SAMPLING, ANALYSIS, MONITORING AND REPORTING PROGRAM WORK PLAN

SEAFORD NYLON PLANT
SEAFORD, DELAWARE

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Figure 1 SWMU and Well Location Map

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Table 1 Seaford SAMR Sampling Program

APPENDICES

Appendix A Seaford Facility SAMR Field Sampling Log (Sample)

ACRONYMS

Acronym	Definition / Description
DuPont	E. I. du Pont de Nemours and Company
AOC	Administrative Order on Consent
CC14	Carbon tetrachloride
CMS	Corrective Measures Study
DNREC	(Delaware) Department of Natural Resources and Environmental Control
EC	Environmental Covenant
GMZ	Groundwater Management Zone
IC	Institutional control
LCS	Laboratory control spike
LCSD	Laboratory control spike duplicate
µg/L	Microgram(s) per liter
µm	Micron
MCL	Maximum contaminant level
mg/L	Milligram(s) per liter
MNA	Monitored natural attenuation
MOA	Memorandum of Agreement
MS	Matrix spike
MSD	Matrix spike duplicate
OSHA	Occupational Safety and Health Administration
QA/QC	Quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
ROD	Record of Decision
SAMR	Sampling, analysis, monitoring and reporting (program)
SB	Statement of Basis
SHWMB	(DNREC) Solid & Hazardous Waste Management Branch
SWMU	Solid waste management unit
USEPA	U.S. Environmental Protection Agency

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1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

The Sampling, Analysis, Monitoring, and Reporting (SAMR) Program Work Plan (SAMR Work Plan) defines the long-term monitoring portion of the RCRA[1] Corrective Action program for the real property located at 25876 DuPont Road in Seaford, Delaware, on which the nylon textile manufacturing plant (herein collectively referred to as the Site). An Annual SAMR Project Report is due to the Delaware Department of Natural Resources and Environmental Control (DNREC) on or before July 1, and a Corrective Measures Five-Year Assessment Report is due every fifth year, again no later than July 1. Each Annual SAMR Project Report will include an evaluation of remedy effectiveness and recommendations for any additional corrective measures. The Corrective Measures Five-Year Assessment Report will serve as the annual summary report in the year that it is submitted and will also include an evaluation of remedy effectiveness and recommendations for any additional corrective measures.

1.2 Background

The RCRA Corrective Action activities performed at the Site to date were commenced pursuant to an Administrative Order on Consent (AOC Order) entered into by the U.S. Environmental Protection Agency (USEPA) and E. I. du Pont de Nemours and Company (DuPont) on February 25, 1992 (Docket Number RCRA-III-051-CA). The AOC Order was entered into pursuant to Section 3008(h) of RCRA, as amended, 42 United States Code Section 6928(h), and required DuPont to complete Interim Measures, a RCRA Facility Investigation (RFI), and a Corrective Measures Study (CMS).

1.2.1 Solid Waste Management Units

The solid waste management units (SWMUs) identified during the RFI activities were evaluated as part of the RCRA Corrective Action process and/or as part of other investigations to determine whether the units released contaminants to the environment. The DNREC issued a Statement of Basis (SB) and a Record of Decision (ROD) in 2006 documenting that the investigations were complete with three exceptions. Further corrective measures were needed at SWMU-1 (Solid Waste Landfill A), SWMU-7/12/13 (Utility Ash Settling Ponds/Retention Ponds/Solid Waste Landfill C), and SWMU-13/16/17 (Solid Waste Landfill C/Trade Waste Retention Pond/Coal Ash Landfill). Portions of SWMU 13/16/17 are overlain by an ash landfill, currently undergoing closure procedures, and regulated under a Delaware Solid Waste Industrial (Ash) Landfill Closure and Post Closure Care Permit (SW-09/01). USEPA Region 3 determined in a letter dated January 16, 2007, that DuPont had satisfactorily completed the RFI/CMS Order and terminated the Order. DuPont completed the Corrective Measures required by the ROD in 2007.

DNREC and DuPont entered into an Environmental Covenant (EC) in 2009 that established land use restrictions on certain portions of the property including groundwater management zones (GMZs). The EC was amended in 2014.

