2014 ANNUAL MONITORING / INSPECTION REPORT

SNPE- VDM Creek Bank Corrective Actions

VanDeMark Chemical Inc. – Lockport, New York

Order on Consent: R9-20080205-5

Submitted To: SNPE, Inc.
103 Carnegie Center, Suite 300
Princeton, New Jersey 08540

VanDeMark Chemical Inc.
One North Transit Rd.
Lockport, New York 14094

New York State Department of Environmental Conservation
270 Michigan Ave.
Buffalo, New York 14203

Submitted By: Golder Associates Inc.
2430 N. Forest Road, Suite 100
Getzville, NY 14068 USA

Distribution:

2 copies –	New York State Department of Environmental Conservation
1 copy –	SNPE, Inc.
1 copy -	Golder Associates Inc.

February 2015 **Project No. 093-89168**

A world of capabilities delivered locally

Golder Associates

Table of Contents

1.0 INTRODUCTION 2
2.0 QUARTERLY MONITORING AND INSPECTIONS 4
2.1 Passive DNAPL Collection Trench 4
2.1.1 March 2014 Inspection 4
2.1.2 June 2014 Inspection 4
2.1.3 November 2014 Inspection 4
2.2 Creek Bank Area 5
2.2.1 March 2014 Inspection 5
2.2.2 June 2014 Inspection 5
2.2.3 November 2014 Inspection 5
2.3 Collection Trench Overflow Filter Sump Structure 5
2.3.1 March 2014 Inspection 5
2.3.2 June 2014 Inspection 6
2.3.3 November 2014 Inspection 6
3.0 SEMI-ANNUAL GROUNDWATER MONITORING 7
3.1 Introduction 7
3.2 Creek Bank Piezometers 7
3.2.1 Piezometer Development 7
3.2.2 Piezometer Sampling & Analytical Results 7
3.3 Plant Monitoring Well Sampling & Analytical Results 8
3.4 Filter Sump Structure Sampling & Analytical Results 9
4.0 MAINTENANCE AND CLEAN-OUT ACTIVITIES 11
5.0 REFERENCES 12

List of Tables

Table 3-1 2014 Groundwater and Vault Monitoring Results
Table 3-2 Historic Groundwater and Vault Monitoring Results

List of Figures

Figure 1-1 Site Location Map
Figure 1-2 OMP Site Plan- VDM Plant and Creek Bank Area
Figure 3-1 Creek Bank Area Site Plan

Appendices

Appendix A Operations and Monitoring Summary Inspection Forms
Appendix B Inspection Photographs
Appendix C Piezometer Sample Collection Forms

1.0 INTRODUCTION

Golder Associates Inc. (Golder) under contract to SNPE Inc. (SNPE) and in close cooperation with VanDeMark Chemical Inc. (VDM), the Site owner, has prepared this annual monitoring and inspection summary report for 2014, in support of the Operations and Maintenance Plan (OMP) that was prepared for the VDM Lockport facility by Golder (Golder, April 2013). This summary report describes the activities that were undertaken during 2014 to maintain and monitor the effectiveness of the remedial system that was implemented at the VDM site along a portion of VDM's property adjacent to the north bank of Eighteen Mile Creek Bank (hereafter referred to as the "Creek Bank Area") and associated groundwater/DNAPL impacts at VDM's manufacturing facility in Lockport, New York. The VDM facility is located in the north central sector of the City of Lockport city limits, as shown on Figure 1-1.

The purpose of the constructed remedial system was twofold: create a barrier to restrict and contain the migration of dense non-aqueous phase liquid (DNAPL) consisting of coal tar residuals that have been exiting the fractured bedrock formation at, or near, the toe of the Creek Bank area slope; and promote the collection of the DNAPL in a defined permeable trench for subsequent mechanical removal, if required. This annual monitoring/inspection report documents the extent to which these objectives are being met based on the following primary activities that were conducted throughout the 2014 monitoring period:

- Three visual inspections for presence of DNAPL in the passive upgradient permeable collection trench installed along the grout cutoff wall alignment;
- Three visual inspections for presence of DNAPL along the Eighteen Mile Creek bank areas where coal tar residuals have previously been observed;
- Semi-annual groundwater sampling of the four piezometers installed upgradient and downgradient of the grout cutoff wall;
- Semi-annual sampling of the water discharge from the collection trench Filter Sump overflow chamber;
- Semi-annual groundwater sampling of two representative monitoring wells located within the VDM Plant at the top of the Niagara Escarpment;
- Visual inspection of the Filter Sump media (i.e., filter sand and activated carbon) and sump chamber;
- Visual inspection of the passive collection trench for the presence of DNAPL residuals; and,
- Visual inspection of the collection trench permeable stone media and DNAPL observation sumps.

Figure 1-2 shows the locations of the areas both within the active VDM facility and to the south along the Eighteen Mile Creek Bank Area (Creek Bank Area) that were monitored as part of this annual report.

The following sections present details on the frequency and methodologies employed for the inspections, monitoring and maintenance activities described above. The documentation and reporting associated with these activities are also described and provided.

2.0 QUARTERLY MONITORING AND INSPECTIONS

Due to heavy snow cover extending late into the first quarter, the initial quarterly inspection visit was not conducted until the very end of March 2014, Subsequently the remaining inspections were delayed by approximately 4-6 weeks and therefore a final fourth quarter inspection was not conducted during the 2014 monitoring period as a result. Consequently, in both the first and second year of inspection and monitoring only 3 of the 4 planned visual inspections were completed.

2.1 Passive DNAPL Collection Trench

Visual inspections were performed on the DNAPL collection trench by Golder personnel in March, June and November 2014. Based on the visual inspections performed by Golder personnel, the following observations were recorded and summarized on daily written inspection reports, included in this report as Appendix A. Photos taken during the inspections were also recorded and are included as Appendix B.

2.1.1 March 2014 Inspection

DNAPL accumulation was not observed during the March 2014 inspection period within the DNAPL observation sumps located within the DNAPL collection trench based on visual inspection and use of a wooden probe stick inserted to bottom of four, 4-inch diameter PVC DNAPL observation sumps (OS-1, OS-2, OS-3 and OS-4). Groundwater was encountered in OS-1, while OS-2, OS-3 and OS-4 were dry. Snow covered ground conditions limited the visual inspection of some sheltered slope areas. The down-gradient slope was generally obscured by snow cover, while the up-gradient slope was only partially covered.

2.1.2 June 2014 Inspection

DNAPL accumulation was not observed during the June 2014 inspection period within the DNAPL observation sumps located within the DNAPL collection trench based on visual inspection and use of a wooden probe stick inserted to bottom of four, 4-inch diameter PVC DNAPL observation sumps (OS-1, OS-2, OS-3 and OS-4). Groundwater was encountered in OS-1 and OS-3, while OS-2 and OS-4 were dry. Heavy foliage partially obscured the visual inspection of both the up and down-gradient slopes.

2.1.3 November 2014 Inspection

DNAPL accumulation was not observed during the November 2014 inspection period within the DNAPL observation sumps located within the DNAPL collection trench based on visual inspection and use of a wooden probe stick inserted to bottom of four, 4-inch diameter PVC DNAPL observation sumps (OS-1, OS-2, OS-3 and OS-4). Groundwater was encountered in OS-1 and OS-3, while OS-2 and OS-4 were dry. Large amounts of dead foliage inhibited the visual inspection of both the up and down-gradient slopes.

2.2 Creek Bank Area

Visual inspections were performed along approximately 300 feet of the Creek Bank Area down gradient of the DNAPL collection trench in Marc, June and November, 2014. Based on the visual inspections performed by Golder personnel, the following observations were recorded and summarized on daily written inspection reports, included in this report as Appendix A. Photos taken during the inspections were also recorded and are included as Appendix B.

2.2.1 March 2014 Inspection

No new DNAPL accumulations were observed during the March 2014 inspection period along the up-gradient slope and toe area of the creek bank north of the DNAPL collection trench, as well as the down-gradient portion adjacent to the creek.

2.2.2 June 2014 Inspection

No new DNAPL accumulations were observed during the June 2014 inspection period along the up-gradient slope and toe area of the creek bank north of the DNAPL collection trench, as well as the down-gradient portion adjacent to the creek. As a result of a previous wind storm, the creek bank access road was partially inhibited by fallen trees.

2.2.3 November 2014 Inspection

No new DNAPL accumulations were observed during the November 2014 inspection period along the up-gradient slope and toe area of the creek bank north of the DNAPL collection trench, although heavy foliage at the time of inspection may have limited full observation of possible small outbreaks. New DNAPL accumulations were not observed along the down-gradient portion adjacent to the Creek. Fallen trees blocking the access road, noted in the previous site visit, had been removed and vehicle access to the road restored.

2.3 Collection Trench Overflow Filter Sump Structure

Inspections of the collection trench drainage/filtration system including the Filter Sump and gravel filled sump drain were performed during the March, June and November, 2014 inspection periods. Visual observations included noting the general condition of the drainage sump filter media and any evidence of excessive solids accumulation, presence of DNAPL residuals or filter media washout. Based on the visual inspections performed by Golder personnel, the following observations were recorded and summarized on daily written inspection reports, included in this report as Appendix A. Photos taken during the inspections were also recorded and are included as Appendix B.

2.3.1 March 2014 Inspection

During the March 2014 inspection period, there was no observation of DNAPL present on the surface of accumulated water in the overflow filter sump. There was no erosion or disturbance of the drainage sump

filter media, with only negligible sediment present on the top of the sand media. The overflow section (filtered water discharge chamber) of the sump structure was clear and free of any sediment or solids. Water was observed to be freely overflowing to the discharge pipe.

The gravel filled sump drainage area adjacent to the filter sump was observed to be in good condition with no evidence of surficial water overflow, silting or DNAPL.

2.3.2 June 2014 Inspection

During the June 2014 inspection period, there was no observation of DNAPL present on the surface of accumulated water in the overflow filter sump. There was no erosion or disturbance of the drainage sump filter media, with only negligible sediment present on the top of the sand media. The overflow section (filtered water discharge chamber) of the sump structure was clear and free of any sediment or solids. Water was observed to be freely overflowing to the discharge pipe.

