THIRD FIVE-YEAR REVIEW REPORT FOR DELAVAN MUNICIPAL WELL No. 4 SUPERFUND SITE DELAVAN, WISCONSIN

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FOR:
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8-17-15

Date

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List of Acronyms

ARAR	Applicable, Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
City	City of Delavan
CFR	Code of Federal Regulations
CSES	Chip Storage Extraction System
DCA	Dichloroethane
EPA	United States Environmental Protection Agency
ES	Enforcement Standard (State of Wisconsin)
FS	Feasibility Study
FYR	Five Year Review
ICs	Institutional Controls
ICIAP	Institutional Control Implementation and Assurance Plan
LTS	Long Term Stewardship
MW	Monitoring Well
NCP	National Contingency Plan
NPL	National Priorities List
NR	Natural Resources (as in "NR 140.28, WAC")
O&M	Operation and Maintenance
OU	Operable Unit
PALs	Preventive Action Limits
PCE	Perchloroethylene or Tetrachloroethylene
PCOR	Preliminary Closeout Report
PRPs	Potentially Responsible Parties
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Responsible Party
RPM	Remedial Project Manager (EPA)
SES	Southeast Extraction System
Sta-Rite	Sta-Rite Industries, Inc.
State	State of Wisconsin
SVE/GWE	Soil Vapor Extraction and Groundwater Extraction
TCA	Trichloroethane
TCE	Trichloroethylene
UU/UE	Unlimited Use/Unrestricted Exposure
VI	Vapor Intrusion

VOC	Volatile Organic Compound
WAC	Wisconsin Administrative Code
WDHSS	Wisconsin Department Health and Social Services
WDNR	Wisconsin Department of Natural Resources

EXECUTIVE SUMMARY

This is the third five-year review (FYR) for the Delavan Municipal Well No. 4 Superfund Site located within the corporate limits of the City of Delavan (City), Walworth County, Wisconsin. The purpose of this FYR is to review information to determine if the remedy is and will continue to be protective of human health and the environment. The triggering action for this statutory FYR was the signing of the previous FYR on September 23, 2010.

The Site, defined as the contaminated aquifer used by the City, is located within the corporate limits of the City. The portion of the aquifer that is contaminated is generally located on property occupied by Sta-Rite Industries, Inc. (Sta-Rite). In March 1982, during a random public well sampling program by the Wisconsin Department of Natural Resources (WDNR), trichloroethylene (TCE) was detected in Delavan Municipal Well No. 4. TCE exceeded the suggested levels for water quality standards as set by the Wisconsin Department of Health and Social Services (WDHSS). Subsequent samplings also identified 1,1,1-trichloroethane (TCA) and tetrachloroethylene (PCE) in Delavan Municipal Well No. 4. As a result, the City removed Delavan Municipal Well No. 4 from the municipal water supply system in 1982.

In 1983, Sta-Rite implemented the following corrective measures over a period of ten years to remove and/or contain volatile organic compounds (VOCs) on Sta-Rite property:

- excavation of the former sump and adjacent soils;
- installation of a spray irrigation flushing system so infiltrating water would enhance the removal of the solvent from impacted soils; and
- installation of a soil vapor extraction and groundwater extraction (SVE/GWE) system as well as groundwater extraction and monitoring wells.

In January 1993, WDNR approved interim remedial measures, which called for the construction of an expanded SVE/GWE system. In September 2000, the United States Environmental Protection Agency (EPA) signed a Record of Decision (ROD) and determined that no further action was necessary other than continued operation and maintenance (O&M) of the following response actions implemented under State of Wisconsin (State) authorities:

- soil vapor extraction in three source areas;
- groundwater extraction and treatment; and
- groundwater monitoring.

The remedy at the Delavan Municipal Well No. 4 Site is currently protective of human health and the environment because no groundwater exceeding Preventive Action Limits (PALs) is migrating beyond the Sta-Rite property boundary, and VOCs are no longer present in Delavan Municipal Well No. 4. In addition, VOCs in the soil have been remediated to levels that are protective for industrial use. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: groundwater data needs to be reviewed to determine whether a vapor intrusion (VI) investigation is needed; a decision document is needed to record a final decision to add institutional controls (ICs) as a component of the selected remedy; ICs need to be implemented; and an Institutional Control Implementation

and Assurance Plan (ICIAP) needs to be developed to ensure that effective ICs are implemented, monitored, maintained, and enforced. Long-term protectiveness requires groundwater monitoring until performance standards are achieved as well as compliance with effective ICs.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Delavan Municipal Well #4		
EPA ID: WID980820062		
Region: 5	**State:** WI	**City/County:** Delavan, Walworth County
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	**Has the Site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: State		
Author name (Federal or State Project Manager): Thomas A. Wentland		
Author affiliation: WDNR		
Review period: 3/1/2015 – 7/31/2015		
Date of site inspection: 3/26/2015		
Type of review: Statutory		
Review number: 3		
Triggering action date: 9/23/2010		
Due date ***(five years after triggering action date)***: 9/23/2015		

Five-Year Review Summary Form (continued)

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:
None

Issues and Recommendations Identified in the Five-Year Review:

OU(s): *Site-wide*	**Issue Category: Institutional Controls**			
	Issue: ROD did not require implementation of ICs.			
	Recommendation: Complete a decision document to record a final decision to add ICs as a component of the selected remedy.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	State	12/30/2016

OU(s): *Site-wide*	**Issue Category: Institutional Controls**			
	Issue: ICs and long-term stewardship procedures are needed.			
	Recommendation: Develop an ICIAP and implement ICs to ensure that effective ICs are implemented, monitored, maintained, and enforced.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	12/30/2016

OU(s): *Site-wide*	**Issue Category: Monitoring**			
	Issue: Determine the need for a VI investigation.			
	Recommendation: Review an additional round of groundwater data to confirm whether VOC levels are below screening levels.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	12/30/2016

Protectiveness Statement(s)

Site-wide Protectiveness Statement

Protectiveness Determination:
Short-term Protective

Protectiveness Statement:
The remedy at the Delavan Municipal Well No. 4 Site is currently protective of human health and the environment because no groundwater exceeding PALs is migrating beyond the Sta-Rite property boundary, and VOCs are no longer present in Delavan Municipal Well No. 4. In addition, VOCs in the soil have been remediated to levels that are protective for industrial use. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: groundwater data needs to be reviewed to determine whether a VI investigation is needed; a decision document is needed to record a final decision to add ICs as a component of the selected remedy; ICs need to be implemented; and an ICIAP needs to be developed to ensure that effective ICs are implemented, monitored, maintained, and enforced. Long-term protectiveness requires groundwater monitoring until performance standards are achieved as well as compliance with effective ICs.

I. INTRODUCTION

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

The WDNR is preparing this FYR in consultation with EPA pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

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

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

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

WDNR has conducted a FYR of the remedial action (RA) implemented at the Delavan Municipal Well No. 4 Superfund Site located within the corporate limits of the City of Delevan, Walworth County, Wisconsin. The review for this Site was conducted from March 2015 through July 2015 by the WDNR Project Manager with assistance from the EPA Remedial Project Manager. This report documents the results of the review. As part of this review, the WDNR Project Manager reviewed all data collected under the regular O&M monitoring program for the Site to evaluate the current Site status.

This is the third FYR for the Delavan Municipal Well No. 4 Superfund Site. The triggering action for this statutory review is the completion date of the previous FYR. The FYR is required due to the fact that hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The Site consists of one Operable Unit (OU).

