitoring	Type of monitoring <u>MNA</u>	
	<input type="checkbox"/> Performance not monitored		
	Frequency <u>2 x / year</u>	<input type="checkbox"/> Evidence of breaching	
	Head differential <u>Around the barrier to north, usually towards</u>		
	Remarks <u>river within the barrier.</u>		

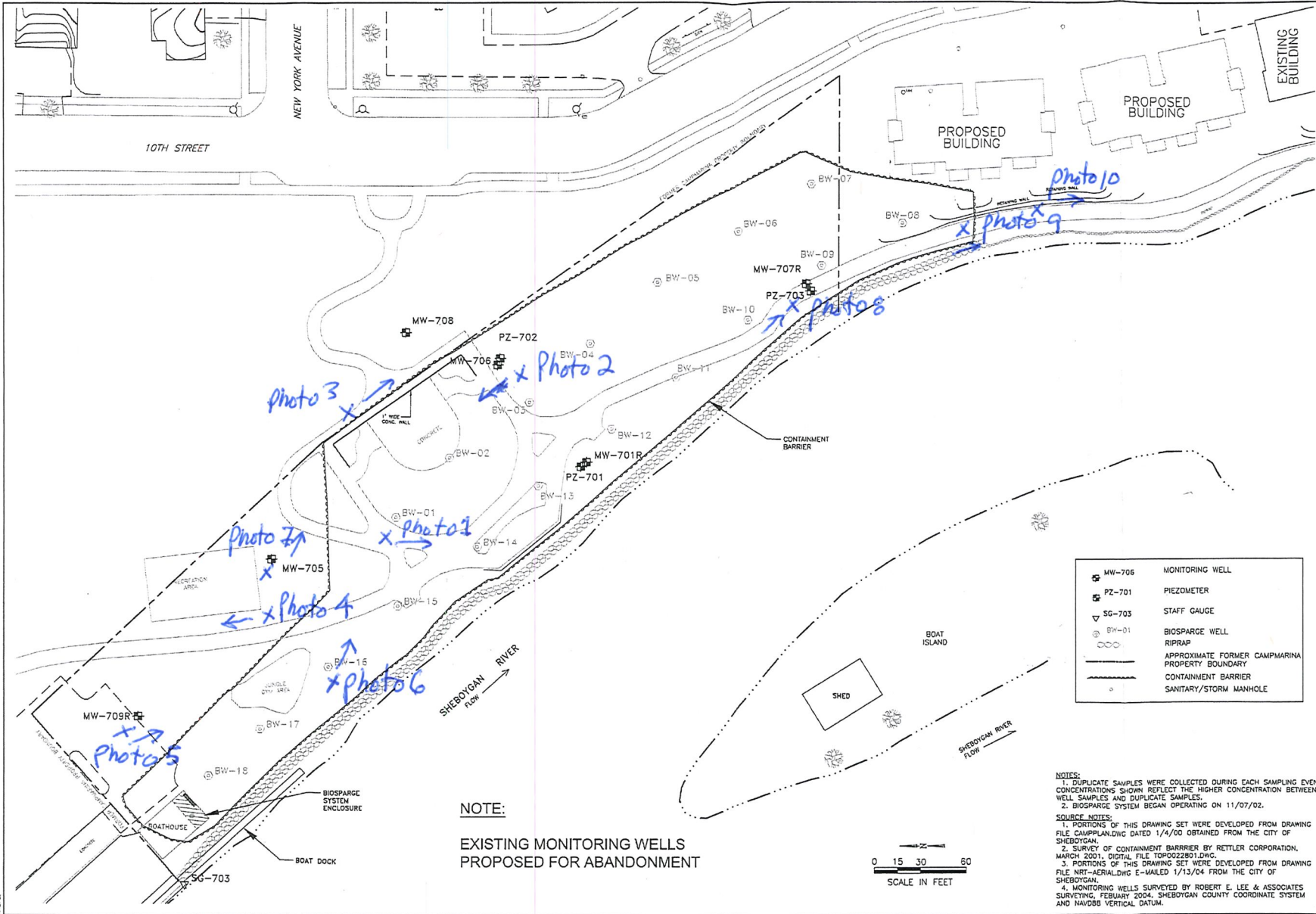
IX. GROUNDWATER/SURFACE WATER REMEDIES <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
A. Groundwater Extraction Wells, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Pumps, Wellhead Plumbing, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____
B. Surface Water Collection Structures, Pumps, and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1.	Collection Structures, Pumps, and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____
3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____