The gravel filled sump drainage area adjacent to the filter sump was observed to be in good condition with no evidence of surficial water overflow, silting or DNAPL.

2.3.3 November 2014 Inspection

During the November 2014 inspection period, there was no observation of DNAPL present on the surface of accumulated water in the overflow filter sump. There was no erosion or disturbance of the drainage sump filter media, with only minor sediment present on the top of the sand media. Active biology (snail) noted in the sand bed media. The overflow section (filtered water discharge chamber) of the sump structure was clear and free of any sediment or solids. Water was observed to be freely overflowing to the discharge pipe.

The gravel filled sump drainage area adjacent to the filter sump was observed to be in good condition with no evidence of surficial water overflow, silting or DNAPL.

3.0 SEMI-ANNUAL GROUNDWATER MONITORING

3.1 Introduction

A total of four (4) piezometers located in the Creek Bank Area were installed in 2012 and two (2) bedrock monitoring wells located at the top of the escarpment within the VDM plant site and installed in 1999 and 2006 were monitored to establish a groundwater quality baseline data set at the site as described below. A table summarizing the piezometer, monitoring well and DNAPL Observation Sump installation information (Table 3-1) was provided in the Operations & Maintenance Plan (OMP) report previously submitted by Golder (Golder, April 2013).

3.2 Creek Bank Piezometers

Piezometer development and semi-annual groundwater sampling was performed on the four (4) piezometers (PZ-1, PZ-2, PZ-3 and PZ-4) installed as part of the Creek Bank Corrective Measures in 2012 (refer to Figure 3-1) as described below.

3.2.1 Piezometer Development

The 2-inch diameter piezometers were developed prior to both the June and November 2014 sampling events. Development methods implored by Golder personnel involved the use of dedicated polyethylene bailers to remove standing water and sediment trapped in well screens to insure representative samples of groundwater at each location. Development of piezometers continued until extraction of three well volumes was complete and field measurements for turbidity, pH, specific conductivity and temperature stabilized.

Well development data, including the duration of the development process, methods employed, and the volume of water removed, are included on the Sample Collection Field Logs provided in Appendix C. Water purged from the piezometers during the development process was collected by Golder personnel in appropriate containers and discharged into VDM's process sewer manhole.

3.2.2 Piezometer Sampling & Analytical Results

Following development, groundwater samples were collected from each of the piezometers to assess the general groundwater quality up gradient and down gradient of the grout wall and bedrock cutoff system. Pre-sampling activities included determining the piezometer's water elevation, a piezometer-maintenance check, and non-aqueous phase liquid (NAPL) determination. All piezometers were measured, however piezometer PZ-1 was found to be dry during sampling activities and no measurements could be obtained. After completion of these pre-sampling activities, the piezometers were purged of three well volumes (or until dry). A sample of the third well volume was measured for the following field parameters: pH, temperature, and specific conductivity.

Groundwater samples were then collected for chemical analysis using dedicated polyethylene bailers. The groundwater samples were shipped via courier under proper chain of custody procedures to TestAmerica Laboratories, Inc. (TestAmerica) in Buffalo, New York, a New York State Department of Health Environmental Laboratory Accreditation Program (ELAP) certified laboratory, within 24 hours of collection. Water purged from the piezometers during the sampling activities was collected in appropriate containers by Golder personnel and discharged into VDM's process sewer manhole. At the conclusion of each semi-annual sampling event, the physical condition of the piezometers and protective casings/locks was also noted and any recommended repairs or maintenance required (if necessary) was documented on the sampling logs provided in Appendix C.

All piezometer groundwater samples collected were analyzed for TCL Volatile Organic Compounds (VOCs) in accordance with USEPA Method 8260B and TCL Semi-volatile Organic Compounds (SVOCs) in accordance with USEPA Method 8270C and the analytical results are presented in Table 3-1. This is the second year of Site monitoring following the completion of the Corrective Measures, therefore the 2014 sample results are also presented in Table 3-2 comparing this year's analytical results to the established baseline set by the 2013 groundwater quality sample data.

The results of the piezometer sampling and analyses identified several SVOCs, benzo(a)pyrene in PZ-2, bis(2-ethlhexyl)phthalate, nitrobenzene, and phenol in PZ-3), and bis(2-ethlhexyl)phthalate in PZ-4 in one or both sampling events as exceeding the NYSDEC Part 703 groundwater quality standards (GWQS). Bis(2-ethlhexyl)phthalate is a common laboratory contaminant and was not detected in the 2013 sample results, therefore they are considered to be an anomalous result in these samples. No other compounds were detected above the GWQS. Golder will assess the piezometer groundwater data for trends and evaluate the effectiveness of the Corrective Measures when additional analytical data is collected during future annual monitoring events.

3.3 Plant Monitoring Well Sampling & Analytical Results

Semi-annual groundwater sampling was performed on only one (1) existing monitoring well, MW-7D, located within the operational portion of the VDM facility at the top of the escarpment, to assess the general groundwater quality at these up gradient locations on the top of the escarpment. Monitoring Well MW-7D was installed in 2006 by Benchmark as part of voluntary site investigations associated with the sale of the facility. During the June 2014 sampling event MW-3D, installed in 1999 by Dames and Moore and located within the operational portion of the VDM facility, was noted as being damaged by plant snow removal activities the previous winter/spring, therefore no samples were obtained from MW-3D during the 2014 sampling events and a replacement well was not identified for sampling. Location of both wells is presented on Figure 1-2.

Pre-sampling activities included measuring the well's water elevation, a well-maintenance check, and non-aqueous phase liquid (NAPL) determination. After completion of these pre-sampling activities, the wells were purged of three well volumes (or until dry). A sample of the third well volume was measured for the following field parameters: pH, temperature, and specific conductivity. Groundwater samples were then collected for chemical analysis using dedicated polyethylene bailers. The groundwater samples were shipped via courier under proper chain of custody procedures to Test America within 24 hours of collection. Water purged from the wells during the sampling activities was collected in appropriate containers by Golder personnel and discharged into VDM's process sewer manhole.

All monitoring well groundwater samples collected were analyzed for TCL Volatile Organic Compounds (VOCs) in accordance with USEPA Method 8260B and TCL Semi-volatile Organic Compounds (SVOCs) in accordance with USEPA Method 8270C and the analytical results are presented in Table 3-1. This is the second year of Site monitoring following the completion of the Corrective Measures, therefore the 2014 sample results are also presented in Table 3-2 comparing this year's analytical results to the established baseline set by the 2013 groundwater quality sample data.

The results of the monitoring well sampling and analyses identified six VOCs in one or both monitoring events as exceeding the NYSDEC Part 703 GWQS. Two SVOCS, acenaphthene and bis(2-ethylhexyl)phthalate were detected in monitoring well MW-7D in one or both sampling events, above the GWQS.

VOCs detected in MW-7D and historically in MW-3D within the operational portion of the VDM facility were not detected in down-gradient piezometers. Golder will continue to assess Plant monitoring well groundwater data for trends and evaluate potential impacts of the up-gradient groundwater on the Corrective Measures as additional analytical data is collected from future annual monitoring events.

At the conclusion of each semi-annual sampling event, the physical condition of the monitoring wells and protective casings or covers was noted and any recommended repairs or maintenance required (if necessary) was documented on the sampling logs provided in Appendix C.

3.4 Filter Sump Structure Sampling & Analytical Results

Semi-annual sampling was performed on the collection trench drainage/filtration system overflow chamber as part of the annual site inspection activities performed by Golder personnel in 2014. One aqueous sample was collected from the overflow chamber of the Filter Sump to assess the general performance of the grout wall and bedrock cutoff system. Pre-sampling activities included inspection of the vault filter media, a vault-maintenance check, and non-aqueous phase liquid (NAPL) determination.

After completion of these pre-sampling activities, a sample of the Filter Sump effluent water was measured for the following field parameters: pH, temperature, and specific conductivity. Aqueous samples were then collected for chemical analysis by direct fill methods. The aqueous samples were shipped via courier under proper chain of custody procedures to Adirondack within 24 hours of collection.

Samples collected from the collection trench drainage/filtration system overflow chamber were analyzed for TCL Volatile Organic Compounds (VOCs) in accordance with USEPA Method 8260B and TCL Semi-volatile Organic Compounds (SVOCs) in accordance with USEPA Method 8270C and the analytical results are presented in Table 3-1. This is the second year of Site monitoring following the completion of the Corrective Measures, therefore the 2014 sample results are also presented in Table 3-2 comparing this year's analytical results to the established baseline set by the 2013 groundwater quality sample data. Golder will continue to assess the collection trench drainage/filtration system overflow chamber data for trends and evaluate the effectiveness of the Corrective Measures as appropriate.

One VOC, chloroform was detected in the Filter Sump sample during the November 2014 effluent sampling. No SVOCs were detected above the GWQS in the Filter Sump effluent samples.

At the conclusion of each semi-annual sampling event, the physical condition of the collection vault was noted and any recommended repairs or maintenance required (if necessary) was documented on the sampling logs provided in Appendix C.

4.0 MAINTENANCE AND CLEAN-OUT ACTIVITIES

As described in Section 2.0 above, the inspections conducted in 2014 did not find evidence of DNAPL impacts to the DNAPL Collection Trench or Filter Sump, therefore maintenance or clean-out activities were not necessary or performed on these components of the Creek Bank Area remedial system. Repairs to the piezometers and monitoring wells were not required since no damage was observed to the protective casings, locks or the monitoring well or piezometer risers.

Some clearing of storm debris from downed trees was performed by VDM along the access road down to the bottom of the Creek Bank Area to maintain good access to the piezometers and effluent vault.

5.0 REFERENCES

1.) Golder Associates Inc., *SNPE-VanDeMark Corrective Actions, Operation & Maintenance Plan*, prepared for SNPE Inc., April 2013.