II. PROGRESS SINCE THE LAST REVIEW

Table 1: Chronology of Site Events

Event	Date
Sta-Rite facility constructed	1958
Initial discovery of contamination	March 1982
Delavan Municipal Well No. 4 decommissioned	July 1982
City and Sta-Rite perform hydrogeological investigations	1983
City of Delavan Municipal Well No. 4 listed on NPL	1984
Installation of GWE system	1984
Installation of SVE system	1988
Sta-Rite and WDNR enter into contract for RI/FS & RD/RA	September 21, 1990
Sta-Rite conducts site evaluation report	1990
Sta-Rite conducts monitoring well evaluation	1991
Sta-Rite prepares focused feasibility study for interim RA	1993
Interim remedy	1994
Construction completion	June 16, 1994
Preliminary Closeout Report	September 28, 2000
ROD signed	September 28, 2000
First Five-Year Review Completed	September 28, 2005
Second Five-Year Review Completed	September 23, 2010

III. BACKGROUND

Physical Characteristics

The Delavan Municipal Well No. 4 Superfund Site is located within the corporate limits of the City of Delavan, Wisconsin, and is defined as the contaminated aquifer used by Delavan Municipal Well No. 4. The portion of the aquifer that was contaminated is generally located on the property occupied by Sta-Rite. The area encompasses approximately 70 acres and is located in the southeast 1/4 of Section 17 in Delavan Township (T2N, R16E), and is bordered on the south by a commercial strip shopping center, on the west by Wright Street and on the north by

the Wisconsin Calumet Railroad. The west side of Wright Street, adjacent to the Site, is occupied by industrial and commercial properties and Delavan Municipal Well No. 4. Sta-Rite has operated manufacturing facilities located at 293 Wright Street since 1958. Two major plants on the Site produce high quality water pumps and related products. Plant No. 1 is located approximately 1000 feet northeast of Delavan Municipal Well No. 4, and Plant No. 2 is located approximately 400 feet east of Delavan Municipal Well No. 4. The City installed Delavan Municipal Well No. 4 in 1968.

Land Resource Use

The Site is located near the intersection of Interstate Highway I-43 and State Trunk Highway 50. The land use in the area is currently mixed use and includes commercial, residential, and light industrial. The Site is located on the far eastern side of the City and borders on agricultural land use. The City has a population of 8,463 based on 2010 U.S. Census figures.

History of Contamination

Various solvents were used in manufacturing processes at the Sta-Rite facilities. TCE was used throughout both plants in various manufacturing and cleaning processes until 1977. Other solvents used at the facilities included TCA and PCE. The compounds detected in the greatest concentrations and which are the most prevalent at the Site are TCE, TCA, and PCE. These three compounds have been preliminarily identified as the compounds of greatest potential concern based on their potential toxicity and concentrations observed at the Site. The other organic compounds which are less prevalent at the Site and which have occurred at relatively low concentrations in groundwater samples probably represent miscellaneous, small volume releases of organic solvents, and/or degradation products.

A series of floor drains and sumps in Plant #1 were used from 1958 to 1976 to collect spills and other discharges and to separate sludge and solids from the spills prior to their discharge to the storm sewer system. Because the sumps were constructed of concrete block, leakage to the surrounding soils was possible. From 1982 through 1984, most of the sumps and floor drains were permanently sealed. These areas comprise the previously-known release areas. Spent solvents and other waste liquids were also thought to have been released to open pits and the ground surface south of Plant #1, below or just south of an area currently covered by a plant expansion constructed in 1974. The area beneath the 1974 addition was investigated, and areas of residual impacts were not noted. One location immediately south of the 1974 plant expansion appears to have residual impacts; however, spent solvents were reportedly released onto cast iron chips in the area southeast of Plant #1, although the exact release locations were uncertain. The area of these releases has been evaluated using soil gas, soil, and groundwater sampling.

Pervasive low levels of VOCs appeared to exist below Plant #1, and several of the former disposal sumps have residual VOC impacts to soils. The areas investigated beneath the Plant #1 structures appear to be relatively minor sources; however, the monitoring wells installed up gradient of these known release areas and trends in VOC concentration gradients indicated a source of greater impacts probably exists southeast of Plant #1. One source area was detected southeast of Plant #1 at the former chip storage area. This area is immediately up gradient of the

Site monitoring wells, which have the highest concentrations of VOCs impacts, and this area is, therefore, thought to be the major area of concern. The size of this area is approximately 100 feet by 200 feet.

Previous investigative work at the Site has documented that, from 1968 to 1977, solvents were discharged to a sump adjacent to the north wall of Plant #2. The unlined sump functioned as a release area for waste to soils via a floor drain in an adjacent solvent storage area inside Plant #2. The sump was excavated and removed in 1983. Visibly-impacted soils were excavated from the sump and treated. Residual soil impacts are currently being remediated by an in-situ soil vapor extraction system that has been operating since May 1988.

In addition, a drainage swale off the edge of the pavement southeast of Plant #2 was a suspected source area, based on interviews with Sta-Rite personnel and review of historical aerial photographs. Liquid waste was known to have been released in this area. The general area encompassed by this source is approximately 180 feet by 50 feet, based on soil gas and soil analytical data. Remedial investigation activities at Plant #2 verified that these two areas had residual soil impacts, which have impacted groundwater quality.

Initial Response

Following the initial investigations, several corrective measures were implemented by Sta-Rite since 1983 to remove and/or contain VOC impacts on Sta-Rite property. The sump area at Plant No. 2 was excavated and removed in 1983.

A groundwater extraction system, consisting of five groundwater extraction wells at Plant No. 1 and two extraction wells at Plant No. 2, was installed in 1984 to remove impacted groundwater. The groundwater extraction system is also used to hydraulically control off-site migration of impacted water. These systems are still in place and operating. All extracted water is discharged to the storm sewer after nozzle aeration treatment.

A spray irrigation flushing system was installed in 1984 to spray a portion of the groundwater extracted by Extraction Well EX-1 onto the ground surface at the Plant No. 2 sump area so that infiltrating water would enhance the removal of solvent from impacted soils. A gravel trench was installed in the vicinity of the former sump to assist infiltration. The spray irrigation of groundwater ceased in the late 1980s, and all extracted groundwater was then discharged to the storm sewer.

A soil vapor extraction system was installed at the former sump location at Plant No. 2 in May, 1988 and operated until 1998 when a heated soil vapor extraction system was added to enhance VOC removal.

Combination soil vapor and groundwater extraction wells were installed in the former chip storage area and the drainage swale source areas in 1994. Groundwater monitoring wells were installed to monitor all source areas.

Basis for Taking Action

In 1983, EPA proposed the Site for listing on the National Priorities List. The Site listing was finalized in 1984. In September 1986, Sta-Rite, the only PRP entered into a contract with WDNR for the purpose of performing a Remedial Investigation/ Feasibility Study (RI/FS). The goal of the RI/FS was to determine the effect of Delavan Municipal Well No. 4 Site on the surrounding environment and to present cleanup alternatives for reducing the risks to human health and the environment. The PRP contractor performing the RI was Geo Trans, Inc.

During the RI, samples were taken from surface and subsurface soils, monitoring wells, residential/municipal wells, surface water, and sediment.

Based on the 1993 RI report and the 2000 ROD, the primary contaminants or chemicals of concern (COCs) affecting the soil and groundwater were organic compounds. Specifically, the primary COCs were identified as:

- TCE;
- TCA; and
- PCE.

Monitoring wells were installed on the Sta-Rite property to ascertain the location of areas of chemical concentration contributing to the contamination of Municipal Well No 4. Groundwater was determined to be moving in a southwest direction from the Site toward Delavan Municipal Well No. 4. Sampling of Delavan Municipal Well No. 4 indicated raw water at the well exceeded the suggested levels for water quality standards as set by WDHSS. At that time, Delavan Municipal Well No. 4 was removed from the City's municipal system.

The RI concluded that the Site posed a risk to human health by allowing contaminated groundwater to enter the municipal system. Based on these findings, Sta-Rite constructed the dual soil vapor and groundwater extraction systems on their property to control the spread of contaminants to Municipal Well No 4.

IV. Remedial Actions

Remedy Selection

The Interim RA constructed in June 1994 included construction of soil vapor and groundwater extraction systems in the chip storage area and the drainage swale east of Plant No. 2. This remedy was operated in addition to the existing soil vapor extraction system at the Plant No. 2 sump area and the site-wide groundwater extraction system.