C. Treatment System		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Treatment Train (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____		
2.	Electrical Enclosures and Panels (properly rated and functional) <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		
3.	Tanks, Vaults, Storage Vessels <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____		
4.	Discharge Structure and Appurtenances <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____		
5.	Treatment Building(s) <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks <i>Biosurge equipment building converted to storage for the Sheboygan Outboard Motor Club</i>		
6.	Monitoring Wells (pump and treatment remedy) <input checked="" type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input checked="" type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks <i>Covers not removed (all flush mounts), tanks not inspected.</i>		
D. Monitoring Data			
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality		
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining		

D. Monitored Natural Attenuation			
1.	Monitoring Wells (natural attenuation remedy)		
	<input checked="" type="checkbox"/> Properly secured/locked	<input checked="" type="checkbox"/> Functioning	<input checked="" type="checkbox"/> Routinely sampled
	<input checked="" type="checkbox"/> All required wells located	<input type="checkbox"/> Needs Maintenance	<input checked="" type="checkbox"/> Good condition
	Remarks _____		<input type="checkbox"/> N/A
X. OTHER REMEDIES			
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.			
XI. OVERALL OBSERVATIONS			
A. Implementation of the Remedy			
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).			
<i>Containment system not visible from surface.</i>			

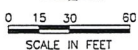
B. Adequacy of O&M			
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.			
<i>No issues noted.</i>			

C. Early Indicators of Potential Remedy Problems
<p>Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.</p> <p><i>No problems seen.</i></p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
D. Opportunities for Optimization
<p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.</p> <p><i>None.</i></p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>



MW-705, MW-706, MW-707R, MW-708, MW-709R, PZ-701, PZ-702, PZ-703, SG-703, BW-01, BW-02, BW-03, BW-04, BW-05, BW-06, BW-07, BW-08, BW-09, BW-10, BW-11, BW-12, BW-13, BW-14, BW-15, BW-16, BW-17, BW-18, BOATHOUSE, BOAT DOCK, BIOSPARGES SYSTEM ENCLOSURE, SHED, BOAT ISLAND, SHEBOYGAN RIVER, SHEBOYGAN FLOW, CONTAINMENT BARRIER, APPROXIMATE FORMER CAMP MARINA PROPERTY BOUNDARY, SANITARY/STORM MANHOLE, 10TH STREET, NEW YORK AVENUE, EXISTING BUILDING, PROPOSED BUILDING, PROPOSED BUILDING.

NOTE:
 EXISTING MONITORING WELLS
 PROPOSED FOR ABANDONMENT



	MW-705	MONITORING WELL
	PZ-701	PIEZOMETER
	SG-703	STAFF GAUGE
	BW-01	BIOSPARGES WELL
		RIPRAP
		APPROXIMATE FORMER CAMP MARINA PROPERTY BOUNDARY
		CONTAINMENT BARRIER
		SANITARY/STORM MANHOLE

NOTES:
 1. DUPLICATE SAMPLES WERE COLLECTED DURING EACH SAMPLING EVENT. CONCENTRATIONS SHOWN REFLECT THE HIGHER CONCENTRATION BETWEEN WELL SAMPLES AND DUPLICATE SAMPLES.
 2. BIOSPARGES SYSTEM BEGAN OPERATING ON 11/07/02.
SOURCE NOTES:
 1. PORTIONS OF THIS DRAWING SET WERE DEVELOPED FROM DRAWING FILE CAMPPLAND.DWG DATED 1/4/00 OBTAINED FROM THE CITY OF SHEBOYGAN.
 2. SURVEY OF CONTAINMENT BARRIER BY RETTLER CORPORATION, MARCH 2001, DIGITAL FILE TOPO022801.DWG.
 3. PORTIONS OF THIS DRAWING SET WERE DEVELOPED FROM DRAWING FILE INT-AERIAL.DWG E-MAILED 1/13/04 FROM THE CITY OF SHEBOYGAN.
 4. MONITORING WELLS SURVEYED BY ROBERT E. LEE & ASSOCIATES SURVEYING, FEBRUARY 2004, SHEBOYGAN COUNTY COORDINATE SYSTEM AND NAVD83 VERTICAL DATUM.