TABLES

SNPE-VANDEMARK SITE
2014 GROUNDWATER AND VAULT MONITORING RESULTS
LOCKPORT, NY

Lab ID	NYSDEC Part 703 Groundwater Quality Standards	480-62067-2	480-71961-4	-	480-62067-1	480-71961-5	480-62067-6	480-71961-1	480-62067-3	480-71961-2	480-62067-5	480-62067-3
Sample Date		6/17/2014	11/25/2014	-	6/17/2014	11/25/2014	6/17/2014	11/25/2014	6/17/2014	11/25/2014	6/17/2014	11/25/2014
Sample ID		Vault Effluent	Vault Effluent	MW-3D+	MW-7D	MW-7D	PZ-2	PZ-2	PZ-3	PZ-3	PZ-4	PZ-4
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Volatile Organics by GC/MS (US EPA Method 8260B)												
1,1,1-Trichloroethane	5	-	-		**97**	**140**	-	-	-	-	-	-
1,1-Dichloroethane	5	-	-		**-**	**350**	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-		**77**	**110**	-	-	-	-	-	-
1,2-Dichloroethane	0.6	-	-		**4.8**	**6.6**	-	-	-	-	-	-
2-Butanone	NV	-	-		-	-	-	-	-	-	-	-
Acetone	NV	-	-		-	-	-	-	16 ^	6 J	-	-
Carbon disulfide	NV	-	-		-	-	-	-	0.61 J	-	-	-
Carbon tetrachloride	5	-	-		0.53 J	-	-	-	-	-	-	-
Chloroethane	5	-	-		**73**	**100**	-	-	-	-	-	-
Chloroform	7	3.7	**9.6**		0.8 J	-	3.2	0.6 J	-	-	-	-
cis-1,2-Dichloroethene	5	-	-		0.98 J	-	-	-	-	-	-	-
Ethylbenzene	5	-	-		2	-	-	-	-	-	-	-
Trichloroethene	5	-	-		1.1	-	-	-	-	-	-	-
Vinyl chloride	2	-	-		**21**	**19**	-	-	-	-	-	-
Semivolatile Organics by GC/MS (US EPA Method 8270C)												
Biphenyl	NV	-	-		-	5	-	0.1 J	-	-	-	-
2,4-Dimethylphenol	NV	-	-		-	0.48 J	-	0.9 J	-	-	-	-
2-Methylnaphthalene	NV	-	-		-	-	-	-	0.79 J	1.3 J	-	-
2-Nitroaniline	5	-	-		-	-	-	-	-	1.1 J	-	-
4-Methylphenol	NV	-	-		-	-	-	-	-	1.2 J	-	-
4-Methylphenol & 3-Methlyphenol	NV	-	-		-	-	-	-	-		-	-
Acenaphthene	20	-	-		12	**39**	0.88 J	4.1 J	1.6 J	2.7 J	-	-
Acenaphthylene	NV	-	-		-	0.56 J	-	-	-	-	-	-
Anthracene	NV	-	-		0.22 J	1 J	0.23 J	1.2 J	-	-	-	-
Benzaldehyde	NV	-	0.86 JB*		-	0.84 JB*	-	0.87 JB	-	1.5 JB*		0.89 JB*
Benzo(a)anthracene	NV	-	-		-	-	0.38 J	0.53 J	-	-	-	-
Benzo(a)pyrene	ND	-	-		-	-	-	**0.5** J	-	-	-	-
Benzo(b)fluoranthene	NV	-	-		-	0.28 J	-	0.43 J		-	-	-
Bis(2-ethylhexyl)phthalate	5	-	3.1 J		**6.7** J	3.5 J	-	3.4 J	-	**6.3**	**1.5** J	3.1 J
Carbazole	NV	-	-		2.2 J	10 *	-	1.1 J*	-	-	-	-
Chrysene	NV	-	-		-	-	0.42 J	0.59 J	-	-	-	-
Dibenzofuran	NV	-	-		6.5 J	-	-	-	-	-	-	-
Di-n-butyl phthalate	50	-	-		-	27	-	-	-	-	-	0.31 J
Fluoranthene	NV	-	-		0.34 J	1.3 J	0.47 J	1.7 J	-	-	-	-
Fluorene	NV	-	-		4.3	18	0.32 J	1.9 J	0.34 J	0.64 J	-	-
Isophorone	NV	-	-		-	10	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	NV	-	-		-	-	-	4.1 JB	-	-	-	4.2 JB
Naphthalene	10	-	-		2.5	8	0.54 J	1.3 J	2.5	4.4 J	-	-
Nitrobenzene	0.4	-	-		-	-	-	-	-	**0.49** J	-	-
Phenanthrene	50	-	-		1.1 J	7.5	1 J	5.4	0.52 J	1.4 J	-	-
Phenol	1*	-	-		-	-	-	-	**38**	**53**	-	0.61 J
Pyrene	NV	-	-		-	0.74 J	0.74 J	2.9 J	-	-	-	-

Key:
Vault Effluent Sample Results
Plant Monitoring Well Sample Results
Piezometer Sample Results

Table by: JGT
Checked by:
Reviewed by:

Footnotes:
Analyses performed by TestAmerica Laboratories, Inc.
- Compound not detected above the Analytical Method Detection Limit
BOLD = Value exceed the groundwater quality standards.
+ This well was damaged and unable to be sampled
* = The sum of all phenols
NV = No GW Quality Standard

Qualifications:
J = Analyte detected at a level less that Reporting Limit and greater than or equal to the Method Detection Limit. Concentrations in this range are estimated.
B = Analyte detected in the method blank.
^ = Instrument related QC exceeds the control limits.

SNPE-VANDEMARK SITE
HISTORIC GROUNDWATER AND VAULT MONITORING RESULTS
LOCKPORT, NY

Lab ID	NYSDEC Part 703 Groundwater Quality Standards	130617007-001	130930005-006B	480-62067-2	480-71961-4	130617007-003	130930005-001B	-	130617007-002	130930005-002B	480-62067-1	480-71961-5	130617007-004	130930005-003B	480-62067-6	480-71961-1	130617007-005	130930005-004B	480-62067-3	480-71961-2	130617007-006	130930005-005B	480-62067-5	480-62067-3	130617007-007
Sample Date		6/13/2013	9/26/2013	6/17/2014	11/25/2014	6/13/2013	9/26/2013	-	6/13/2013	9/26/2013	6/17/2014	11/25/2014	6/13/2013	9/26/2013	6/17/2014	11/25/2014	6/13/2013	9/26/2013	6/17/2014	11/25/2014	6/13/2013	9/26/2013	6/17/2014	11/25/2014	6/13/2013
Sample ID		Vault Effluent	Vault Effluent	Vault Effluent	Vault Effluent	MW-3D	MW-3D	MW-3D+	MW-7D±	MW-7D	MW-7D	MW-7D	PZ-2	PZ-2	PZ-2	PZ-2	PZ-3	PZ-3	PZ-3	PZ-3	PZ-4	PZ-4	PZ-4	PZ-4	Dup (MW-3D)
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Volatile Organics by GC/MS (US EPA Method 8260B)																									
1,1,1-Trichloroethane	5	-	-	-	-	**11**	**13**		**19**	**71**	**97**	**140**	-	-	-	-	-	-	-	-	-	-	-	-	**11**
1,1-Dichloroethane	5	-	-	-	-	**87**	**120**		**79**	**260**	**-**	**350**	-	-	-	-	-	-	-	-	-	-	-	-	**89**
1,1-Dichloroethene	5	-	-	-	-	**27**	**38**		**21**	**70**	**77**	**110**	-	-	-	-	-	-	-	-	-	-	-	-	**27**
1,2-Dichloroethane	0.6	-	-	-	-	**17**	**23**		**2** J	-	**4.8**	**6.6**	-	-	-	-	-	-	-	-	-	-	-	-	**17**
2-Butanone	NV	-	-	-	-	-	-		-	-	-	-	-	35	-	-	-	-	-	-	-	-	-	-	-
Acetone	NV	1.8 J, B	-	-	-	-	-		-	-	-	-	-	12	-	-	-	8.6 J	16 ^	6 J	8.3 J, B	-	-	-	-
Carbon disulfide	NV	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	0.61 J	-	-	-	-	-	-
Carbon tetrachloride	5	-	-	-	-	-	-		-	-	0.53 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	5	-	-	-	-	-	-		**20**	**58**	**73**	**100**	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	7	4.2 J	-	3.7	**9.6**	-	-		-	-	0.8 J	-	**12**	**14**	3.2	0.6 J	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	5	-	-	-	-	-	-		-	-	0.98 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	5	-	-	-	-	-	-		2.9 J	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	5	-	-	-	-	-	-		-	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	2	-	-	-	-	**17**	**26**		**5.3** J	**23**	**21**	**19**	-	-	-	-	-	-	-	-	-	-	-	-	**18**
Semivolatile Organics by GC/MS (US EPA Method 8270C)																									
Biphenyl	NV	-	-	-	-	-	-		-	-	-	5	-	-	-	0.1 J	-	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	NV	-	-	-	-	-	-		-	-	-	0.48 J	-	-	-	0.9 J	-	-	-	-	-	-	-	-	-
2-Methylnaphthalene	NV	-	-	-	-	-	-		-	1.1 J	-	-	-	-	-	-	-	-	0.79 J	1.3 J	-	-	-	-	-
2-Nitroaniline	5	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	1.1 J	-	-	-	-	-
4-Methylphenol	NV	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	**2.6** J	-	1.2 J	-	-	-	-	-
4-Methylphenol & 3-Methlyphenol	NV	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	**5.9** J	-	-	-	-
Acenaphthene	20	-	-	-	-	2.5 J	2.9 J		27	28	12	**39**	-	1.4 J	0.88 J	4.1 J	-	3.7 J	1.6 J	2.7 J	-	-	-	-	2.3 J
Acenaphthylene	NV	-	-	-	-	-	-		1.2 J	-	-	0.56 J	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	NV	-	-	-	-	-	-		-	-	0.22 J	1 J	-	-	0.23 J	1.2 J	1.1 J	- J	-	-	-	-	-	-	-
Benzaldehyde	NV	-	-	-	0.86 JB*	-	-		-	-	-	0.84 JB*	-	-	-	0.87 JB	-	-	-	1.5 JB*	-	-	-	0.89 JB*	-
Benzo(a)anthracene	NV	-	-	-	-	-	-		-	-	-	-	-	2.0 J	0.38 J	0.53 J	1.3 J	- J	-	-	-	-	-	-	-
Benzo(a)pyrene	ND	-	-	-	-	-	-		-	-	-	-	-	1.6 J	-	**0.5** J	1 J	- J	-	-	-	-	-	-	-
Benzo(b)fluoranthene	NV	-	-	-	-	-	-		-	-	-	0.28 J	-	-	-	0.43 J	-	-	-	-	-	-	-	-	-
Bis(2-ethylhexyl)phthalate	5	-	-	-	3.1 J	-	-		-	2.5 J	**6.7** J	3.5 J	1.5 J	1.1 J	-	3.4 J	1.2 J	- J	-	**6.3**	-	-	**15** J	3.1 J	-
Carbazole	NV	-	-	-	-	-	1.2 J		2.3 J	5.1	2.2 J	10 *	-	-	-	1.1 J*	-	-	-	-	-	-	-	-	-
Chrysene	NV	-	-	-	-	-	-		-	-	-	-	1.1 J	2.2 J	0.42 J	0.59 J	1.4 J	- J	-	-	-	-	-	-	-
Dibenzofuran	NV	-	-	-	-	-	1.2 J		16	18	6.5 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Di-n-butyl phthalate	50	1.2 J, B	-	-	-	2 J, B	1.4 J		1.5 J, B	2.5 J	-	27	-	-	-	-	-	-	-	-	-	-	-	0.31 J	-
Fluoranthene	NV	-	-	-	-	-	-		-	1.5 J	0.34 J	1.3 J	1.1 J	2.6 J	0.47 J	1.7 J	1.6 J	- J	-	-	-	-	-	-	-
Fluorene	NV	-	-	-	-	-	-		8.9	9.7	4.3	18	-	-	0.32 J	1.9 J	-	-	0.34 J	0.64 J	-	-	-	-	-
Isophorone	NV	-	-	-	-	-	-		-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	NV	-	-	-	-	-	-		-	-	-	-	-	-	-	4.1 JB	-	-	-	-	-	-	-	4.2 JB	-
Naphthalene	10	-	-	-	-	-	-		8.2	9.8	2.5	8	-	1.5 J	0.54 J	1.3 J	-	3.4 J	2.5	4.4 J	4.3 J	-	-	-	-
Nitrobenzene	0.4	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	**0.49** J	-	-	-	-	-
Phenanthrene	50	-	-	-	-	-	-		1.8 J	4.2 J	1.1 J	7.5	1.2 J	3.3 J	1 J	5.4	3.3 J	2.4 J	0.52 J	1.4 J	-	-	-	-	-
Phenol	1*	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	**130**	**38**	**53**	**260**	**1.4** J	-	0.61 J	-
Pyrene	NV	-	-	-	-	-	-		-	1.1 J	-	0.74 J	1.9 J	4.4 J	0.74 J	2.9 J	2.8 J	-	-	-	-	-	-	-	-