In a letter from Mr. Bryan Ashby of DNREC's Solid & Hazardous Waste Management Branch (SHWMB) to DuPont dated June 3, 2010, DNREC confirmed "that the remediation work required under the CMS and ROD has been implemented and the site

[1] RCRA – Resource Conservation and Recovery Act

is designated as Complete with Controls" with the remaining controls being monitoring and maintenance of the remedy enacted per the ROD. This SAMR Work Plan defines the monitoring and maintenance activities required by the ROD.

A chronology of key documents and reports is posted at: http://www.epa.gov/reg3wcmd/ca/de/pdf/ded002348845.pdf

1.2.2 Institutional Controls

The institutional controls (ICs) for SWMU-1, SWMU-7/12/13, and SWMU-13/16/17 are comprised of the land use restrictions documented in the EC, which include digging restrictions. The EC also includes an internal 2008 DNREC Memorandum of Agreement (MOA) that discusses the Groundwater Management Zones (GMZs) that prohibit withdrawal of groundwater from within the GMZ boundaries except for environmental monitoring purposes.

1.3 Work Plan Organization

In addition to this introductory section, the work plan is presented in five sections, as follows.

- Section 2 describes the status of each SWMU in the program and action levels associated with them.
- Section 3 describes the locations and frequency, procedures (sampling and water level measurements), and analyses for ground- and surface water sampling. It also describes the measurement of water levels and waste management procedures.
- Section 4 describes the quality assurance/quality control (QA/QC) program that will be employed to assure the precision, accuracy, completeness, and appropriateness of the sampling and analytical program.
- Section 5 describes the deliverables associated with the SAMR, including project reporting and procedures for taking corrective action, should it be necessary.
- Section 6 describes the health and safety program associated with the SAMR.

2.0 SWMU STATUS AND ACTION LEVELS

SWMU-1: Monitored natural attenuation (MNA) with institutional controls was selected as the remedy for the carbon tetrachloride (CCl4) groundwater contamination in SWMU-1. The concentration of CCl4 was documented to be <0.5 micrograms per liter (µg/L) for three consecutive sampling periods, and DNREC approved no further groundwater sampling for this SWMU in a letter dated October 5, 2010. Therefore, groundwater samples will not be collected at SWMU-1 as part of this SAMR Work Plan. However, SWMU-1 is covered by the ICs (i.e., GMZ and Land Use Restrictions) established by the EC.

SWMU-7/12/13: MNA with ICs was selected as the remedy for the arsenic groundwater plume in this area. Monitoring includes collecting surface water and groundwater samples for laboratory and field analyses and water level measurements as described in Section 3. Aspects of the EC affect this area.

SWMU 13/16/17: Based on information collected during the RCRA Corrective Action process, DNREC concluded in its SB that no contaminant hazards existed in this area. Work required by the SB and ROD included placement of a soil cover over physical hazards. This work is complete as set forth in a DNREC letter to DuPont dated June 3, 2010..

Remedial activities at SWMU-1 (CCl4 <0.5 µg/L for three sampling periods) and SWMU-13/16/17 (placement of soil cover with vegetative cover) are complete with controls. Therefore, the primary goal of the SAMR Work Plan is to monitor concentrations of arsenic in groundwater and surface water at and near SWMU-7/12/13 to confirm that the MNA approach remains effective and the groundwater plume remains stable. The Site-Specific Action Level for dissolved arsenic in groundwater is 69,680 µg/L (Appendix B of the Corrective Measures Study).

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3.0 SAMPLING, MONITORING AND INSPECTIONS

3.1 Sampling Locations and Frequency

The approved CMS and ROD include requirements for a groundwater and surface water monitoring program. The monitoring program commenced with annual surface water and groundwater sampling and water level measurements in 2007 and has been completed annually with the submission and subsequent approval of the 1st Annual (2007) through 7th Annual (2013) monitoring reports. The program has evolved through the years to respond to monitoring results and changes at the facility. For example, sampling of well L-6D in SWMU-1 was discontinued after CCl4 results had been below the maximum concentration level (MCL) for three consecutive monitoring rounds. Monitoring changes for SWMU-7/12/13 were also approved (12/17/2012) as a result of pond closures and well abandonments.

This section presents the monitoring program that will be instituted upon the approval of this document. Figure 1 identifies the locations of SWMUs and monitoring points. Table 1 summarizes the groundwater and surface water locations and constituents included in the monitoring program. Field activities will be logged on a copy of the form provided in Appendix A. Groundwater and surface water samples and water level measurements will be collected annually in the fourth quarter of each calendar year, so that the Annual SAMR Project Reports can be submitted by July 1 of the following year. The timing of the sampling and collection of water level measurements may be adjusted by submitting written notice to DNREC.