EPA issued a ROD for the final remedy for this Site on September 28, 2000. The ROD selected no further action under CERCLA authorities because the existing and planned response action under State authorities (including operation and maintenance of the original extraction system and interim RA of soil vapor/groundwater extraction wells) was progressing to meet the remedial

action objectives (RAOs) of the ROD. The ROD states that no further action is necessary for the Site other than the continued O&M of the Interim RA.

Remedial Action Goals

The primary RA goals described in the ROD for the Site were: 1) to meet groundwater PALs pursuant to Ch NR 140, Wis. Adm. Code; and 2) to remediate unsaturated soil in accordance with Ch NR 720, Wis. Adm. Code (See page 6 of the ROD).

Remedy Implementation

In response to the ROD, a dual SVE/GWE remediation system consisting of three phases was installed. The first phase of the SVE/GWE remediation system addressed the impacts at the former chip storage area southeast of Plant 1 and was referred to as the chip storage extraction system (CSES). The second phase remediated the impacts found in the southeast corner of the Site and was referred to as the southeast extraction system (SES). The third phase, which was only an SVE system, remediated soil impacts at the former location of a sump that was located adjacent to the north wall of Plant 2 and was referred to as the former sump area.

SVE from the CSES and SES phases were discontinued on March 18, 2002 per the recommendations made in the February 1999 through April 2001 progress reports (GeoTrans, Inc., July 6, 2001), which was approved by the WDNR in a letter dated February 13, 2002. Groundwater has not been extracted from the dual SVE/GWE wells in the SES area since 2002 because none of the submersible pumps in the dual SVE/GWE wells were operational. Fine-grained sediment that entered the wells during the operation of the dual SVE/GWE system clogged the well screens and caused the pumps in the dual SVE/GWE wells to fail. Attempts to remove the submersible pumps from the dual SVE/GWE wells in the SES area in 2003 were unsuccessful due to the presence of the fine-grained sediment in the wells. Groundwater extraction from the dual SVE/GWE wells in the CSES area was also stopped on December 23, 2003. The suspension of groundwater extraction from the SES and CSES areas was approved by the WDNR in a letter dated April 22, 2004.

SVE from the third phase of the dual SVE/GWE system located in the former sump source area was discontinued on December 9, 2003 per the recommendation contained in the 2003 Annual Progress Report for the Delavan facility (GeoTrans, March 29, 2004). SVE was discontinued because analytical results for soil samples collected in 2003 from the former sump source area indicated there were only approximately four pounds of VOC impacts remaining in the soil above the water table. This recommendation was approved by the WDNR in a letter dated April 22, 2004.

In accordance with the recommendation made in the May 2001 through December 2002 progress report (GeoTrans, January 28, 2003), a groundwater investigation was performed in the CSES and SES areas in 2003. Four temporary monitoring wells (TW-303, TW-304, TW-305, and TW-306) were installed in and around the SES area, and two rounds of groundwater samples were collected from the temporary monitoring wells to document the degree and extent of residual groundwater impacts. Three temporary monitoring wells were slated to be installed

around the CSES, but the wells could not be installed in this area due to the presence of cobbles and boulders at depth. Because the temporary monitoring wells could not be installed around the CSES area, two rounds of groundwater samples were collected from the operational SVE/GWE wells in the CSES and from existing monitoring well MW-1026 located approximately 113 feet downgradient of the CSES. Groundwater samples were also collected from the temporary monitoring wells installed in the SES area during this reporting period on September 17, 2004. The groundwater analytical results from the CSES/SES investigations and the sampling round conducted in September 2004 showed TCE is the only contaminant present above its Chapter NR140 enforcement standard (ES) in both areas. Groundwater samples were also collected from monitoring wells and groundwater extraction wells that are part of the groundwater monitoring program for the Delavan facility. The analytical results from 2004 show stabilized or declining VOC concentrations in groundwater both at Plant 1 and Plant 2.

In addition to the soil vapor extraction wells, six groundwater extraction wells were installed in the Chip Storage Area and four groundwater extraction wells were installed in the SES area. The groundwater was aerated and discharged to the City's storm sewer system. The groundwater discharge is regulated under the Wisconsin Pollutant Discharge Elimination System.

Since 2000, Sta-Rite's annual O&M reports show a steady decline in the VOCs in groundwater and soils at the Site. Because of the significant reductions in VOCs observed in Site monitoring wells, operation of the SVE/GWE system was discontinued. In addition, sampling of the raw water intake at Delavan Municipal Well No. 4 demonstrated that VOCs are no longer present. As of 2000, Delavan Municipal Well No. 4 is back on-line and fully functional. Seven groundwater extraction wells remain in operation to control off-site migration of contaminated groundwater.

Institutional Controls

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

Current Compliance:

The ROD for this Site did not require implementation of ICs to protect the integrity of the remedy or to minimize the potential for exposure to contamination in groundwater or soils.

IC Evaluation and Follow-up Actions Needed:

Initial IC evaluation has revealed that additional steps must be taken to evaluate the ICs required to ensure the remedy continues to function as intended. The remedy requirements must be reviewed relative to whether performance standards will allow for UU/UE and to identify those areas for which ICs are required. Certain groundwater areas under the Sta-Rite property exceed PALs and require groundwater use restrictions. Soils in certain areas of the Sta-Rite property have been cleaned up to levels that are protective of industrial uses but are not protective of non-industrial uses. Those areas also require ICs to prevent non-commercial/non-industrial uses. EPA

will complete a decision document to record a final decision to add ICs as a component of the selected remedy.

WDNR and EPA will develop an ICIAP. The purpose of the ICIAP is to conduct IC evaluation activities to ensure that effective ICs are implemented, maintained, monitored, and enforced. Long-term stewardship (LTS) requires continued compliance with the land and groundwater use restrictions to ensure that the remedy continues to function as intended and that ICs are maintained, monitored, and enforced. Plans incorporating LTS procedures (for example, a LTS Plan or O&M Plan) should include the mechanisms and procedures for inspecting and monitoring compliance with the ICs as well as communications procedures in the event that ICs are not properly maintained. An annual report should be submitted to EPA to demonstrate the Site was inspected, ensuring inconsistent uses have not occurred, and certifying that ICs remain in place, are effective, and that any necessary contingency actions have been executed.

IC evaluation activities will also include, as needed, map revisions to depict current conditions in areas that do not allow for UU/UE as well as records and title reviews to ensure restrictions are properly recorded and prior-in-time encumbrances inconsistent with the ICs do not exist on the Site. The following table describes areas that may require ICs.

Table 2: 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)**
Groundwater on Sta-Rite Property current area that exceeds groundwater cleanup standards	Yes	No	Sta-Rite Property	Prohibit groundwater use until cleanup standards are met	Under review
Soils remediated at Sta-Rite Property	Yes	No	Sta-Rite Property	To be determined	Under review
Other remedy components such as transmission lines, treatment plant, and monitoring wells	Yes	No	To be determined	Prohibit interference with remedy components	Under review

Long Term Stewardship:

Because compliance with ICs is necessary to ensure protectiveness of the remedy, planning for LTS is required to ensure that ICs are maintained, monitored, and enforced so the remedy continues to function as intended. Long-term stewardship involves ensuring effective procedures are in place to properly maintain and monitor the Site. As part of the IC follow-up actions, WDNR and EPA will develop a LTS Plan (or an updated O&M Plan).

System Operations/Operations & Maintenance

Operation and maintenance of the treatment system consists of the original seven groundwater extraction wells. Currently, all valves on the seven extraction wells are exercised weekly as a precaution against valve seizing. Pumps and motors for all seven wells have been replaced within the last two years. Wells are flow tested quarterly and results submitted to the WDNR, Wastewater Program.