SITE MAP	DRAWN BY: NWD	DATE: 04/09/13
	CHECKED BY: JWM	DATE: 04/09/13
	APPROVED BY: JMK	DATE: 05/17/13
		DRAWING NO: 1313-B-3.d-Monitoring Wells
REFERENCE: SEE INFO BLOCK		
BRRTS #02-60-000095 CAMP MARINA MANUFACTURED GAS PLANT SHEBOYGAN, WISCONSIN		
PROJECT NO. 67971		
FIGURE NO. 1		

Appendix F2 Site Inspection Photographic Log



Photo 1. Central lower part of the containment area looking southwest towards Boat Island (center) and the Pennsylvania Avenue Bridge (left). The guardrail for the river overlook bench is far center right of photo. Photo taken September 21, 2022.



Photo 2: Re-seeded exposed soil on the top of the cover south of the basketball court looking northwest. New condominiums are in the upper right of photo. Photo taken September 21, 2022.



Photo 3: Unknown well nest at the top of the former gas plant foundation. Photo looking southeast, taken September 21, 2022.



Photo 4: Recreation Area (volleyball court) off the containment area to the northeast side. New condominiums are in the upper right of photo. Photo taken September 21, 2022.



Photo 5: Possibly monitoring well MW-709R. Photo looking southwest towards two wells pictured near the top of the photo which may be MW-703 (reported as abandoned) and possibly air sparge well. Photo taken September 21, 2022.



Photo 6: Two wells possibly MW-703 (reported as abandoned) and possibly air sparge Well BW-16. Photo looking east, taken September 21, 2022.



Photo 7: Likely Monitoring Well MW-705. Photo looking east-southeast, taken September 21, 2022.



Photo 8: Likely MW-707R (left) and PZ-703 (right) showing damage to surface pavement. Photo looking southeast from near the southeast end of the site taken September 21, 2022.



Photo 9: Possibly air sparge Well BW-08. Photo looking southeast from southeast end of site, taken September 21, 2022.



Photo 10: Possible abandoned boring/geotechnical boring at the extreme southeast end of the site near retaining wall (left side of photo). Looking Southeast, taken September 21, 2022.

Appendix G

Benzene, Total Xylenes, and Naphthalene Concentrations Since FRY1

Well	Sample Date	Benzene ug/l	Total Xylenes ug/l	Naphthalene ug/l	
MW-701R	December 18, 2017	3980	147J	901	
	June 4, 2018	3550	165	1090	
	December 13, 2018	4140	646	1500	
	June 17, 2019	3130	152	994	
	December 3, 2019	2920	134	821	
	June 8, 2020	3690	191	762	
	December 11, 2020	4220	176	1030	
	June 14, 2021	3440	189	902	
	December 2, 2021	3290	145.9	1120	
	June 2, 2022	3890	149	1220	
	MW-706	December 18, 2017	3330	286	1680
		June 4, 2018	6170	1130	2270
December 13, 2018		3710	126J	667	
June 17, 2019		2670	648	1680	
December 3, 2019		2010	485	1280	
June 8, 2020		3250	944	1470	
December 11, 2020		2540	438	701	
June 14, 2021		2680	467	1790	
December 2, 2021		2510	283	1630	
June 2, 2022		3900	610	1700	
MW-707R		December 18, 2017	1720	458	338
		June 4, 2018	1450	557	424
	December 13, 2018	1310	143	15.1	
	June 17, 2019	2630	636	398	
	December 3, 2019	269	46.2	7.3	
	June 8, 2020	1020	461	176	
	December 11, 2020	2920	559	404	
	June 14, 2021	1630	502	155	
	December 2, 2021	3100	641	471	
	June 2, 2022	2220	603	22.5	
	MW-708	December 18, 2017	<0.50U	<1.5U	<0.020U
		June 4, 2018	<0.50U	<1.5U	<0.018U
December 13, 2018		<0.25U	<1.5U	0.022J	
June 17, 2019		<0.25U	<1.5U	<0.019U	
December 3, 2019		<0.25U	<1.5U	<0.020U	
June 8, 2020		<0.25U	<1.5U	<0.018U	
December 11, 2020		0.25U	1.5U	0.018U	
June 14, 2021		0.30U	1.0J	0.18U	
December 2, 2021		0.30U	1.05U	0.027J	
June 2, 2022		0.30U	1.0U	0.019J	