3.2 Sampling Procedures

The following procedures will be used to collect groundwater and surface water samples for analysis at a certified laboratory:

- Samples will be filtered in the field for dissolved arsenic using a 0.45-micron (µm) filter cartridge before being placed in laboratory-prepared sample bottles. The filter will be attached to the pump discharge using clean, dedicated silicone tubing for each sampling location. The bottles will be filled directly from the filter discharge port. The contract laboratory will provide all required new, pre-preserved sample containers.
- Samples will be logged onto a chain-of-custody form that is provided by the laboratory or consultant. The original custody record will be submitted to the laboratory with the samples, and a completed copy will be included in the laboratory report and maintained in the project file with the analytical results.
- Samples will be packed in a cooler with wet ice and shipped to the laboratory via laboratory courier or overnight transport. Coolers will be secured with a custody seal, and the samples will be maintained at a temperature at or below 4 degrees Celsius.

In keeping with standard surface water risk assessment practices, both total and dissolved surface water samples will be taken. Field instruments will be calibrated prior to sampling in accordance with manufacturer instructions and applicable standard operating procedures.

3.3 Groundwater Sampling

Production wells will be sampled from a port that is located on the well head.

Each well will be purged using a low-flow (minimum drawdown) protocol before any samples are collected. The low-flow peristaltic pump will be used to evacuate the groundwater from the screened area of the well. Purging will be considered complete when the field parameters have stabilized or three to five volumes of standing water in the well casing have been evacuated, whichever occurs first. Stabilization will be considered achieved when three consecutive readings, taken at 3- to 5-minute intervals are within the following limits:

- Dissolved oxygen (10 percent);
- Specific conductance (3 percent);
- Temperature (3 percent); and
- pH (±0.1 standard unit).

Field analysis will be performed using a flow-through cell once the water level in the well has stabilized. The field technician will collect samples in laboratory-supplied bottles by disconnecting the flow cell and collecting water directly from the pump discharge. Dissolved arsenic samples will be transferred into the laboratory-prepared sample bottle with preservative after passing through a 0.45-µm filter. A new disposable filter unit will be utilized for each sampling location.

Groundwater samples will be drawn from each monitoring well using a peristaltic pump. Clean polypropylene or polyethylene tubing will be used in each well during each sampling event. The tube will be placed such that the pump intakes are positioned within the midpoint of the screened interval. The pump will be decontaminated between wells.

A graduated cylinder and a stopwatch will be used to measure the pumping rate.

3.4 Surface Water Sampling

Surface water samples will also be collected using a peristaltic pump. The tubing connected to the pump intake will be placed into the surface water at the desired sampling location. New tubing will be used for each sampling location. Samples requiring filtration will then be filtered in the field through a 0.45-µm filter unit and placed into the sample container supplied by the laboratory. The filter will be attached to the pump discharge using new, dedicated silicone tubing for each sampling location. The bottles will be filled directly from the filter discharge port. A new disposable filter unit will be utilized for each sampling location.

3.5 Water Level Measurements

The water level in each well will be measured using an electronic water level meter capable of measuring to 0.01-foot accuracy. The water levels will be measured from the top of the well casing.

3.6 Sample Analysis

Groundwater and surface water samples will be analyzed by a lab or in the field for the parameters shown in the table below. Lab analyses will be performed by a lab that holds

a current Delaware Office of Drinking Water approval and is included in the current DNREC list of approved laboratories for Hazardous Substance Cleanup Act programs.

Laboratory and Field Analyses

Certified Laboratory Analysis	Field Analysis
pH (SM 4500 H/B)	pH
Specific Conductance (SM20 2510 B)	Specific Conductance
Total Dissolved Solids (SM20 2540 C)	Dissolved Oxygen
Alkalinity as $CaCO_3$ to pH 4.5 and 8.3 (SM20 2320 B)	Odor
Sulfate (EPA 375.4)	Color
Dissolved Arsenic (SW-846 6020) - GW and SW Total Arsenic (SW-846 6020) - GW and SW	Oxidation-Reduction Potential
Phosphorus, total as PO4 (EPA 365.1)	Temperature
Hardness as $CaCO_3$ (SM20 2340 C)	Turbidity

The field analysis parameters listed in the table above (other than odor and color) will be collected using a YSI 6920 Water Quality Meter. Section 3.3 describes the method in greater detail.