V. Progress since the Last Review

Due to the significant reductions in VOC impacts observed in the Site monitoring wells, operation of the SVE/GWE system was discontinued. Operation of the groundwater extraction system (see Section III, Initial Response) will remain in operation to control off-site groundwater migration. Annual groundwater monitoring will continue with results being submitted to the WDNR.

Table 3: Protectiveness Determinations/Statements from the 2010 FYR

Site-wide	Protectiveness Determination	Protectiveness Statement
Site-wide	Short-term Protective	The state's remedy is protective of human health and the environment in the short term because no groundwater exceeding PALs is migrating beyond the Sta-rite property boundary. COCs are no longer present in Delavan Municipal Well No. 4. The extracted and discharged groundwater meets all ARARs, thereby demonstrating the effectiveness of the extraction system. VOCs in soil have been remediated to levels that are protective for industrial use. The remedy requirements must be reviewed relative to whether performance standards will allow for UU/UE and whether ICs are required for soils and groundwater. Decision documents do not currently require ICs. If needed, EPA and WDNR will amend the remedy decision and require IC work plan from Sta-Rite. Long-term protection will be achieved when groundwater cleanup standards have been and will continue to be achieved throughout the plume and, if needed, when effective land and groundwater use restrictions are implemented, monitored, maintained and enforced at the Site.

Table 4: Status of Recommendations from the 2010 FYR

Site-wide	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
Site-wide	Conduct sampling and analysis to determine whether PALs are being met and will continue to be met at all points of compliance pursuant to Ch NR 140.22. Determine whether PALs are being met and will continue to be met at points of compliance upon shutting down the groundwater extraction and treatment system on an extended probationary or permanent basis. Remedy requirements must be reviewed relative to whether performance standards will allow for UU/UE and whether ICs are required for soils and groundwater. The current decision documents do not specifically include need for ICs. Certain groundwater areas under and near the Sta-Rite property may exceed PALs and require interim groundwater use restrictions until groundwater standards are achieved. Soils in certain areas of the Sta-Rite property have been cleaned up to levels that are protective of industrial uses but are not protective of non-industrial uses.	Review remedy decision documents to determine if performance standards will allow for UU/UE and whether ICs are required to ensure long-term protectiveness of human health and the environment. If needed, amend remedy decision and require IC work plan from PRP to: 1) prohibit groundwater use until groundwater cleanup standards are achieved, and 2) implement a restrictive covenant/environmental easement prohibiting non-industrial uses on areas where residual VOC contamination remains at the Sta-Rite property.	EPA/State	EPA	8/2011	Ongoing	NA

VI. Five-Year Review Process

Administrative Components

EPA, WDNR, and Sta-Rite were notified of the FYR Site inspection in March 2015. The RPM established the components of the Review, which included:

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

The Site inspection took place on March 26, 2015 and was led by the WDNR Site Manager, Thomas Wentland. EPA Superfund Remedial Project Manager, Colleen Moynihan, and PRP Representatives, Dennis Schwind and Arnold Gatrel of Sta-Rite, were in attendance.

Community Notification and Involvement

Activities to involve the community in the five-year review process were initiated in February 2015 in the form of a notification by the WDNR announcing the initiation of the five-year review process and soliciting Site information and concerns from the community published on February 26, 2015 in the Delavan Enterprise, a weekly newspaper serving the City of Delavan.

Historically, there have been few community concerns regarding Delavan Municipal Well No. 4. This is the only Superfund site in Walworth County. Past community relations activities for the Site have included a public meeting held August 23, 2000 prior to issuing the ROD. A public comment period was held from August 17 to September 18, 2000. Fact sheets were routinely distributed to update the community on the cleanup progress. WDNR has also maintained an administrative record document repository in the community throughout the cleanup process at the Aram Public Library in Delavan, Wisconsin.

Document Review

The FYR included a review of the relevant documents such as the RI/FS, RD/RA, Statement of Work, ROD, all enforcement documents, State groundwater quality standards, and risk-based levels to protect human health and the environment. Also, post-RA documents such as the PCOR, and applicable EPA and WDNR guidance.

Data Review

The annual reports for the time period from February 1999 to December 2003 show a steady decline in COCs justifying the suspension of groundwater and vapor extraction at the SES and CSES areas. The decision to suspend groundwater and vapor extraction at these two areas was documented in a WDNR letter dated April 22, 2004.

For this FYR, EPA reviewed the 2014 Annual Progress Report documenting the results of the following sampling activities (see Figure 1, Site Map, for sample locations):

- Groundwater is pumped continuously from the seven groundwater extraction wells on the Sta-Rite facility, and monthly samples were collected from the storm sewer outfall (SS-1 sample ID) where groundwater is discharged. The following table shows the sampling

results in micrograms per liter. The WPDES Permit limit for all three parameters is 50 micrograms per liter.

Table 5: 2014 Monthly Storm Sewer Concentrations

Month	PCE	TCE	TCA
January	<0.170	0.775	<0.200
February	<0.170	0.778	<0.200
March	<0.170	0.500	<0.200
April	<0.170	0.550	<0.200
May	<0.170	0.790	<0.200
June	<0.170	0.86	<0.200
July	<0.170	0.75	<0.200
August	<0.170	0.66	<0.200
September	2.7	0.75	<0.200
October	<0.170	0.68	<0.200
November	<0.170	0.69	<0.200
December	<0.170	0.73	<0.200

- One round of groundwater samples was collected in 2014 from monitoring and extraction wells included in the groundwater monitoring program copied from the annual progress report and shown below (see Table 3 below taken from the 2014 groundwater monitoring progress report).

Table 3. Delavan Facility Groundwater Monitoring Program
Sta-Rite Industries, LLC, Delavan, Wisconsin

Monitoring Point	Sampling Frequency	Parameters
Plant 1 Monitoring Points		
D-25R	Annual	PCE, TCA, TCE, VC
MW-1026	Annual	PCE, TCA, TCE, VC
MW-1027	Annual	PCE, TCA, TCE, VC
TW-4	Annual	VOCs
EX-2R	Annual	PCE, TCA, TCE, VC
EX-3	Annual	PCE, TCA, TCE, VC
Plant 2 Monitoring Points		
D-15	Annual	PCE, TCA, TCE, VC
D-18	Annual	PCE, TCA, TCE, VC
MW-2004	Annual	PCE, TCA, TCE, VC
MW-2005R	Annual	PCE, TCA, TCE, VC
MW-2011	Annual	PCE, TCA, TCE, VC
TW-1	Annual	PCE, TCA, TCE, VC
TW-3	Annual	PCE, TCA, TCE, VC
EX-1	Annual	PCE, TCA, TCE, VC
EX-7	Annual	PCE, TCA, TCE, VC
Site Monitoring Point		
Storm Sewer Grate (SS-1)	Annual	PCE, TCA, TCE, VC

PCE = Tetrachloroethene
TCA = 1,1,1-Trichloroethane and 1,1,2-Trichloroethane
TCE = Trichloroethene
VC = Vinyl Chloride
VOCs = Volatile Organic Compounds

- Quarterly pumping rate measurements were collected from facility extraction wells EX-1, EX-2R, EX-3, EX-4, EX-5, EX-6, and EX-7.