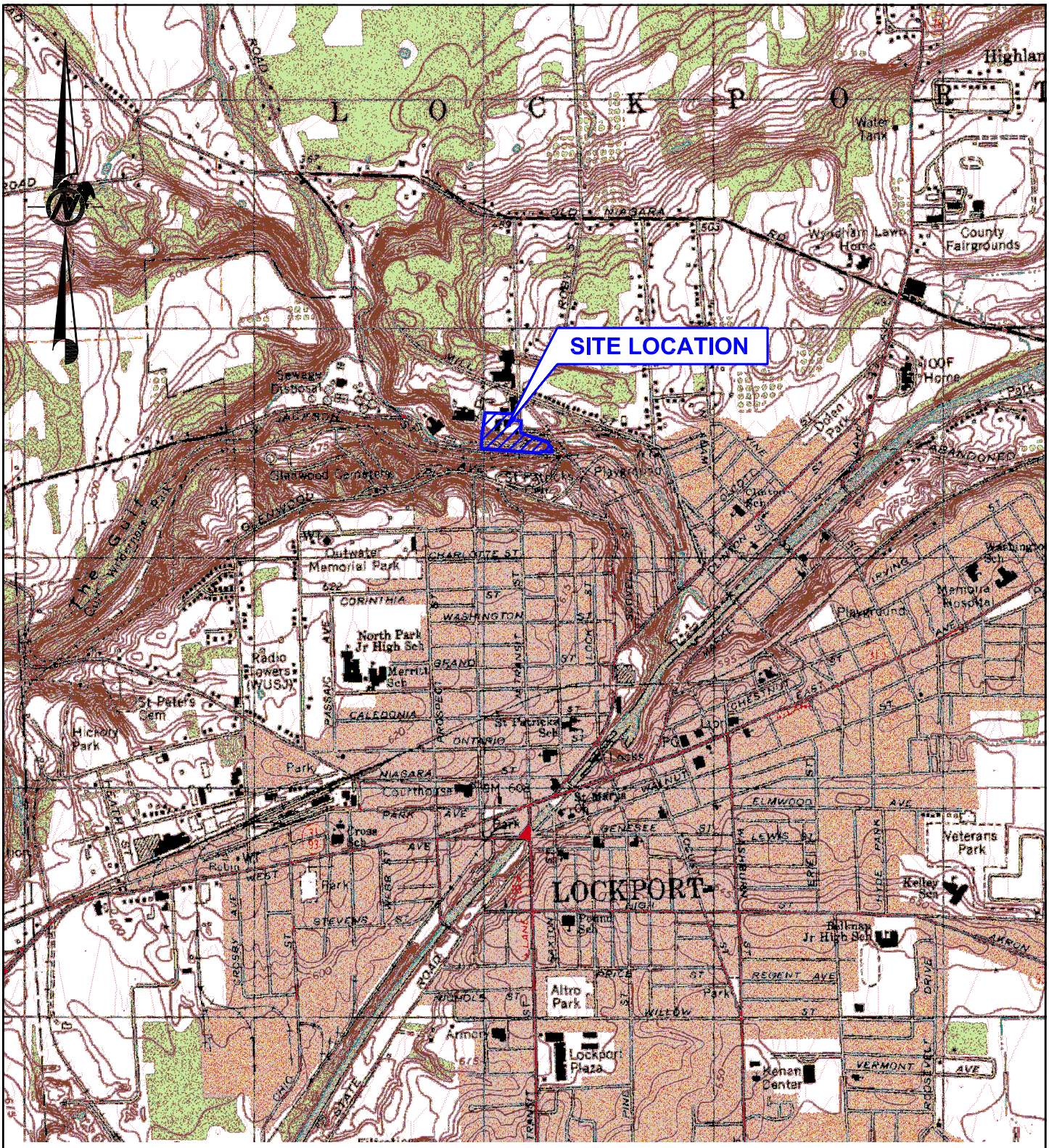
Key:
Vault Effluent Sample Results
Plant Monitoring Well Sample Results
Piezometer Sample Results

Footnotes:
Analyses performed by Adirondack Environmental Services Inc.
- Compound not detected above the Analytical Method Detection Limit
BOLD = Value exceed the groundwater quality standards.
+ = This well was damaged and unable to be sampled.
± This sample was incorrectly labeled as MW-2D on chain of custody and laboratory report
* = The sum of all phenols
NV = No GW Quality Standard

Qualifications:
J = Analyte detected at a level less that Reporting Limit and greater than or equal to the Method Detection Limit. Concentrations in this range are estimated.
B = Analyte detected in the method blank.

Table by: JGT
Checked by:
Reviewed by:

FIGURES



REFERENCES

1.) BASE MAP TAKEN FROM U.S.G.S. 7.5 MINUTE QUADRANGLE OF LOCKPORT, NEW YORK DATED 1980.

2000 0 2000
SCALE FEET

NJ Authorization #24GA28029100

Golder Associates
Buffalo, New York

SCALE	AS SHOWN
DATE	02/04/11
DESIGN	AML
CADD	GLS
CHECK	
REVIEW	

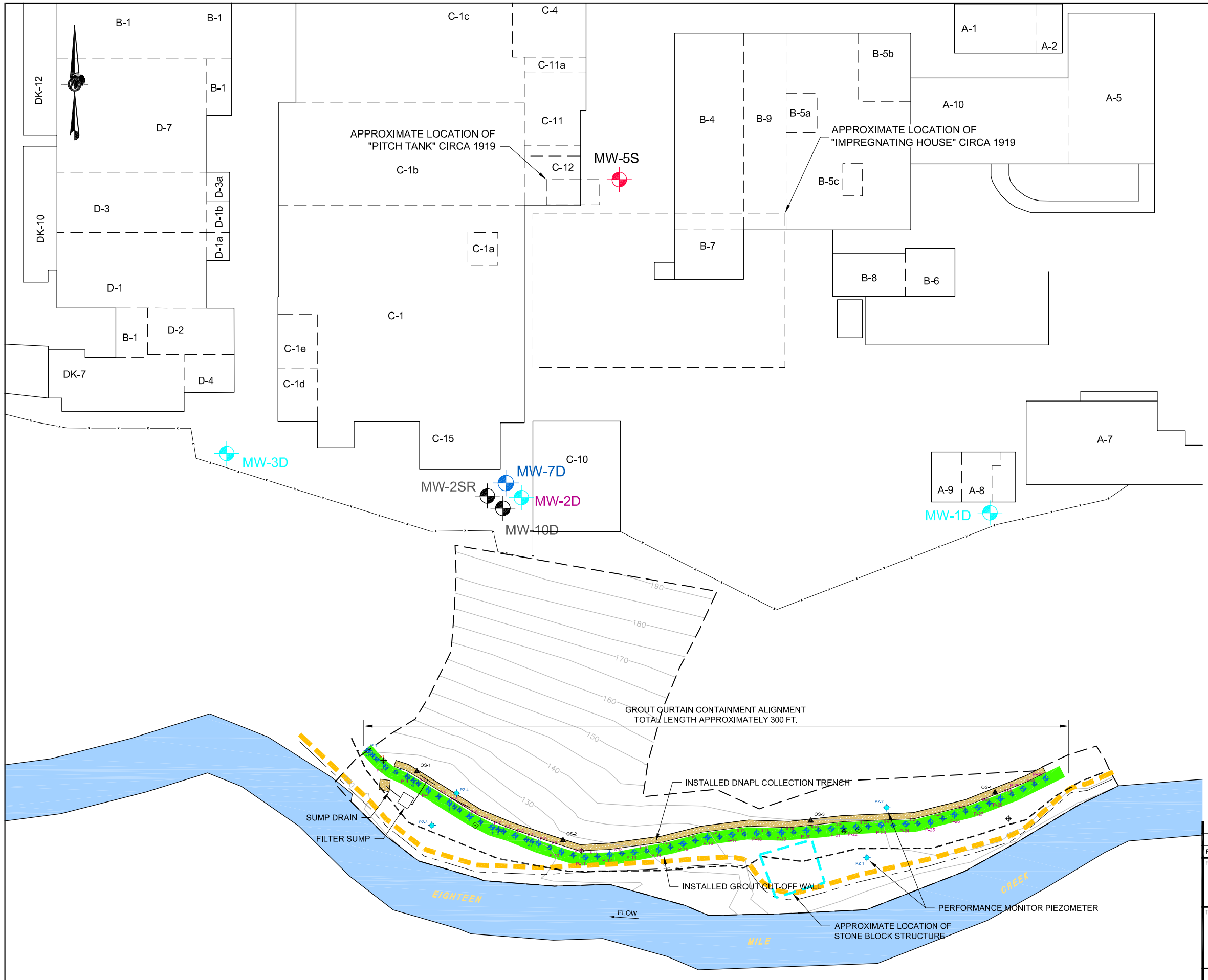
FILE No. 09389168A011
PROJECT No. 093-89168 REV. 0