MW-709R	December 18, 2017	<0.50U	<1.5U	<0.018U
	June 4, 2018	<0.50U	<1.5U	<0.018U
	December 13, 2018	<0.25U	<1.5U	<0.019U
	June 17, 2019	<0.25U	3.6	<0.018U
	December 3, 2019	<0.25U	<1.5U	<0.020U
	June 8, 2020	<0.25U	2.0J	<0.018U
	December 11, 2020	0.25U	1.7J	0.020U
	June 14, 2021	0.30U	1.1J	0.023J
	December 2, 2021	0.30U	1.05U	0.021J
	June 2, 2022	0.30U	1.0U	0.11
PZ-701	December 18, 2017	<0.50U	<1.5U	0.029J
	June 4, 2018	<0.50U	<1.5U	0.019J
	December 13, 2018	<0.25U	<1.5U	<0.020U
	June 17, 2019	<0.25U	<1.5U	0.045J
	December 3, 2019	<0.25U	<1.5U	0.043J
	June 8, 2020	<0.25U	<1.5U	0.050J
	December 11, 2020	0.25U	1.5U	0.14
	June 14, 2021	0.30U	1.0U	0.32
	December 2, 2021	0.30U	1.05U	0.22
	June 2, 2022	0.30U	1.0U	0.029J
PZ-702	December 18, 2017	<0.50U	<1.5U	0.036J
	June 4, 2018	<0.50U	<1.5U	0.042J
	December 13, 2018	<0.25U	<1.5U	<0.018U
	June 17, 2019	<0.25U	<1.5U	0.049J
	December 3, 2019	<0.25U	<1.5U	0.026J
	June 8, 2020	<0.25U	<1.5U	<0.018U
	December 11, 2020	0.25U	1.5U	0.034J
	June 14, 2021	0.30U	1.0U	0.054J
	December 2, 2021	0.30U	1.05U	0.051
	June 2, 2022	0.30U	1.0U	0.021J
PZ-703	December 18, 2017	188	71.3	0.083J
	June 4, 2018	429	94.7	0.041J
	December 13, 2018	392	84.3	0.055
	June 17, 2019	363	94.0	0.040J
	December 3, 2019	279	51.0	0.040J
	June 8, 2020	296	72.6	0.026J
	December 11, 2020	244	44.6	0.11
	June 14, 2021	316	68.4	0.072J
	December 2, 2021	278	51.6	0.13
	June 2, 2022	335	75.9	0.28

The reference documents may be found on the DNR's Bureau of Remediation and Redevelopment's Tracking System (BRRTS) public database at EM/RR BOTW (wi.gov) using the tracking number 02-60-000095:

After 2014, groundwater data has been submitted as copies sent to DNR in EPA monthly updates and 10-day sampling notifications to the City of Sheboygan. The following documents were used since FYR1 for this table as listed on BRRTS:

- 20180226_43_GW_Mon_Update
- 20180725_43_GW_Mon_Update
- 20190222_43_GW_Mon_Update
- 20190822_43_GW_Mon_Update
- 20190822_43_GW_Mon_Update
- 20200123_43_GW_Mon_Update
- 20200724_43_GW_Mon_Update
- 20210122_43_GW_Mon_Update
- 20210720_43_GW_Mon_Update
- 20220119_43_Status_Rpt_December_2021
- 20220721_43_Status_Rpt