3.7 Waste Management

Purged groundwater and decontamination water generated during monitoring well sampling activities will be collected in a 55-gallon drum that will be sealed after collection. All disposable sampling equipment such as filters and tubing will be placed in a 5-gallon bucket that will also be sealed. The drum and bucket will then be placed in a designated waste accumulation area. A waste tracking log will be maintained for all waste generated during each sampling event. When the well sampling is complete, a composite sample of the purged water will be collected from the drum for arsenic analysis. The drum and bucket will be labeled to reflect the pending analysis. If the sample analysis result for the composite sample is less than 5 milligrams per liter (mg/L), the purge water is nonhazardous, and the water will be disposed of in the Site's wastewater treatment facility. The bucket of sampling equipment will be disposed of in an on-site industrial dumpster. A concentration greater than 5 mg/L will indicate that the purge water is hazardous. If so, the consultant will work with a representative of the responsible party to provide all information necessary to properly manifest the generated hazardous waste. The drum and bucket will then be labeled as hazardous waste and transported off-site for disposal at an approved facility.

3.8 Inspections and Maintenance

The inspection and maintenance activities associated with SWMU-13/16/17 will be completed as needed with a minimum frequency of at least once per calendar year, as follows:

- The vegetative cover will be inspected to characterize the general condition and identify areas not covered with vegetation or where the vegetation is stressed.

- The covered area will be inspected for evidence of trespass or vandalism, burrowing animals, cracking, desiccation, erosion, subsidence, or other damage or structural changes.
- Each inspection will be documented on an Inspection and Maintenance Form.
- Repairs to any damaged and/or eroded protective cover will be initiated as soon as possible, but no later than 24 hours after discovery. All repairs and maintenance activities (including type, remedy, and completion date) will be documented on the Inspection and Maintenance Form.
- All exposed debris discovered during repair and/or maintenance activities, that can be manually removed, will be removed and disposed of in accordance with Delaware's *Regulations Governing Hazardous Waste* or *Regulations Governing Solid Waste*, as applicable, prior to repairing the SWMU's cover. If debris is discovered during repair and/or maintenance activities that cannot be manually removed, a minimum of six (6) inches of protective cover, consisting of clean fill, topsoil and grass seeding, will be applied and maintained on that area.

4.0 QUALITY ASSURANCE / QUALITY CONTROL

The laboratory will provide analytical results in a report pdf and electronic deliverable data (EDD) file. All analytical results will have been reviewed at the bench and unit levels, and authorized by the laboratory Quality Assurance (QA) Officer (or designee). The data will also be checked for accuracy and completeness and tabulated upon receipt by the QA Officer for the Site or the designated consultant. The following section describes the QA and quality control (QC) functions in greater detail.

4.1 Precision

Precision is defined as the agreement between numeric values for two of more measurements that have been made in an identical fashion. The laboratory's objective for precision is to equal or exceed the guidelines of the analytical methods, as applicable, and to comply with in-house precision criteria. The laboratory routinely monitors precision for each of the methods by means of relative percent difference measurements for laboratory control spikes (LCSs) versus laboratory control spike duplicates (LCSDs), matrix spike (MS) versus matrix spike duplicate (MSD) samples, or samples and sample duplicates (DUP) in each analytical batch. The QA Officer will also evaluate field sampling precision in field duplicate samples.

4.2 Accuracy

Accuracy is the degree of agreement of a measurement with an accepted true value. The accuracy check consists of the following:

- The date analyzed/date sampled in the laboratory report are checked to see whether they match the EDD. Analytical holding times are also verified and compared with USEPA guidance for the applicable methods.
- The reported detection limits/dilution factors on the laboratory report are reviewed to ensure that they match the EDD.
- The reported results are reviewed for all analytes on the laboratory report to ensure that they match the EDD.
- The MS and LCS recoveries for the sample set are compared to the laboratory acceptance criteria, and the associated blank samples (field and/or laboratory) are examined for comparison with detections of target analytes in field samples.