TITLE

SITE LOCATION MAP

SNPE - VANDEMARK CHEMICAL

FIGURE 1-1



LEGEND

- FENCE
- SILT FENCE
- STRAW BALES
- SAND BAGS
- FLOWABLE FILL AND CEMENT GROUT
- No. 2 WASHED STONE
- IN-SITU GROUT WALL PERMEABILITY SAMPLE LOCATION
- OS-2 — 4-INCH DNAPL OBSERVATION SUMP (IN COLLECTION TRENCH)
- PZ-1 — 1-INCH PERFORMANCE MONITORING PIEZOMETER
- 1999 INVESTIGATION OVERBURDEN MONITORING WELL
- 1999 INVESTIGATION BEDROCK MONITORING WELL
- 2006 BEDROCK MONITORING WELL
- MONITORING WELL (UNKNOWN INSTALLATION DATE)
- EIGHTEEN-MILE CREEK

REFERENCE

1.) TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

2.) BOREHOLE AND CORE LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE.

3.) MAP DIGITIZED FROM HARD COPY OF FIGURE 1 ENTITLED "SITE PLAN," PREPARED BY BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.

4.) CONCRETE VAULT, PIEZOMETERS, GRAVEL COLLECTION TRENCH, OBSERVATION SUMPS, AND FRENCH DRAIN FROM 121205 FIELD DATA REVISED.XLSX, PREPARED BY WENDEL IN NOVEMBER 30, 2012.

SCALE 20 0 20 40 FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	09/30/13	AML	Corrected the layout and IDs of several GW wells west of Building C-10	AML	PTM	PTM

PROJECT

SNPE - VANDEMARK
CREEK BANK AREA CORRECTION MEASURES PROJECT
LOCKPORT, NEW YORK

TITLE

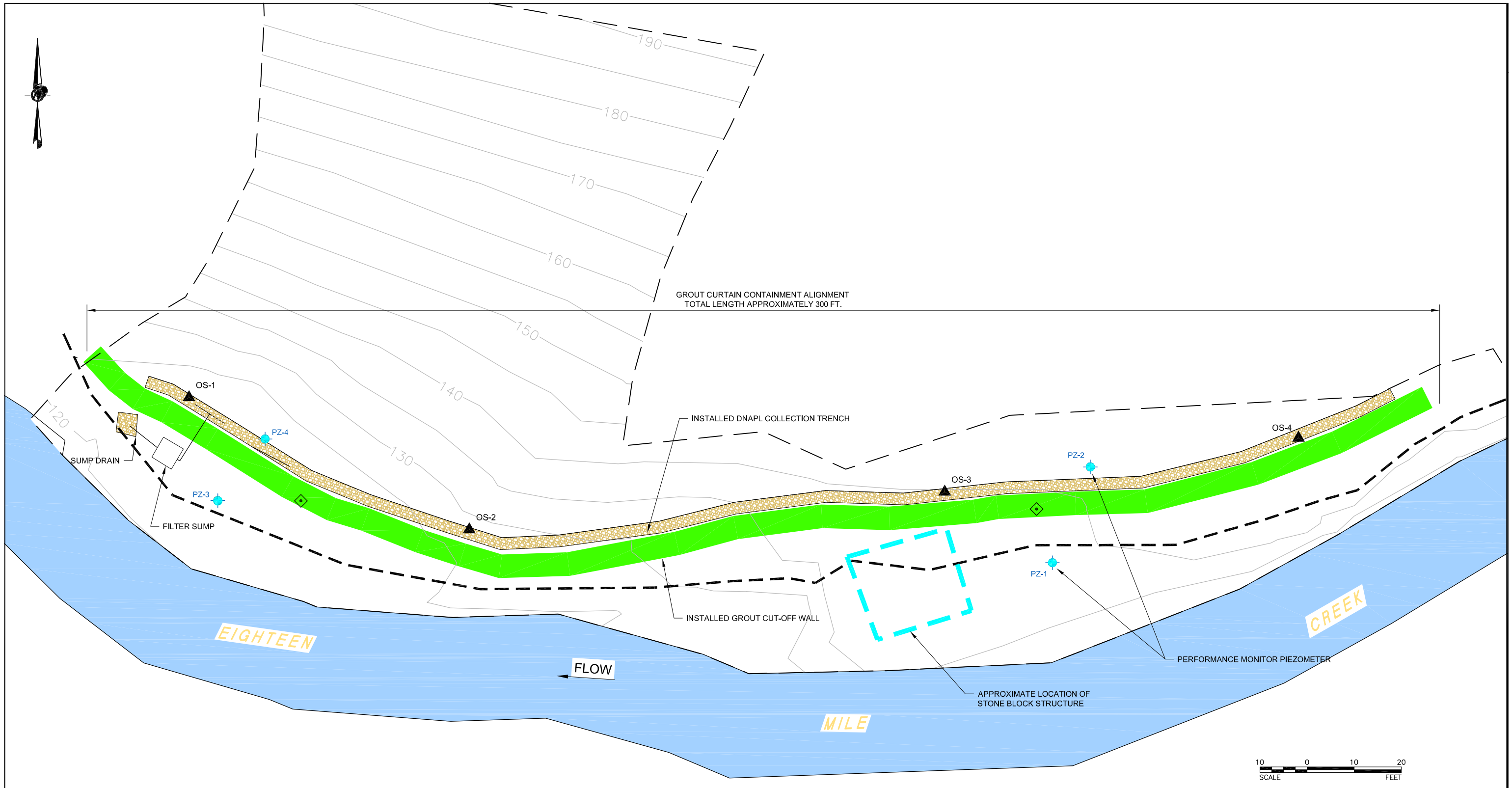
OMP SITE PLAN - VDM PLANT & CREEK BANK AREA

NJ Authorization #24GA28029100

Golder Associates
Mt. Laurel, New Jersey

PROJECT No.	093-89168		FILE No.	09389168A030	
DESIGN	PTM	04/16/13	SCALE	AS SHOWN	REV. 0
CADD	MJS	04/16/13			
CHECK	AML	04/17/13			
REVIEW					

FIGURE 1-2



LEGEND

- APPROXIMATE LOCATION OF EROSION CONTROL MEASURES (SILT FENCE, STRAW BALES, AND SAND BAGS). TO REMAIN IN PLACE UNTIL SPRING OF 2013
- PZ-1 — PERFORMANCE MONITORING PIEZOMETER
- OBSERVATION SUMPS
- IN-SITU GROUT WALL PERMEABILITY SAMPLE LOCATION
- FLOWABLE FILL AND CEMENT GROUT
- No. 2 WASHED STONE
- EIGHTEEN-MILE CREEK

REFERENCE

1.) TOPOGRAPHY SHOWN ON THIS PLAN WAS TAKEN FROM SURVEY FILE xve-vandemark base.dwg, DATED 06-21-2010.

2.) CORE LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE.

3.) MAP DIGITIZED FROM HARD COPY OF FIGURE 1 ENTITLED "SITE PLAN," PREPARED BY BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.