Groundwater Sampling

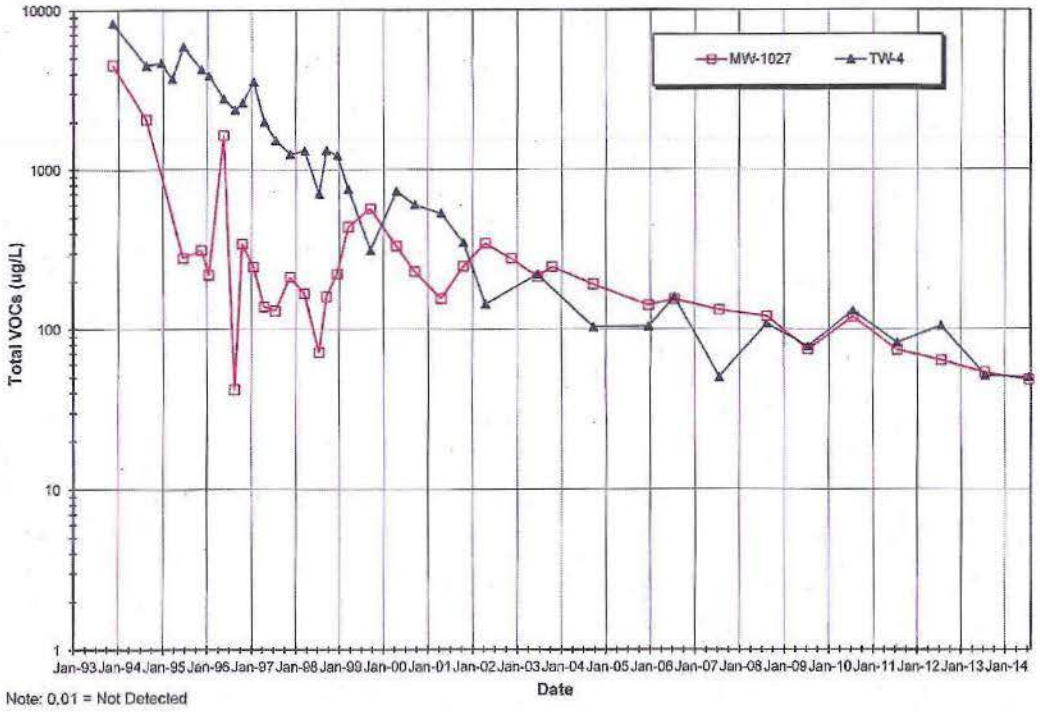
Residual groundwater impacts originating from the former SES and sump source areas are controlled by extraction wells EX-1 and EX-7. Groundwater downgradient of the former CSES source area is controlled by extraction wells EX-2R, EX-3, EX-4, EX-5, and EX-6. Wastewater discharge monitoring reports document flow rate and effluent chemistry where the combined flow from the seven extraction wells is discharged to the storm sewer outfall SS-1.

Significant reduction in VOC impacts at the Site has been observed since the implementation of the corrective measures and RA. Even though the dual soil vapor extraction/groundwater extraction wells have been disconnected, hydraulic control of the contaminated plume is maintained by pumping from the seven groundwater extraction wells.

The analytical results from 2014 showed slight decreases in concentrations or non-detections of the VOCs in 11 of the wells sampled and increases in one or two of the VOCs analyzed in four of the wells compared to the 2013 data. As shown in the figure below, even though there were a

few increases in parameter concentration, there is an overall decreasing trend in VOC concentrations for monitoring wells MW-1027 and TW-4.

Figure 2: Groundwater Concentration Trend



Vapor Intrusion

EPA conducted a risk-based VI screening to identify whether buildings pose a health concern through the VI pathway. In general, the groundwater VOC levels fall below screening levels. The only well of concern for potential VI is TW-4. There is no immediate concern for VI exposure because it appears TCE concentrations are decreasing in TW-4 as seen in Figure 2 above and the surrounding land use is not residential. It is recommended that decisions are not made for a potential VI investigation in the area of this well until an additional round of groundwater sampling is performed on this well. If the decreasing TCE concentration trend continues, the concentration is expected to be within or below the EPA acceptable risk range, and a VI investigation would not be needed.

Site Inspection

WDNR Project Manager Thomas Wentland and EPA Remedial Project Manager Colleen Moynihan conducted a Site inspection on March 26, 2015. Dennis Schwind and Arnold Gatrel of Sta-Rite were also in attendance. The purpose of the Site inspection was to assess the protectiveness of the remedy, the condition of Site security to restrict access, and the condition of the Site itself (e.g., the groundwater extraction system, monitoring wells, and surrounding land).

A copy of the Site Inspection Checklist (see Appendix B) and Site photographs (see Appendix C) are included in this FYR report.

Site Interviews

Thanintr T. Ratarasarn, P.E., WDNR Drinking Water Engineer, was interviewed in conjunction with the raw water quality of Delavan Municipal Well No. 4. Information from this interview supported documentation found in the annual reports for the past five years indicating that VOCs are no longer affecting Delavan Municipal Well No. 4.

VII. TECHNICAL ASSESSMENT

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

Yes. Based on a review of relevant documents, applicable or relevant and appropriate requirements (ARARs), risk assumptions, and the results of the Site inspection, all portions of the remedy currently appear to be functioning as intended by the ROD and previous corrective measures.

The ROD selected no further action under CERCLA because the existing and planned response action under State authorities (including Wisconsin's agreement with Sta-Rite Industries) was progressing adequately to meet the groundwater RAO in the ROD. The ROD states that the RAO for contaminated groundwater at the Site was to meet Ch NR 140, Wis. Adm. Code regarding groundwater PALs for all COCs. Ch NR 140.22 identifies the following points of compliance for groundwater PALs: a) any point of present groundwater use; b) any point beyond the boundary of the property on which the facility, practice or activity is located; and c) any point within the property boundaries beyond the three-dimensional design management zone, if one is established by the department at each facility, practice or activity.

The effectiveness and progress of the remedy are tracked through the monitoring program. Monitoring data indicates PALs are met at the boundary of the Sta-Rite facility; however, contamination exceeds PALs at a few locations within the Sta-Rite facility. The original groundwater extraction system installed in 1984 consisting of seven wells remains in operation to ensure that groundwater contamination is contained within the Sta-Rite facility boundary. The State-lead groundwater RA appears to continue to be progressing toward meeting the groundwater RAO of the ROD. Exposure pathways that could result in unacceptable risk are being monitored, and the Sta-Rite property is connected to municipal water.

The ROD does not require ICs as part of the remedy for the Site. However, ICs are needed for those areas not meeting UU/UE following implementation of the remedy. A decision document will be completed to address the requirement for ICs, and an ICIAP will be developed to ensure that effective ICs are implemented, monitored, maintained, and enforced.

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

Yes. The physical conditions of the Site have not changed in such a manner that would affect the protectiveness of the remedy. Additionally, the cleanup standards identified in the ROD have not changed. No new classes of potential chemical-specific ARARs were noted since the ROD. While the chemical-specific criteria for surface water were set at the time of the ROD, some of the chemical specific regulatory and guidance levels have been amended since the ROD.

Surface Water

The chemical-specific ARARs are discharge standards pertaining to surface water. These discharge standards are as follows:

- Water Quality Criteria, 40 CFR. Part 131 Quality Criteria for Water, 1986; and
- Surface Water Quality Standards (NR 102, NR 105, NR 106 WAC)

Groundwater

Extracted and discharged groundwater must meet the substantive requirements of the National Pollution Discharge Elimination System (40 CFR 122, 125) and the Wisconsin Pollutant Discharge Elimination System. Discharge of treated groundwater to the drainage channels adjacent to the Site must meet the substantive requirements of Section 402 of the Clean Water Act and must not exceed discharge limits established by the State (NR 102, NR 105, NR 106, and NR 207 WAC). Groundwater extraction and monitoring is done in compliance with State Groundwater Monitoring and Recovery Requirements (NR 141, NR 181, WAC).

Wisconsin PALs and ESs continue to define acceptable groundwater concentrations at groundwater remediation sites located in the State. However, an exceedance of a PAL does not necessarily trigger RA as long as protectiveness is maintained. Some revisions to the chemical-specific PALs have occurred since the 1988 groundwater quality standards were issued by WDNR and identified as potential future groundwater ARARs in the 2000 ROD. Annual Site reports which compare sampling results to current PALs show a consistent decline in contaminant levels.

Vapor Intrusion

EPA conducted a risk-based VI screening to identify whether a health concern exists in facility buildings via the VI pathway. In general, the groundwater VOC levels fall below screening levels. The only well of concern for potential VI is TW-4. There is no immediate concern for VI exposure because it appears TCE concentrations are decreasing in TW-4 and the surrounding land use is not residential. It is recommended that decisions for a potential VI investigation in the area of this well be delayed until an additional round of groundwater sampling is performed on this well. If the decreasing TCE concentration trend continues, the concentration is expected to be within or below the EPA acceptable risk range, and no VI investigation would need to be performed in this area.