4.3 Completeness

Completeness is a measure of the amount of valid data obtained from the measurement system compared with the amount that was expected under normal conditions. Analytical data for a given project or sampling effort are reviewed for completeness by the QA Officer. The definition of completeness consists of the following.

- Checking that the collected field samples were analyzed by the correct analytical method as stated in the project specifications;
- Checking that the required analytes for each collected field sample were reported by the laboratory for a given analytical method;
- Checking that the appropriate preparation method was performed for the requested analytical method; and

- Reviewing the analytical data to ensure that the analytical method required holding time was achieved.

4.4 Batch Integrity

The QA Officer reviews the batch QC for all of the analytical methods used for a given project. The batch process is per SW-846 guidance. For MS/MSD samples collected in the field at a rate of 1 per 20 field samples, the laboratory will have an MS/MSD to incorporate into each analytical batch.

The QA Officer will review the analytical data on a batch basis to ensure that the minimum necessary QC samples (method blank [MB], LCS, LCSD, MS, MSD, or DUP) were performed for every batch of 20 or fewer field samples in a given project. The purpose of this review is to assure that the accuracy and precision data are associated with every batch of samples for a given analytical method. A batch equals 20 or fewer field samples that have associated precision and accuracy QC data including MB, LCS, LCSD, MS, MSD, and DUP.

4.5 Appropriateness

Appropriateness considers the usability of the data for the project, given the results of precision and accuracy measurements and batch QC review. The batch QC data are reviewed by the QA Officer to determine if the accuracy and precision measurements associated with every 20 field samples are within the prescribed QC limits. All batch QC sample comments made by the laboratory are also reviewed for their appropriateness for a given accuracy or precision QC measurement that is not within the designated limits.

If batch QC is not within the prescribed limits or is incomplete, it is typically noted in the QC section or case narrative of the laboratory report.

The reported practical quantitation and method detection limits are also reviewed by the QA Officer and compared against project specifications.

Data usability qualifiers (U, J, UJ, B, R) are applied to the dataset as necessary, and a QA Summary is prepared by the QA Officer to identify any particular data quality or usability issues specific to the sample set. All final electronic data are stored in a secure database.

5.0 SAMR PROJECT DELIVERABLES

5.1 SAMR Project Reporting to DNREC

Sampling results and observations will be evaluated and summarized in an Annual SAMR Project Report that will be submitted to DNREC-SHWMB no later than July 1st each year. Every fifth year, DNREC will be provided a Corrective Measures Five-Year Assessment Report no later than July 1st. The Corrective Measures Five-Year Assessment Report will also serve as the annual summary report in the year that it is submitted.

5.2 Corrective Action Plan

If dissolved arsenic concentrations in groundwater samples from any groundwater monitoring well in the SAMR program exceed the Site-Specific Action Level for groundwater set forth in Section 2.0of this SAMR Work Plan, then DNREC will be notified in writing within 7 days of receipt of the validated laboratory results. The well(s) in question will be resampled within 30 days of receiving the validated laboratory results, and DNREC will be notified in writing within 7 days of receipt of the resampling validated laboratory results. The analytical results for this second sample will also be sent to DNREC. If the second dissolved arsenic analytical result is less than the Site-Specific Action Level for groundwater set forth in Section 2.0, no further action will be required. If the second dissolved arsenic analytical result exceeds the Site-Specific Action Level for groundwater set forth in Section 2.0, then the need to re-evaluate the MNA remedy and/or develop a corrective action plan will be considered.

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6.0 HEALTH AND SAFETY

Personnel performing on-site fieldwork will be trained in accordance with 29 Code of Federal Regulations Part 1910.120(e)(8) Hazardous Waste Operations and Emergency Response, as mandated by the Occupational Safety and Health Administration (OSHA). In addition to OSHA training, personnel will also be trained in:

- Plant rules and procedures
- Plant Safety (e.g., protective equipment, emergency procedures)
- Site-specific orientation
- Sample collection techniques used during each sampling event
- The Site's health and safety plan

Any contractor performing on-site fieldwork will have a contractor-prepared Health & Safety Plan as required by the Site's contractor management process.