4.) CONCRETE VAULT, PIEZOMETERS, GRAVEL COLLECTION TRENCH, OBSERVATION SUMPS, AND FRENCH DRAIN FROM 121205 FIELD DATA REVISED.XLSX, PREPARED BY WENDEL IN NOVEMBER 30, 2012.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

SNPE - VANDEMARK
CREEK BANK AREA CORRECTION MEASURES PROJECT
LOCKPORT, NEW YORK

TITLE

CREEK BANK AREA SITE PLAN
OPERATION & MAINTENANCE PLAN

NJ Authorization #24GA28029100

Golder Associates
Mt. Laurel, New Jersey

PROJECT No.		093-89168	FILE No.		09389168A028
DESIGN	PTM	12/11/12	SCALE	AS SHOWN	REV. 0
CADD	AML	03/28/13			
CHECK	PTM				
REVIEW	DCW				

FIGURE 3-1

APPENDIXA

OPERATIONS AND MONITORING
SUMMARY INSPECTION FORMS

OPERATIONS & MONITORING SUMMARY

SHEET 1 OF 2

PROJECT NUMBER: 093-89168
PROJECT TITLE: Creek Bank Corrective Measures -Site No. 932149
OWNER: SNPE - VanDeMark Chemical
CONTRACTOR: N/A
LOCATION: Lockport, New York
SUB CONTRACTOR(S):

DATE: 3/31/14

WEATHER: CLOUD COVER: SUNNY
TEMPERATURE: LOW: 34 @ HIGH @
PRECIPITATION: N/A
WIND: LIGHT

GOLDER PERSONNEL ON SITE:

P. MARTIN
J. HALDY

SUMMARY OF FIELD INSPECTION OBSERVATIONS:

THIS INSPECTION WAS COORDINATED W/ STAN RAVON OF NYSDEC
- IN GENERAL SNOW COVER LIMITED INSPECTION OF SOME SLOPE AREAS

(1) EFFLUENT VAULT: WATER IS CLEAR & OVERFLOWING TO OUTFALL
NO EVIDENCE OF SHEEN OR DNAPL ON WATER SURFACE OR TOP OF SAND MEDIA. MINOR SEDIMENT ACCUMULATION ON TOP OF SAND BED

(2) OBSERVATION SUMPS
OS-1 WATER PRESENT TO 2-3" BELOW GRADE (PARTIALLY FROZEN)
NO SHEEN OR ODOR.
OS-2 DRY - NO DNAPL PRESENT
OS-3 DRY - NO DNAPL PRESENT
OS-4 DRY - NO DNAPL PRESENT

(3) OBSERVATIONS OF UPGRADIENT SLOPE & TOE AREA (NORTH OF DNAPL COLLECTION TRENCH): NO NEW DNAPL ACCUMULATIONS OBSERVED (PARTIALLY OBSCURED BY SNOW

(4) OBSERVATION OF DOWNGRADIENT SLOPE ADJACENT TO CREEK: NO OBSERVATIONS FEASIBLE DUE TO HEAVY SNOW COVER IN AREA

GOLDER ACTIVITIES AND TEST RESULTS:

- PHOTOS TAKEN OF INSPECTED AREAS

Golder Associates

SUBMITTED BY:

OPERATIONS & MONITORING SUMMARY

SHEET 1 OF 2

PROJECT NUMBER: 093-89168
PROJECT TITLE: Creek Bank Corrective Measures -Site No. 932149
OWNER: SNPE - VanDeMark Chemical
CONTRACTOR:
LOCATION: Lockport, New York
SUB CONTRACTOR(S):

DATE: 6/17/14

WEATHER: CLOUD COVER
TEMPERATURE: PARTLY CLOUDY
LOW: @ 75°
PRECIPITATION: NA
HIGH @
WIND

GOLDER PERSONNEL ON SITE:

P. MARTIN
J. TAYLOR

SUMMARY OF FIELD INSPECTION OBSERVATIONS:

(1) INSPECTED EFFLUENT VAULT - WATER IS CLEAR & APPEARS TO BE OVERFLOWING TO OUTFALL W/NO RESTRICTION. NO EVIDENCE OF DNAPL OR SHEEN ON WATER SURFACE OR ON TOP OF SAND MEDIA. MINIMAL SEDIMENT ACCUMULATION ON TOP OF SEDIMENT

(2) OBSERVATION SUMPS:

OS-1: WATER PRESENT TO ~ 4" BELOW GRADE. NO DNAPL OR SHEEN OR ODOR OBSERVED.

OS-2: DRY - NO DNAPL PRESENT (STONE OBSERVED @ BOTTOM)

OS-3: ~ 6" WATER PRESENT. NO DNAPL, SHEEN, OR ODOR OBSERVED

OS-4: DRY - NO DNAPL PRESENT (STONE OBSERVED @ BOTTOM)

(3) OBSERVATIONS of UPGRADIENT SLOPE & TOE AREA (NORTH OF DNAPL COLLECTION TRENCH)

- NO NEW DNAPL ACCUMULATIONS OBSERVED (HEAVY FOLIAGE LIMITED A THOROUGH INSPECTION)

(4) OBSERVATION OF DOWNGRADIENT SLOPE ADJACENT TO CREEK

- NO NEW DNAPL ACCUMULATIONS OBSERVED (HEAVY FOLIAGE LIMITED A THOROUGH INSPECTION)

GOLDER ACTIVITIES AND TEST RESULTS:

- PHOTOS TAKEN OF ALL AREAS
- VAULT EFFLUENT SAMPLE COLLECTED BY JESS HANDY AS PART OF SEMI-ANNUAL MONITORING EVENT

Golder Associates

SUBMITTED BY: Patrick J. Martin

GOLDER FORM: R4-0699
(JANUARY 2005)

OPERATIONS & MONITORING SUMMARY

SHEET 1 OF 2

PROJECT NUMBER: 093-89168
PROJECT TITLE: Creek Bank Corrective Measures -Site No. 932149
OWNER: SNPE - VanDeMark Chemical
CONTRACTOR:
LOCATION: Lockport, New York
SUB CONTRACTOR(S):

DATE: 11/25/14

WEATHER: CLOUD COVER: Cloudy
TEMPERATURE: LOW: ____ @ ____ HIGH ____ @ ____
PRECIPITATION: Slight drizzle
WIND: ____

GOLDER PERSONNEL ON SITE:

Jonathan Taylor, Jessica Hardy

SUMMARY OF FIELD INSPECTION OBSERVATIONS:

① Access road cleared of debris & fallen trees noted during the previous site visit.

② DNAPL Observation Sumps – probbed with wooden stick

OS-1 => Approx 3.5' of water, No DNAPL, No Sheen

OS-2 => Dry; Stone on bottom

OS3 => Approx 8" of water, No DNAPL, No sheen

OS4 => Dry, Stone on bottom

③ Collection Sump hatch opened, water draining from inlet and through outlet. Small amount of sediment on top of sand. Snail noted living in sand bed.

④ Observed upward & down gradient toe of slop. Inspection of slope toe and creek area revealed no new DNAPL accumulations.

GOLDER ACTIVITIES AND TEST RESULTS:

Golder Associates

SUBMITTED BY:

GOLDER FORM: R4-0699
(JANUARY 2005)

APPENDIX B

INSPECTION PHOTOGRAPHS

2014 Annual Report: VanDeMark Chemical Creek Bank Operations & Monitoring Plan

PHOTO 1

Condition of access road observed at upper creek area during March 2014 inspection event, with piezometer and observation sump, looking east.

PHOTO 2

Condition of access road at lower creek area during March 2014 inspection event, with piezometer and north slope toe, looking east.

PHOTO 3 Collection trench filter sump hatch during March 2014 inspection event.	
PHOTO 4 Condition of access road observed at lower creek area during June 2014 inspection event, with piezometers and filter sump at west end of collection trench alignment, looking west.	

PHOTO 5 Observation sump at west end of collection trench, looking northeast.	
PHOTO 6 Filter bed material on floor of filter sump in excellent condition during June 2014 event. No observed DNAPL on filter surface and negligible sediment was present.	

PHOTO 7 Observed existing coal tar (heavily weathered) outbreak along embankment on north side of collection trench during June 2014 inspection event.	
PHOTO 8 Monitoring wells, within facility fence line, north of slope. 7D labeled during June 2014 sample event, looking north.	

APPENDIX C

PIEZOMETER DEVELOPMENT AND SAMPLE COLLECTION FORMS

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME: VDM O&M   GAI PROJECT NO.: ~~093-8~~ 9168

SAMPLE ID.: MW-7D   SOURCE CODES: RIVER OR STREAM, (WELL), SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (yy/mm/dd)	06/17/14	TIME (24 HR CLOCK)	0945	ELAPSED HRS.	0:24
CASING VOL.(Gal.)	3.04	GAL. PURGED (Gal.)	9.25		
PURGING DEVICE (SEE BELOW)	E	PURGING DEVICE MATERIAL	Poly.	DEDICATED (Y/N)	(Y)

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (yy/mm/dd)	06/17/14	TIME (24 HR CLOCK)	1019	MATRIX	W
SAMPLING DEVICE (SEE BELOW)	E	DEDICATED (Y/N)	(Y)	FILTERED (Y/N)	(N)
SAMPLING DEVICE MATERIAL	Poly	SAMPLE TYPE - GRAB/COMPOSITE (CIRCLE ONE)	(GRAB)		

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	/
REF. PT. ELEV.(FT. MSL)	/	WELL DEPTH (FT.)	49.63
DEPTH TO WATER (REF. PT.)	31.00	STICKUP (FT.)	/
GW. ELEV.(FT. MSL.)	/	WELL DIAMETER (INCHES)	2.0

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)	6.8	/	6.7	/
SPEC. COND.(uS)	262	/	280	/
TEMPERATURE (C)	15.5	/	15.6	/
OTHER (SPECIFY)	—	/	—	/

COMMENTS/CALCULATIONS

WEATHER CONDITIONS: Sunny/partly cloudy, 70°

SAMPLE APPEARANCE:

2" DIA. CASING CONTAINS .163 Gal./Ft.
4" DIA. CASING CONTAINS .652 Gal./Ft.

9.12 gal in 3 casings

MS/MSD collected

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE: [signature]   DATE: 6/17/14

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME VDM odm GAI PROJECT NO. 093-89168

SAMPLE ID. MW-3D SOURCE CODES: RIVER OR STREAM, (WELL) SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (yy/mm/dd)	06/17/14	TIME (24 HR CLOCK)		ELAPSED HRS.	
CASING VOL.(Gal.)		GAL. PURGED (Gal.)			
PURGING DEVICE (SEE BELOW)	E	PURGING DEVICE MATERIAL	poly	DEDICATED (Y/N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (yy/mm/dd)	__/__/__	TIME (24 HR CLOCK)		MATRIX	
SAMPLING DEVICE (SEE BELOW)		DEDICATED-(Y/N)		FILTERED (Y/N)	
SAMPLING DEVICE MATERIAL		SAMPLE TYPE - GRAB/COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT		LAND ELEVATION (FT./MSL)	
REF. PT. ELEV.(FT. MSL)		WELL DEPTH (FT.)	
DEPTH TO WATER (REF. PT.)		STICKUP (FT.)	
GW. ELEV.(FT. MSL.)		WELL DIAMETER (INCHES)	

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)				
SPEC. COND.(uS)				
TEMPERATURE (C)				
OTHER (SPECIFY)				

COMMENTS/CALCULATIONS

WEATHER CONDITIONS Damaged-not able to Sample

SAMPLE APPEARANCE Cannot get water level meter probe past ~9.5ft.