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

No. Based on the data reviewed and Site inspections, there is no information that would suggest the selected remedy is not protective and functioning as intended by the ROD and by implemented corrective measures. In addition, there are no changes in the physical conditions of the Site and there are no newly-identified ecological risks at this Site that would affect the protectiveness of the remedy.

Technical Assessment Summary

The remedy is functioning as intended by the decision documents and implemented corrective measures. Based on a review of relevant documents, ARARs, and risk assumptions, and the results of the Site inspection, the response action under State authorities is expected to meet the RAOs identified in the ROD. The effectiveness of the remedy as tracked through the monitoring program indicate the Site does not presently pose an immediate threat to human health and the environment.

VIII. Issues

The following issues were identified as a result of this third FYR:

Table 6: Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1. ROD did not require implementation of ICs	N	Y
2. ICs and long-term stewardship procedures are needed	N	Y
3. Determine the need for a VI investigation	N	Y

IX. Recommendations and Follow-up Actions

The following table presents the recommendations and follow-up actions for the issues identified during this FYR:

Table 7: Recommendations and Follow-up Actions

Issues from Table 6	Recommendations and Follow-up Actions	Party Responsible	Oversight or Support Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
1.	Complete a decision document to record a final decision adding ICs as a component of the selected remedy	EPA	WDNR	December 30, 2016	N	Y
2.	Develop an ICIAP and implement ICs to ensure that effective ICs are implemented, monitored, maintained, and enforced	WDNR	EPA	December 30, 2016	N	Y
3.	Review an additional round of groundwater data to confirm whether VOC levels are below screening levels	WDNR	EPA	December 30, 2016	N	Y

X. PROTECTIVENESS STATEMENT

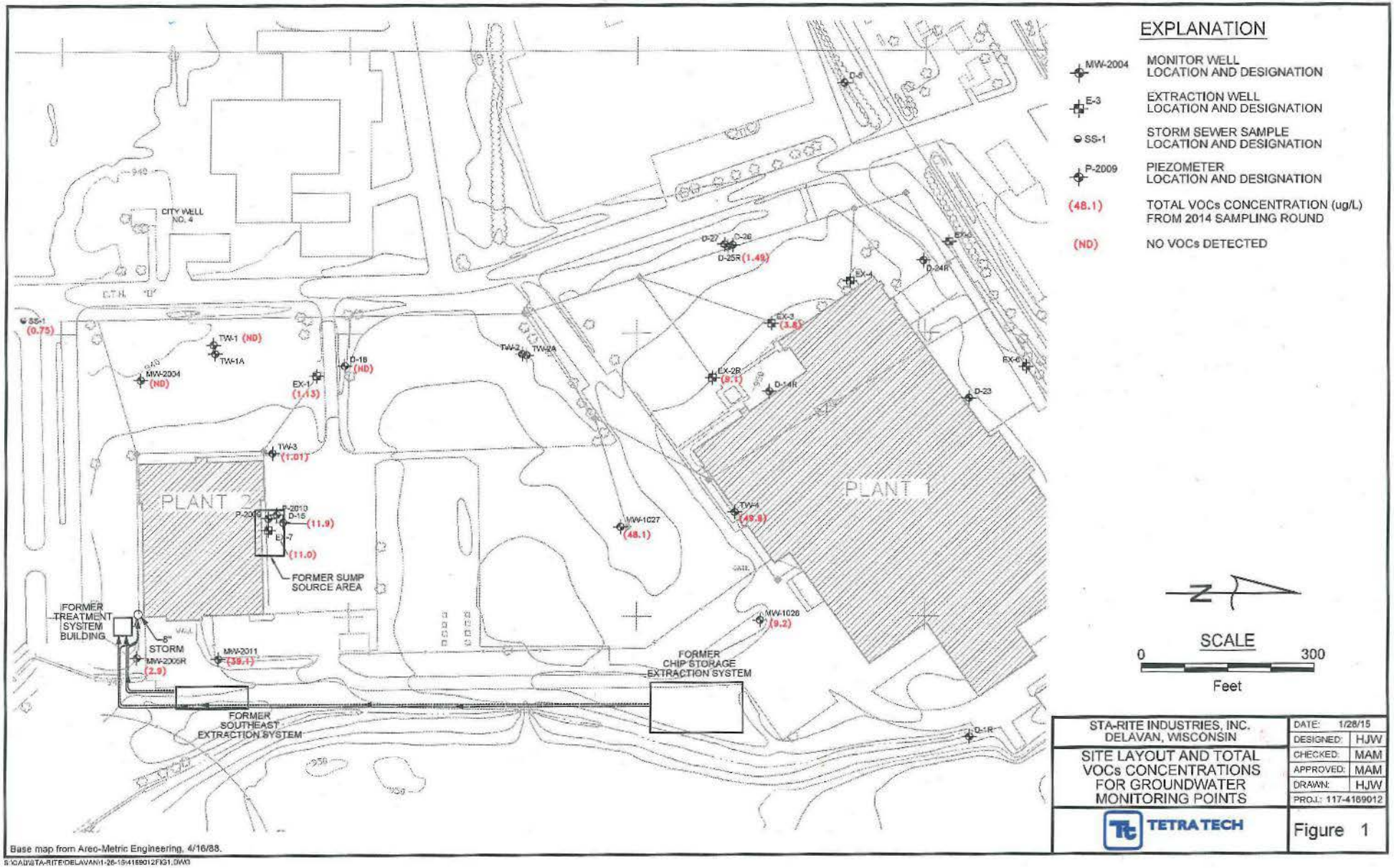
The remedy at the Delavan Municipal Well No. 4 Site is currently protective of human health and the environment because no groundwater exceeding PALs is migrating beyond the Sta-Rite property boundary, and VOCs are no longer present in Delavan Municipal Well No. 4. In addition, VOCs in the soil have been remediated to levels that are protective for industrial use. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: groundwater data needs to be reviewed to determine whether a VI investigation is needed; a decision document is needed to record a final decision to add ICs as a component of the selected remedy; ICs need to be implemented; and an ICIAP needs to be developed to ensure that effective ICs are implemented, monitored, maintained, and enforced. Long-term protectiveness requires groundwater monitoring until performance standards are achieved as well as compliance with effective ICs.

XI. Next Review

The next five-year review for the Delavan Municipal Well No. 4 Site is required five years from the completion date of this review.

Figure 1

SITE MAP



Base map from Areo-Metric Engineering, 4/16/88.

S:\CAD\STA-RITE\DELAVAN\1-26-19\4169012FIG1.DWG

EXPLANATION

MW-2004	MONITOR WELL LOCATION AND DESIGNATION
E-3	EXTRACTION WELL LOCATION AND DESIGNATION
SS-1	STORM SEWER SAMPLE LOCATION AND DESIGNATION
P-2009	PIEZOMETER LOCATION AND DESIGNATION
(48.1)	TOTAL VOCs CONCENTRATION (ug/L) FROM 2014 SAMPLING ROUND
(ND)	NO VOCs DETECTED

N

SCALE

0 300

Feet

STA-RITE INDUSTRIES, INC. DELAVAN, WISCONSIN	DATE: 1/28/15
	DESIGNED: HJW
SITE LAYOUT AND TOTAL VOCs CONCENTRATIONS FOR GROUNDWATER MONITORING POINTS	CHECKED: MAM
	APPROVED: MAM
	DRAWN: HJW
	PROJ.: 117-4169012
TETRA TECH	Figure 1

APPENDIX A

PUBLISHED PUBLIC NOTICE

e English teacher from D.C. Everest in Schofield, Wisconsin and Australia.

the Delavan Enterprise

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WISCONSIN
DEPT. OF NATURAL RESOURCES

DNR to Review Delavan Municipal Well #4 Superfund Site

Delavan, Wisconsin

The Wisconsin Department of Natural Resources, in cooperation with the U.S. Environmental Protection Agency is conducting a status review of the Delavan Municipal Well #4 Superfund site. The Superfund law requires regular reviews of sites (at least every five years) where the cleanup is complete or well underway but waste remains managed on-site. These reviews are done to ensure that human health and the environment continue to be protected.