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FIGURE

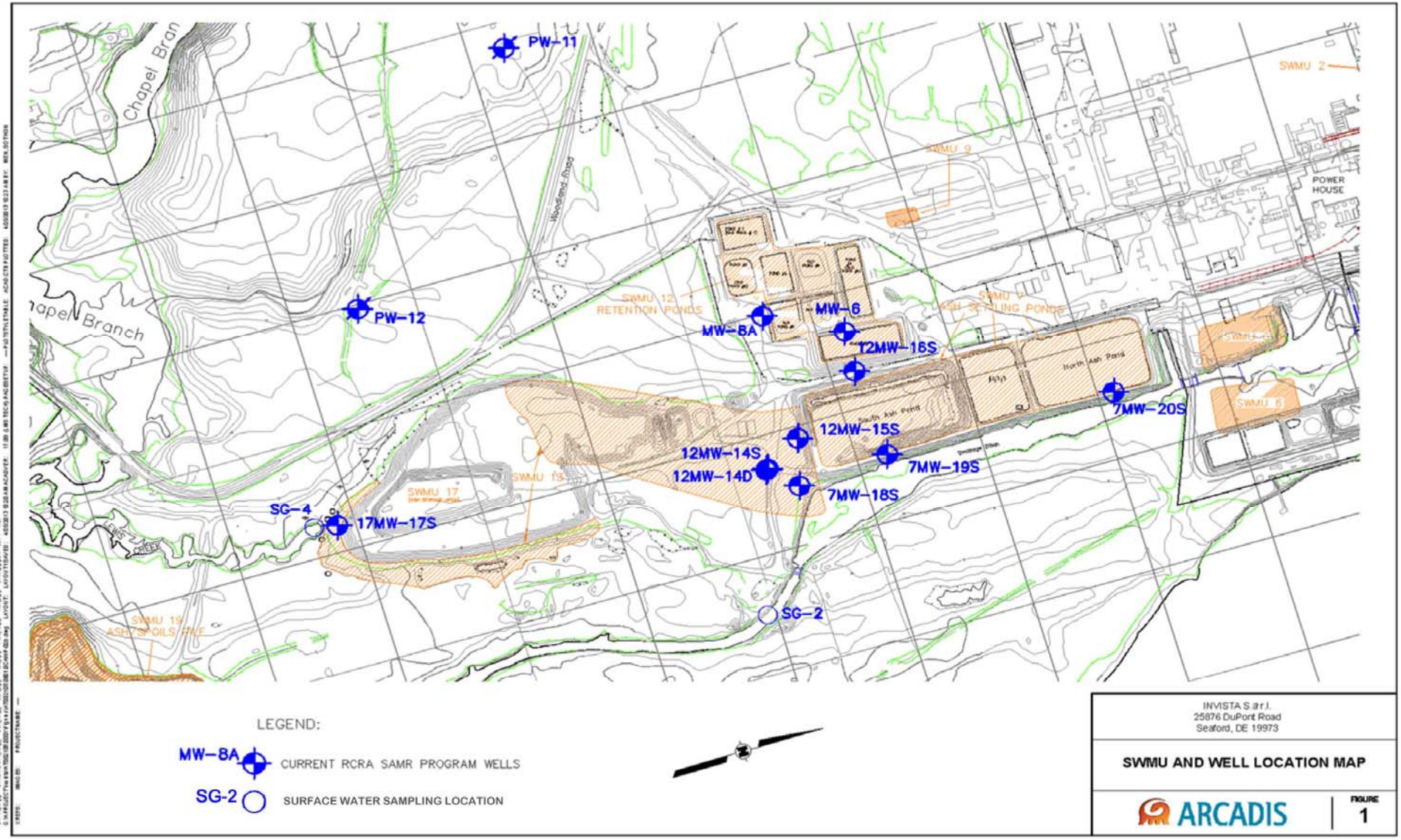
PW-11
PW-12
MW-8A
MW-6
12MW-16S
12MW-15S
12MW-14S
12MW-14D
7MW-19S
7MW-18S
7MW-20S
17MW-17S
SG-4
SG-2
SWMU 2
SWMU 9
SWMU 12
RETENTION PONDS
SWMU 13
SWMU 17
SWMU 19
ASH OR OILS PILE
SWMU 6
POWER HOUSE
Chapel Branch
Woodland Road
South Ash Ponds
North Ash Ponds
LEGEND:
MW-8A CURRENT RCRA SAMR PROGRAM WELLS
SG-2 SURFACE WATER SAMPLING LOCATION
INVISTA S.a.r.l.
25876 DuPont Road
Seaford, DE 19973
SWMU AND WELL LOCATION MAP
ARCADIS
FIGURE
1