2" DIA. CASING CONTAINS .163 Gal./Ft.

4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE Jessica Hardy DATE 6/17/14

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME: VDM O&M GAI PROJECT NO.: 093-89168

SAMPLE ID.: Vault Effluent SOURCE CODES: RIVER OR STREAM, WELL, SOIL, (OTHER) (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (yy/mm/dd)	___/___/___	TIME (24 HR CLOCK)	_____	ELAPSED HRS.	_____
CASING VOL.(Gal.)	_____	GAL. PURGED (Gal.)	_____		
PURGING DEVICE (SEE BELOW)	_____	PURGING DEVICE MATERIAL		DEDICATED (Y/N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (yy/mm/dd)	060/17/14	TIME (24 HR CLOCK)	1120	MATRIX	W
SAMPLING DEVICE (SEE BELOW)	F-amber bottle	DEDICATED (Y/N)		FILTERED (Y/N)	
SAMPLING DEVICE MATERIAL	F-Glass	SAMPLE TYPE - (GRAB)/COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	_____	LAND ELEVATION (FT./MSL)	_____.__
REF. PT. ELEV.(FT. MSL)	_____.__	WELL DEPTH (FT.)	_____.__
DEPTH TO WATER (REF. PT.)	_____.__	STICKUP (FT.)	_____.__
GW. ELEV.(FT. MSL.)	_____.__	WELL DIAMETER (INCHES)	_____.__

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)	_____	_____	7.0	_____
SPEC. COND.(uS)	_____	_____	2.15	_____
TEMPERATURE (C)	_____	_____	19.0	_____
OTHER (SPECIFY)	_____	_____	-	_____

COMMENTS/CALCULATIONS

WEATHER CONDITIONS: partly cloudy, 72°

SAMPLE APPEARANCE: AQ, no odor, colorless, clear

2" DIA. CASING CONTAINS .163 Gal./Ft.

4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE: Jessica Hardy DATE: 6/17/14

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME VDM OAM GAI PROJECT NO. 093-89168

SAMPLE ID. PZ-3 SOURCE CODES: RIVER OR STREAM, (WELL), SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (yy/mm/dd)	06/17/14	TIME (24 HR CLOCK)	1134	ELAPSED HRS.	0.05
CASING VOL.(Gal.)	0.15	GAL. PURGED (Gal.)	0.5		
PURGING DEVICE (SEE BELOW)	E	PURGING DEVICE MATERIAL	poly	DEDICATED (Y/N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (yy/mm/dd)	06/17/14	TIME (24 HR CLOCK)	1142	MATRIX	W
SAMPLING DEVICE (SEE BELOW)	E	DEDICATED (Y/N)		FILTERED (Y/N)	
SAMPLING DEVICE MATERIAL	Poly	SAMPLE TYPE - (GRAB) COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	
REF. PT. ELEV.(FT. MSL)		WELL DEPTH (FT.)	9.09
DEPTH TO WATER (REF. PT.)	5.30	STICKUP (FT.)	
GW. ELEV.(FT. MSL.)		WELL DIAMETER (INCHES)	1.0

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)	11.4		11.2	
SPEC. COND.(uS)	2.14 ms		1751 us	
TEMPERATURE (C)	17.6°		15.2°	
OTHER (SPECIFY)	—		—	

COMMENTS/CALCULATIONS

WEATHER CONDITIONS partly cloudy, 73°

SAMPLE APPEARANCE AQ, clear, odorless, no odor

2" DIA. CASING CONTAINS .163 Gal./Ft.

4" DIA. CASING CONTAINS .652 Gal./Ft.

1"DIA. Casing 0.0408 gal/ft.

0.45 gal in 3 casings

Duplicate collected

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE [signature] DATE 6/17/14

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME VDM O&M GAI PROJECT NO. 093-89168

SAMPLE ID. PZ-4 SOURCE CODES: RIVER OR STREAM, (WELL), SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (yy/mm/dd)	061714	TIME (24 HR CLOCK)	1202	ELAPSED HRS.	0:05
CASING VOL.(Gal.)	0.10	GAL. PURGED (Gal.)	0.3		
PURGING DEVICE (SEE BELOW)	E	PURGING DEVICE MATERIAL	poly	DEDICATED (Y/N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (yy/mm/dd)	061714	TIME (24 HR CLOCK)	1210	MATRIX	W
SAMPLING DEVICE (SEE BELOW)	E	DEDICATED (Y/N)		FILTERED (Y/N)	
SAMPLING DEVICE MATERIAL	poly	SAMPLE TYPE - GRAB/COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	
REF. PT. ELEV.(FT. MSL)		WELL DEPTH (FT.)	10.25
DEPTH TO WATER (REF. PT.)	5.41	STICKUP (FT.)	
GW. ELEV.(FT. MSL.)		WELL DIAMETER (INCHES)	1.0

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)	9.2		8.0	
SPEC. COND.(uS)	3.73 mS		4.13 mS	
TEMPERATURE (C)	15.4°		15.1°	
OTHER (SPECIFY)	—		—	

COMMENTS/CALCULATIONS

WEATHER CONDITIONS partly cloudy, 75°

SAMPLE APPEARANCE AQ, slight milky color, sulfur odor

2" DIA. CASING CONTAINS .163 Gal./Ft. 0.3gal to 3 casings

4" DIA. CASING CONTAINS .652 Gal./Ft.

1" DIA. casing 0.0408 gal/ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE Jessica Hardy DATE 6/17/14

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME VDM D&M GAI PROJECT NO. 093-89168

SAMPLE ID. PZ-1 SOURCE CODES: RIVER OR STREAM, WELL, SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (yy/mm/dd)	__/__/__	TIME (24 HR CLOCK)	____	ELAPSED HRS.	____
CASING VOL.(Gal.)	____	GAL. PURGED (Gal.)	____		
PURGING DEVICE (SEE BELOW)		PURGING DEVICE MATERIAL		DEDICATED (Y/N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (yy/mm/dd)	__/__/__	TIME (24 HR CLOCK)	____	MATRIX	____
SAMPLING DEVICE (SEE BELOW)		DEDICATED-(Y/N)		FILTERED (Y/N)	
SAMPLING DEVICE MATERIAL		SAMPLE TYPE - GRAB/COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	/
REF. PT. ELEV.(FT. MSL)	/	WELL DEPTH (FT.)	10.60
DEPTH TO WATER (REF. PT.)	10.60	STICKUP (FT.)	/
GW. ELEV.(FT. MSL.)	/	WELL DIAMETER (INCHES)	1.0

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)				
SPEC. COND.(uS)				
TEMPERATURE (C)				
OTHER (SPECIFY)				

COMMENTS/CALCULATIONS

WEATHER CONDITIONS DRY No Sample taken

SAMPLE APPEARANCE

2" DIA. CASING CONTAINS .163 Gal./Ft.
4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE Jessica Brady Golder Associates DATE 6/17/14

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME VDM O&M GAI PROJECT NO. 093-89168

SAMPLE ID. PZ-2 SOURCE CODES: RIVER OR STREAM, (WELL) SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (yy/mm/dd)	06/17/14	TIME (24 HR CLOCK)	1226	ELAPSED HRS.	0:06
CASING VOL.(Gal.)	0.15	GAL. PURGED (Gal.)	0.5		
PURGING DEVICE (SEE BELOW)	E	PURGING DEVICE MATERIAL	poly	DEDICATED (Y/N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (yy/mm/dd)	06/17/14	TIME (24 HR CLOCK)	1236	MATRIX	W
SAMPLING DEVICE (SEE BELOW)	E	DEDICATED-(Y/N)		FILTERED (Y/N)	
SAMPLING DEVICE MATERIAL	Poly	SAMPLE TYPE - (GRAB)/COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	
REF. PT. ELEV.(FT. MSL)		WELL DEPTH (FT.)	10.51
DEPTH TO WATER (REF. PT.)	6.72	STICKUP (FT.)	
GW. ELEV.(FT. MSL.)		WELL DIAMETER (INCHES)	1.0

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)	7.3		7.0	
SPEC. COND.(uS)	1085 us		1068 us	
TEMPERATURE (C)	14.8°		13.7°	
OTHER (SPECIFY)	—		—	

COMMENTS/CALCULATIONS

WEATHER CONDITIONS Cloudy, 75°

SAMPLE APPEARANCE AQ, cloudy, slight orangy color, no odor

2" DIA. CASING CONTAINS .163 Gal./Ft.

4" DIA. CASING CONTAINS .652 Gal./Ft.

1" DIA Casing 0.15 gal/ft.