The Delavan Well No. 4 cleanup plan included the following:

- ground water and soil vapor extraction
- air stripping
- thermal soil vapor extraction

The review will include an evaluation of background information, cleanup requirements, effectiveness of the cleanup, and any anticipated future actions.

The five-year review report will be available by August 19, 2015 and will detail the site's progress.

More information can be obtained from:

Thomas Wentland • State Project Manager
920-893-8528 • thomas.wentland@wi.gov

Colleen Moynihan • USEPA Project Manager
800-621-8431 • Moynihan.colleen@Epa.gov

Site-related documents are available for review at:

DNR Service Center - 141 N.W. Barstow St., Room 180
(262) 574-2100 (call for appointment)
Waukesha

195462

195399

DNR Plymouth

APPENDIX B

SITE INSPECTION CHECKLIST

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: DELAVAN WELL No 4	Date of inspection: 3-26-2015
Location and Region:	EPA ID:
Agency, office, or company leading the five-year review:	Weather/temperature:

Remedy Includes: (Check all that apply)

- Landfill cover/containment
- Access controls
- X Institutional controls
- X Groundwater pump and treatment
- Surface water collection and treatment
- Other _____
- Monitored natural attenuation
- Groundwater containment
- Vertical barrier walls

Attachments: Inspection team roster attached Site map attached

II. INTERVIEWS (Check all that apply)

1. O&M site manager ARNOLD L. GATREL (Name) VALUE STREAM MGR. (Title) 3-26-15 (Date)
   Interviewed (at site) at office by phone Phone no. _____
   Problems, suggestions; Report attached _____

2. O&M staff DENNIS SCHWIND (Name) OMM TECH (Title) 3-26-15 (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 WISCONSIN DEPT. OF NATURAL RESOURCES
Contact TOM RATAKASAN ENG 5-4-15
Name Title Date Phone no.
Problems; suggestions; Report attached GOOD OPERATION

Agency _____
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.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	**O&M Documents**			
	O&M manual	Readily available	Up to date	N/A
	As-built drawings	Readily available	Up to date	N/A
	Maintenance logs	Readily available	Up to date	N/A
	Remarks			
2.	**Site-Specific Health and Safety Plan**	Readily available	Up to date	N/A
	Contingency plan/emergency response plan	Readily available	Up to date	N/A
	Remarks			
3.	**O&M and OSHA Training Records**	Readily available	Up to date	N/A
	Remarks			
4.	**Permits and Service Agreements**			
	Air discharge permit	Readily available	Up to date	N/A
	Effluent discharge	Readily available	Up to date	N/A
	Waste disposal, POTW	Readily available	Up to date	N/A
	Other permits	Readily available	Up to date	N/A
	Remarks			
5.	**Gas Generation Records**	Readily available	Up to date	N/A
	Remarks			
6.	**Settlement Monument Records**	Readily available	Up to date	N/A
	Remarks			
7.	**Groundwater Monitoring Records**	Readily available	Up to date	N/A
	Remarks			
8.	**Leachate Extraction Records**	Readily available	Up to date	N/A
	Remarks			
9.	**Discharge Compliance Records**			
	Air	Readily available	Up to date	N/A
	Water (effluent)	Readily available	Up to date	N/A
	Remarks			
10.	**Daily Access/Security Logs**	Readily available	Up to date	N/A
	Remarks			

IV. O&M COSTS

1. **O&M Organization**

State in-house — Contractor for State
PRP in-house — Contractor for PRP
Federal Facility in-house — Contractor for Federal Facility
Other_____

2. **O&M Cost Records**

Readily available — Up to date
Funding mechanism/agreement in place
Original O&M cost estimate_____ Breakdown attached

Total annual cost by year for review period if available

From_____ To_____ _____ Breakdown attached
Date Date Total cost

From_____ To_____ _____ Breakdown attached
Date Date Total cost

From_____ To_____ _____ Breakdown attached
Date Date Total cost

From_____ To_____ _____ Breakdown attached
Date Date Total cost

From_____ To_____ _____ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable . N/A

A. Fencing

1. **Fencing damaged** Location shown on site map Gates secured N/A
Remarks_____

B. Other Access Restrictions

1. **Signs and other security measures** Location shown on site map N/A
Remarks_____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented — Yes (No) N/A
Site conditions imply ICs not being fully enforced — Yes (No) N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date — (Yes) No N/A
Reports are verified by the lead agency — Yes No N/A

Specific requirements in deed or decision documents have been met — Yes No N/A
Violations have been reported — Yes No N/A
Other problems or suggestions: Report attached

2. **Adequacy** (ICs are adequate) ICs are inadequate N/A
Remarks _____

D. General

1. **Vandalism/trespassing** Location shown on site map (No vandalism evident)
Remarks _____

2. **Land use changes on site** N/A
Remarks NONE

3. **Land use changes off site** N/A
Remarks NONE

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads damaged** Location shown on site map Roads adequate N/A
Remarks SITE IN GOOD CONDITION

B. Other Site Conditions

Remarks_____

VII. LANDFILL COVERS Applicable N/A

A. Landfill Surface

1. Settlement (Low spots) Location shown on site map Settlement not evident
Areal extent_____ Depth_____
Remarks_____

2. Cracks Location shown on site map Cracking not evident
Lengths_____ Widths_____ Depths_____
Remarks_____

3. Erosion Location shown on site map Erosion not evident
Areal extent_____ Depth_____
Remarks_____

4. Holes Location shown on site map Holes not evident
Areal extent_____ Depth_____
Remarks_____

5. Vegetative Cover Grass Cover properly established No signs of stress
Trees/Shrubs (indicate size and locations on a diagram)
Remarks_____

6. Alternative Cover (armored rock, concrete, etc.) N/A
Remarks_____

7. Bulges Location shown on site map Bulges not evident
Areal extent_____ Height_____
Remarks_____

8.	**Wet Areas/Water Damage**	Wet areas/water damage not evident	
	Wet areas	Location shown on site map	Areal extent_____
	Ponding	Location shown on site map	Areal extent_____
	Seeps	Location shown on site map	Areal extent_____
	Soft subgrade	Location shown on site map	Areal extent_____
	Remarks_____		
9.	**Slope Instability** Slides	Location shown on site map	No evidence of slope instability
	Areal extent_____		
	Remarks_____		
B. Benches	Applicable 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**	Location shown on site map	N/A or okay
	Remarks_____		
2.	**Bench Breached**	Location shown on site map	N/A or okay
	Remarks_____		
3.	**Bench Overtopped**	Location shown on site map	N/A or okay
	Remarks_____		
C. Letdown Channels	Applicable 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**	Location shown on site map	No evidence of settlement
	Areal extent_____ Depth_____		
	Remarks_____		
2.	**Material Degradation**	Location shown on site map	No evidence of degradation
	Material type_____ Areal extent_____		
	Remarks_____		
3.	**Erosion**	Location shown on site map	No evidence of erosion
	Areal extent_____ Depth_____		
	Remarks_____		

4. **Undercutting** Location shown on site map No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ No obstructions
Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
No evidence of excessive growth
Vegetation in channels does not obstruct flow
Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations Applicable N/A

1. **Gas Vents** Active Passive
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance
N/A
Remarks_____

2. **Gas Monitoring Probes**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks_____

3. **Monitoring Wells (within surface area of landfill)**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks_____

4. **Leachate Extraction Wells**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks_____