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TABLE

Table 1
Seaford SAMR Sampling Program
SAMR Work Plan
Seaford Nylon Plant, Seaford, DE

SAMR Sampling Activities											
Sampling Locaton[a/]	**Water Level Measurement**	**Water Quality Analysis[b/]**	**pH (SM 4500 H/B)**	**Specific Conductance (SM20 2510 B)**	**Total Dissolved Solids (SM20 2540 C)**	**Alkalinity as $CaCO_3$ to pH 4.5 and 8.3 (SM20 2320 B)**	**Sulfate (EPA 375.4)**	**Dissolved Arsenic (SW-846 6020)**	**Total Arsenic (SW-846 6020)**	**Phosphorus, total as PO4 (EPA 365.1)**	**Hardness as $CaCO_3$ (SM20 2340 C)**
Groundwater											
MW-6*	1										
MW-8A	1	1	1	1	1	1	1	1	1	1	1
7MW-18S	1	1	1	1	1	1	1	1	1	1	1
7MW-19S*	1	1	1	1	1	1	1	1	1	1	1
7MW-20S*	1	1	1	1	1	1	1	1	1	1	1
12MW-14S	1	1	1	1	1	1	1	1	1	1	1
12MW-14D	1	1	1	1	1	1	1	1	1	1	1
12MW-15S	1	1	1	1	1	1	1	1	1	1	1
12MW-16S	1	1	1	1	1	1	1	1	1	1	1
17MW-17S	1	1	1	1	1	1	1	1	1	1	1
PW-11	1	1	1	1	1	1	1	1	1	1	1
PW-12**	1	1	1	1	1	1	1	1	1	1	1
Surface Water											
SG-2	1	1	1	1	1	1	1	1	1	1	1
SG-4	1	1	1	1	1	1	1	1	1	1	1
Total Samples	NA	13	13	13	13	13	13	13	13	13	13

[a/] Samples will be collected at the indicated location for each annual event.
[b/] Water Quality Parameters include dissolved oxygen, oxidation-reduction potential, pH, temperature, electrical conductivity, turbidity, color and odor.
* Wells were plugged & abandoned 7/12/2012 when ash ponds were closed; wells were re-installed in July 2014
** Production Well #12 is out of service. If it is placed back into service, it will be sampled. Until it is placed back into service, only water level measurements will be taken.

APPENDIX A
SEAFORD FACILITY SAMR
FIELD SAMPLING LOG

Seaford Facility SAMR Field Sampling Log

The following is an example of a form for field sampling logs. This form or a form reflecting comparable information will be used during field sampling.

Field Personnel														
Field Data	**MW-6**		**MW-8A**		**7MW-18S**		**7MW-19S**		**7MW-20S**		**12MW-14S**		**12MW-14D**	
Time/Date														
Depth to Water (ft)														
Pumping Rate (L/minute)														
pH														
Temp (C°)														
Spec. Cond. (umho/cm)														
D.O. (mg/L)														
Redox (mV)														
Turbidity (ntu)														
Color														
Odor														
Lab Samples Collected	**MW-6**		**MW-8A**		**7MW-18S**		**7MW-19S**		**7MW-20S**		**12MW-14S**		**12MW-14D**	
Dissolved Arsenic	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Total Arsenic	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Total Phosphorus	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Sulfate	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Alkalinity	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Hardness	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Spec. Cond.	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Total Dis. Solids	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
pH	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No

Field Data	12MW-15S	12MW-16S	12MW-17S	PW-11	PW-12	SG-2	SG-4
Time/Date							
Depth to Water (ft)							
Pumping Rate (L/minute)							
pH							
Temp (C°)							
Spec. Cond. (umho)							
D.O. (mg/L)							
Redox (mV)							
Turbidity (ntu)							
Color							
Odor							

Lab Samples Collected	12MW-15S		12MW-16S		12MW-17S		PW-11		PW-12		SG-2		SG-4	
Dissolved Arsenic	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Total Arsenic	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Total Phosphorus	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Sulfate	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Alkalinity	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Hardness	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Spec. Cond.	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Total Dis. Solids	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
pH	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No

Composite sample of monitoring well purge water collected for arsenic TCLP analysis		**Yes**	**No**
Team Leader sign/date when fieldwork is complete	Signature	Date	