0.45 gal in 3 casings

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE Jessica Hardy DATE 6/17/14

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME VanDeMark **GAI PROJECT NO.** 093-89168

SAMPLE ID. PZ-4 **SOURCE CODES: RIVER OR STREAM, (WELL) SOIL, OTHER (CIRCLE ONE)**

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (mm/dd/yy)	11/25/14	TIME (24 HR CLOCK)	0935	ELAPSED HRS.	0.07
CASING VOL.(Gal.)	0.22	GAL. PURGED (Gal.)	0.66		
PURGING DEVICE (SEE BELOW)	bailer	PURGING DEVICE MATERIAL	poly	DEDICATED (Y) N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (mm/dd/yy)	11/25/14	TIME (24 HR CLOCK)	0945	MATRIX	W
SAMPLING DEVICE (SEE BELOW)	bailer	DEDICATED (Y) N)		FILTERED (Y / (N))	
SAMPLING DEVICE MATERIAL	poly	SAMPLE TYPE - (GRAB) / COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	
REF. PT. ELEV.(FT. MSL)		WELL DEPTH (FT.)	10.30
DEPTH TO WATER (REF. PT.)	5.05	STICKUP (FT.)	
GW. ELEV.(FT. MSL.)		WELL DIAMETER (INCHES)	1.0

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)				7.44
SPEC. COND.(uS)				5.36
TEMPERATURE (C)				10.7°
OTHER (SPECIFY)				

COMMENTS/CALCULATIONS

WEATHER CONDITIONS overcast, 38°F

SAMPLE APPEARANCE AQ, clear, colorless, no odor

1" DIA. CASING CONTAINS .041 Gal./Ft.
2" DIA. CASING CONTAINS .163 Gal./Ft. 0.66 gal in 3 casings
4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE Jessica Hanley DATE 11/25/14

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME: VanDeMark | GAI PROJECT NO.: 093-89168

SAMPLE ID.: Vault Effluent (observation sump)

SOURCE CODES: RIVER OR STREAM, WELL, SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (mm/dd/yy)	/ /	TIME (24 HR CLOCK)		ELAPSED HRS.	:
CASING VOL.(Gal.)		GAL. PURGED (Gal.)			
PURGING DEVICE (SEE BELOW)		PURGING DEVICE MATERIAL		DEDICATED (Y / N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (mm/dd/yy)	11/25/14	TIME (24 HR CLOCK)	1010	MATRIX	W
SAMPLING DEVICE (SEE BELOW)	direct fill	DEDICATED-(Y / N)	N/A	FILTERED (Y / N)	N
SAMPLING DEVICE MATERIAL	NA	SAMPLE TYPE - (GRAB) / COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT		LAND ELEVATION (FT./MSL)	
REF. PT. ELEV.(FT. MSL)		WELL DEPTH (FT.)	
DEPTH TO WATER (REF. PT.)		STICKUP (FT.)	
GW. ELEV.(FT. MSL.)		WELL DIAMETER (INCHES)	

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)				7.24
SPEC. COND.(uS)				2.81 mS
TEMPERATURE (C)				6.2°
OTHER (SPECIFY)				—

COMMENTS/CALCULATIONS

WEATHER CONDITIONS: overcast, 38°F

SAMPLE APPEARANCE: AQ, clear, colorless, no odor

1" DIA. CASING CONTAINS .041 Gal./Ft.
2" DIA. CASING CONTAINS .163 Gal./Ft.
4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE: Jessica Hardy | DATE: 11/25/14

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME VanDeMark **GAI PROJECT NO.** 093-89168

SAMPLE ID. PZ-3 **SOURCE CODES: RIVER OR STREAM, WELL, SOIL, OTHER (CIRCLE ONE)**

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (mm/dd/yy)	11/25/14	TIME (24 HR CLOCK)	1005	ELAPSED HRS.	0.06
CASING VOL.(Gal.)	0.17	GAL. PURGED (Gal.)	0.51		
PURGING DEVICE (SEE BELOW)	bailer	PURGING DEVICE MATERIAL	poly	DEDICATED (Y / N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (mm/dd/yy)	11/25/14	TIME (24 HR CLOCK)	1015	MATRIX	W
SAMPLING DEVICE (SEE BELOW)	bailer	DEDICATED (Y / N)		FILTERED (Y / N)	
SAMPLING DEVICE MATERIAL	poly	SAMPLE TYPE - GRAB / COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	
REF. PT. ELEV.(FT. MSL)		WELL DEPTH (FT.)	9.12
DEPTH TO WATER (REF. PT.)	5.08	STICKUP (FT.)	
GW. ELEV.(FT. MSL.)		WELL DIAMETER (INCHES)	1.0

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)				8.75
SPEC. COND.(uS)				1.45 mS
TEMPERATURE (C)				9.7
OTHER (SPECIFY)				

COMMENTS/CALCULATIONS

WEATHER CONDITIONS overcast, 38°F

SAMPLE APPEARANCE AQ, clear, colorless, no odor

1" DIA. CASING CONTAINS .041 Gal./Ft. 0.5 gal x 3 casings

2" DIA. CASING CONTAINS .163 Gal./Ft.

4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE Jessica Bandy DATE 11/25/14

Golder Associates

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME: VanDeMark | GAI PROJECT NO.: 093-89168

SAMPLE ID.: PZ-2 | SOURCE CODES: RIVER OR STREAM, (WELL) SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (mm/dd/yy)	11/25/14	TIME (24 HR CLOCK)	1040	ELAPSED HRS.	0.25
CASING VOL.(Gal.)	0.15	GAL. PURGED (Gal.)	0.50		
PURGING DEVICE (SEE BELOW)	bailer	PURGING DEVICE MATERIAL	poly	DEDICATED (Y) N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (mm/dd/yy)	11/25/14	TIME (24 HR CLOCK)	1050	MATRIX	W
SAMPLING DEVICE (SEE BELOW)	bailer	DEDICATED-(Y) / N)		FILTERED (Y / (N))	
SAMPLING DEVICE MATERIAL	poly	SAMPLE TYPE - (GRAB) COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	
REF. PT. ELEV.(FT. MSL)		WELL DEPTH (FT.)	10.52
DEPTH TO WATER (REF. PT.)	6.78	STICKUP (FT.)	
GW. ELEV.(FT. MSL.)		WELL DIAMETER (INCHES)	1.0

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)				7.04
SPEC. COND.(uS)				1.24 ms
TEMPERATURE (C)				9.5 °C
OTHER (SPECIFY)				—

COMMENTS/CALCULATIONS

WEATHER CONDITIONS: overcast, 38°F

SAMPLE APPEARANCE:

1" DIA. CASING CONTAINS .041 Gal./Ft. 0.48 – 3 casings

2" DIA. CASING CONTAINS .163 Gal./Ft.

4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE: Jessica Bradley Golder Associates | DATE: 11/25/14

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME VanDeMark **GAI PROJECT NO.** 093-89168

SAMPLE ID. PZ-1 **SOURCE CODES: RIVER OR STREAM, (WELL), SOIL, OTHER (CIRCLE ONE)**

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (mm/dd/yy)	__/__/__	TIME (24 HR CLOCK)	____	ELAPSED HRS.	__:__
CASING VOL.(Gal.)	____	GAL. PURGED (Gal.)	____		
PURGING DEVICE (SEE BELOW)	____	PURGING DEVICE MATERIAL	____	DEDICATED (Y / N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (mm/dd/yy)	__/__/__	TIME (24 HR CLOCK)	____	MATRIX	____
SAMPLING DEVICE (SEE BELOW)	____	DEDICATED-(Y / N)		FILTERED (Y / N)	
SAMPLING DEVICE MATERIAL	____	SAMPLE TYPE - GRAB / COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT	TOR	LAND ELEVATION (FT./MSL)	____
REF. PT. ELEV.(FT. MSL)	____	WELL DEPTH (FT.)	10.6
DEPTH TO WATER (REF. PT.)	10.58	STICKUP (FT.)	____
GW. ELEV.(FT. MSL.)	____	WELL DIAMETER (INCHES)	1.0

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)				
SPEC. COND.(uS)				
TEMPERATURE (C)				
OTHER (SPECIFY)				

COMMENTS/CALCULATIONS

WEATHER CONDITIONS Dry - no sample taken

SAMPLE APPEARANCE

1" DIA. CASING CONTAINS .041 Gal./Ft.
2" DIA. CASING CONTAINS .163 Gal./Ft.
4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE Jessica Handy **Golder Associates** DATE 11/25/14

SAMPLE COLLECTION INFORMATION FORM

GAI PROJECT NAME: VanDeMark | GAI PROJECT NO.: 093-89168

SAMPLE ID.: MW-20D

SOURCE CODES: RIVER OR STREAM, (WELL), SOIL, OTHER (CIRCLE ONE)

PURGING INFORMATION (IF APPLICABLE)

PURGE DATE (mm/dd/yy)	11/25/14	TIME (24 HR CLOCK)	1130	ELAPSED HRS.	25:0
CASING VOL.(Gal.)	3.02	GAL. PURGED (Gal.)	9.0		
PURGING DEVICE (SEE BELOW)	bailer	PURGING DEVICE MATERIAL	poly	DEDICATED (Y/N)	

SAMPLE COLLECTION INFORMATION

SAMPLING DATE (mm/dd/yy)	11/25/14	TIME (24 HR CLOCK)	1155	MATRIX	WI
SAMPLING DEVICE (SEE BELOW)	bailer	DEDICATED (Y/N)		FILTERED (Y/N)	
SAMPLING DEVICE MATERIAL	poly	SAMPLE TYPE - GRAB / COMPOSITE (CIRCLE ONE)			

(A) AIR-LIFT PUMP (B) BLADDER PUMP (C) PERISTALTIC PUMP (D) SCOOP/SHOVEL (E) BAILER (F) OTHER (SPECIFY)

WELL INFORMATION (IF APPLICABLE)

REFERENCE POINT		LAND ELEVATION (FT./MSL)	
REF. PT. ELEV.(FT. MSL)		WELL DEPTH (FT.)	49.64
DEPTH TO WATER (REF. PT.)	31.06	STICKUP (FT.)	
GW. ELEV.(FT. MSL.)		WELL DIAMETER (INCHES)	2.0

FIELD MEASURMENTS (FOUR REPLICATES)

	Initial Purge	Final Purge	Initial Sample	Final Sample
pH (STD)			7.13	
SPEC. COND.(uS)			456	
TEMPERATURE (C)			7.1	
OTHER (SPECIFY)				

COMMENTS/CALCULATIONS

WEATHER CONDITIONS: overcast, sleet, 37°F

SAMPLE APPEARANCE: AQ, clear, rusty tint, no odor

1" DIA. CASING CONTAINS .041 Gal./Ft.
2" DIA. CASING CONTAINS .163 Gal./Ft. — 3.02 gal - 1 well volume ⇒ ~9 gal / 3 well +
4" DIA. CASING CONTAINS .652 Gal./Ft.

PLEASE INCLUDE SAMPLE BOTTLE SIZE, BOTTLE COLOR, BOTTLE MATERIAL, PRESERVATIVES AND ANALYTICAL METHODS ON LABORATORY CUSTODY FORMS.

SAMPLER SIGNATURE: Jessica Hardy | DATE: 11/25/14

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

Golder Associates Inc.
2430 N. Forest Road, Suite 100
Getzville, NY 14068 USA
Tel: (716) 204-5880
Fax: (716) 204-5878

Golder Associates