5. **Settlement Monuments** Located Routinely surveyed N/A
Remarks_____

E. Gas Collection and Treatment Applicable N/A

1. **Gas Treatment Facilities**
   Flaring Thermal destruction Collection for reuse
   Good condition Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   Good condition Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   Good condition Needs Maintenance N/A
   Remarks_____

F. Cover Drainage Layer Applicable N/A

1. **Outlet Pipes Inspected** Functioning N/A
   Remarks_____

2. **Outlet Rock Inspected** Functioning N/A
   Remarks_____

G. Detention/Sedimentation Ponds Applicable N/A

1. **Siltation** Areal extent_____ Depth_____ N/A
   Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   Erosion not evident
   Remarks_____

3. **Outlet Works** Functioning N/A
   Remarks_____

4. **Dam** Functioning N/A
   Remarks_____

H. Retaining Walls Applicable N/A

1. **Deformations** Location shown on site map Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** Location shown on site map Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge Applicable N/A

1. **Siltation** Location shown on site map Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** Location shown on site map N/A
   Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** Location shown on site map Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** Functioning N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS Applicable N/A

1. **Settlement** Location shown on site map Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   Performance not monitored
   Frequency_____ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES	Applicable	N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines	Applicable	N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   Good condition All required wells properly operating Needs Maintenance N/A
   Remarks_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition Needs Maintenance
   Remarks_____

3. **Spare Parts and Equipment**
   Readily available Good condition Requires upgrade Needs to be provided
   Remarks_____

B. Surface Water Collection Structures, Pumps, and Pipelines	Applicable	N/A

1. **Collection Structures, Pumps, and Electrical**
   Good condition Needs Maintenance
   Remarks_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition Needs Maintenance
   Remarks_____

3. **Spare Parts and Equipment**
   Readily available Good condition Requires upgrade Needs to be provided
   Remarks_____

C. Treatment System Applicable N/A

1. **Treatment Train** (Check components that apply)
   - Metals removal
   - Oil/water separation
   - Bioremediation
   - Air stripping
   - Carbon adsorbers
   - Filters_____
   - Additive (*e.g.*, chelation agent, flocculent)_____
   - Others_____
   - Good condition
   - Needs Maintenance
   - Sampling ports properly marked and functional
   - Sampling/maintenance log displayed and up to date
   - Equipment properly identified
   - Quantity of groundwater treated annually_____
   - Quantity of surface water treated annually_____

   Remarks_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   - N/A
   - Good condition
   - Needs Maintenance

   Remarks_____

3. **Tanks, Vaults, Storage Vessels**
   - N/A
   - Good condition
   - Proper secondary containment
   - Needs Maintenance

   Remarks_____

4. **Discharge Structure and Appurtenances**
   - N/A
   - Good condition
   - Needs Maintenance

   Remarks_____

5. **Treatment Building(s)**
   - N/A
   - Good condition (esp. roof and doorways)
   - Needs repair
   - Chemicals and equipment properly stored

   Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
   - Properly secured/locked
   - Functioning
   - Routinely sampled
   - Good condition
   - All required wells located
   - Needs Maintenance
   - N/A

   Remarks_____

D. Monitoring Data

1. Monitoring Data
   - Is routinely submitted on time
   - Is of acceptable quality

2. Monitoring data suggests:
   - Groundwater plume is effectively contained
   - Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
   Properly secured/locked Functioning Routinely sampled Good condition
   All required wells located Needs Maintenance N/A
   Remarks_____

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.).

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.

C.	Early Indicators of Potential Remedy Problems
	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.

D.	Opportunities for Optimization
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

APPENDIX C

SITE PHOTOGRAPHS

Photo 1 Groundwater Extraction Well

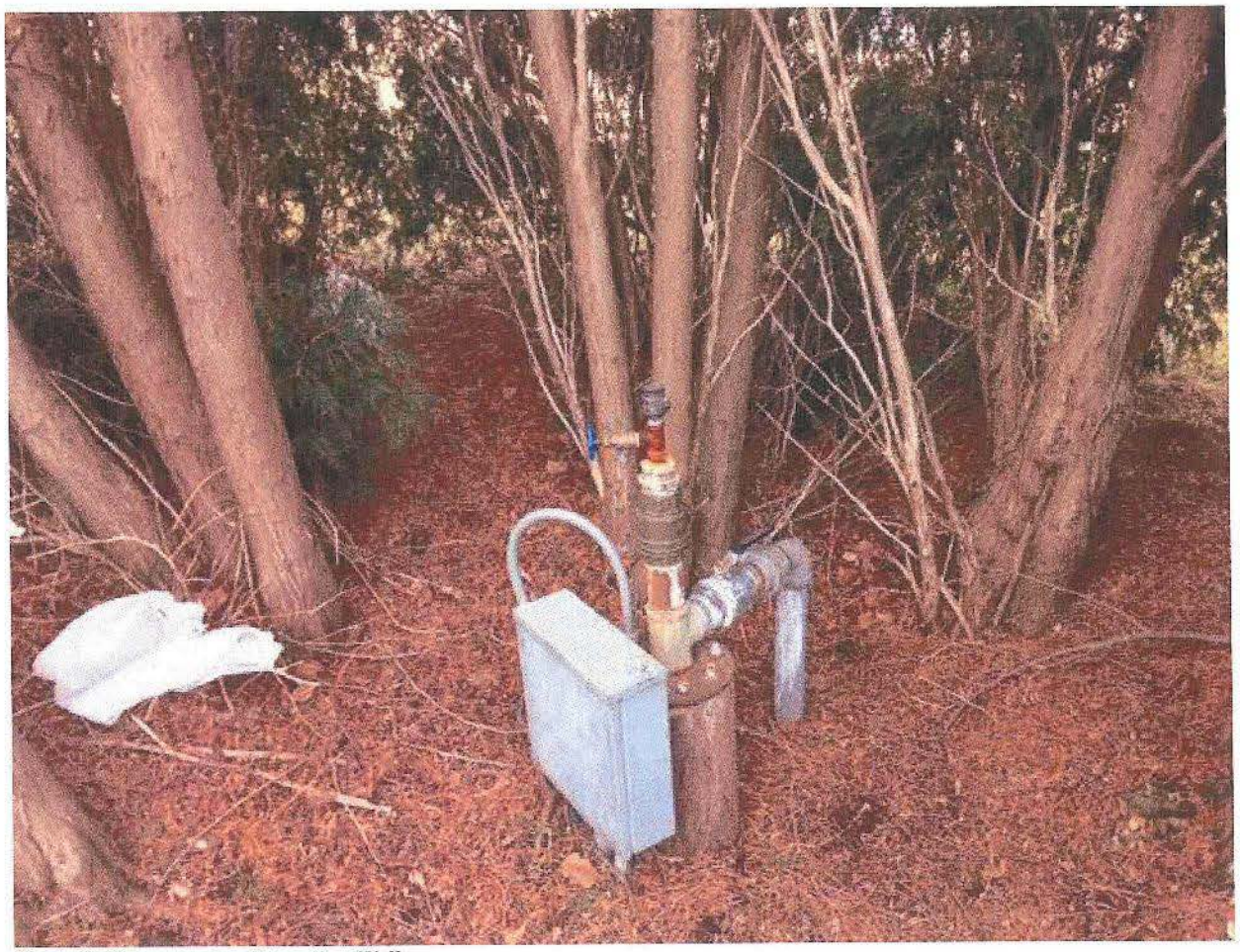

Photo 2 Groundwater Extraction Well

Photo 3 Monitoring Well

Photo 4 Monitoring Well

Photo 5 Groundwater Extraction Well

APPENDIX D

LIST OF DOCUMENTS REVIEWED

City of Delavan Well No. 4 Annual Report, 2011
City of Delavan Well No. 4 Annual Report, 2012
City of Delavan Well No. 4 Annual Report, 2013
City of Delavan Well No. 4 Annual Report, 2014
WDNR, Drinking Water System, Sample History Report, 01/01/1980 to 05/01/2015