SE
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September 17, 1999

Mr. Robert A. O'Meara
Office of Site Remediation and Restoration
United States Environmental Protection Agency
Region I
John F. Kennedy Federal Building (HBT)
One Congress Street
Boston, MA 02203-2211

Subject: **William Prym, Inc.**
EPA ID No. CTD001140920
Environmental Indicator Determination Worksheets
for RCRIS Code CA 750
Revised Submittal

SE Technologies, Inc.
98 Vanadium Road
Bridgeville, PA 15017
412.221.1100

Dear Mr. O'Meara:

On behalf of our client, William Prym Inc., we are pleased to provide you the enclosed revised Environmental Indicator Determination worksheets for Prym's Dayville site for RCRIS Code 750. These worksheets and associated documentation provide a basis for listing the Dayville site as being under control for Groundwater Contamination (CA 750). The worksheets remain the same as originally submitted, but the back up documentation has been expanded to allow this submittal to be more of a stand-alone document. Please review these worksheets at your earliest convenience and contact me with any questions or additional information needs you may have.

As always, should you have any questions or require further information, please feel free to contact Mr. Johan Starrenburg of Prym or me at your convenience.

Sincerely,

Roger A. Dhonau, PE, QEP
Chief Environmental Engineer

RAD/mam

cc: Johan Starrenburg - William Prym, Inc.
Al Smith - Murtha, Cullina, Richter and Pinney


TECHNOLOGIES

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: William Prym Inc.
Facility Address: Dayville, CT
Facility EPA ID #: CTD001140920

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

   X If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore; wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

X If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): See notes under Section 750-2 in attached text.

Footnotes:

[1]"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

__X__ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): See notes under Section 750-3 in attached text.

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge into surface water** bodies?

__X__ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): See notes under Section 750-4 in attached text.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

X If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): See notes under 750-5 in attached text.

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the discharge of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s): In accordance with instructions for Section 5, this section is not applicable for "insignificant" discharges.

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

X If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

____ If no - enter "NO" status code in #8.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): See notes under Section 750-7 in attached text.

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

_____ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the _____ _____ facility , EPA ID # _____ , located at _____. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

(Documentation Provided by Facility)

Completed by (signature) _____ Date 7/23/99
(print) _____
(title) _____

Supervisor (signature) _____ Date 9/29/99
(print) Matthew R. Hoagland
(title) Section Chief
(EPA Region or State) Region I

cc: EV Events

Locations where References may be found:

_____
_____
_____
_____
_____

Contact telephone and e-mail numbers

(name) _____
(phone #) _____
(e-mail) _____

Rationale and References
For
Documentation of Environmental Indicator Determination
RCRA Corrective Action Environmental Indicator Code CA 750

WILLIAM PRYM, INC.
Dayville, CT

Groundwater monitoring was initiated at Prym's Dayville facility (the site) in 1982 to comply with RCRA requirements for storage of hazardous wastes in earthen lagoons. Over the years, the monitoring program has evolved, including changes in the monitoring parameters, number of network wells and monitoring frequency. Initially, monitoring consisted of quarterly measurements of RCRA indicator parameters at four wells surrounding two active hazardous waste sludge lagoons. This program soon detected a significant difference between upgradient and downgradient for these indicator parameters and, subsequently, a groundwater assessment was performed in 1984. Four additional wells were installed during this assessment and the monitoring parameters were expanded to include cyanide, various heavy metals and volatile organics. The assessment found the hazardous waste lagoons to be releasing electroplating sludge constituents to shallow groundwater and called for its closure. The lagoons were closed and quarterly monitoring of these eight wells continued as part of Prym's post-closure care program. In 1994, the monitoring was reduced to semi-annual events and several parameters that routinely were below detection or concentrations of concern were deleted from the program.

Routine monitoring of these eight wells continued until the fall of 1997. At that time, seven additional shallow wells (MW-9 through MW-15) were installed under an EPA approved Phase I RFI Work Plan. The purpose of these new wells was to better define the horizontal extent of historic releases from the Former Sludge Lagoons, to determine if releases had taken place from certain other Areas of Concern (AOCs) and to better define general site hydrogeology. This expanded network met its objectives and determined that release had also occurred from AOC 10 (Plating Room) and from AOC 1 (Mill Pond). In addition to investigating groundwater, the Phase I RFI also evaluated surface water expressions for key site constituents and evaluated the interaction between groundwater and surface water. As a supplement to the Phase I RFI, home wells in close proximity to the site were sampled and analyzed for site constituents. All site constituents were below their respective federal drinking water criteria and, in most cases, below detection limits for all home well and surface water samples.

A Phase II RFI program, implemented in 1998, included the installation of five additional shallow wells, three deep wells and two piezometers. The Phase II RFI groundwater program evaluated the vertical extent of site constituents of concern, further defined groundwater flow regimes and interactions with surface water expressions and better defined the extent of site constituents in shallow groundwater.

Data gathered during the Phase II RFI has been selected as the primary data source to evaluate the site against the CA 750 indicator code. Data generated from this investigation represents the most accurate and current understanding of both groundwater flow and quality.

The following notes provide a basis for the conclusions reached in each step of the Environmental Indicator Determination for RCRIS Codes CA 750. Headings used for these notes correspond to the item numbers in the determination worksheet.

In this evaluation, the EPA Risk Based Criteria – April 1998 for Tap Water (RBCs) were used as the primary benchmark for determining the presence/absence of site constituents at a concentration of significance as well as determining the degree of significance of their presence from a human health perspective. Federal drinking water criteria (MCLs) were used in conjunction with RBCs to determine the significance of detected site constituents.

750-2 Groundwater Contamination Determination

Arsenic, nickel, trichloroethylene and tetrachloroethylene were detected in site groundwater at concentrations in excess of their respective RBCs. In the October 1998 monitoring event, the arsenic RBC (0.045 ug/L) was exceeded in 12 of 23 monitoring wells across the site with no obvious pattern associated to one or more Areas of Concern (AOCs). [Note: Future monitoring will be investigating this matter.] During this same event, the nickel RBC (730 ug/L) was exceeded in two wells down gradient of AOC 10 (Nickel Plating Room). Trichloroethylene exceeded its RBC (1.3 ug/L) in one well and tetrachloroethylene exceeded its RBC (1.1 ug/L) in two wells. Only one exceedance of the arsenic federal drinking water criteria (50 ug/L) and one exceedance of the tetrachloroethylene federal drinking water criteria (5 ug/L) took place during this event. No federal drinking water criterion is in effect for nickel. Attachment A includes a map of the well locations, well construction data, boring logs, a discussion of site hydrology from the RFI Phase II report, and a summary table of analytical results for the October 1998 event.

It is important to note that the CTDEP classification of groundwater at the site is "GB", not suitable for drinking. It should also be noted that municipal water is available at site and throughout the surrounding area.

750-3 Migration Stabilization Evaluation

Over the past 15 years, Prym has put forth considerable effort to remove known and potential groundwater contamination sources from the site. This includes:

- Closure of the electroplating sludge lagoons (AOC 2). With the exception of a small area that encroached on building footings, all sludge and soils that exceeded health based standards in effect at that time (1987) were removed. Attachment B provides excerpts from the closure certification report, documenting the criteria met during closure. The closure was approved by EPA.

- Remediation of the Mill Pond (AOC 1). Three separate voluntary removal programs took place to remove spilled electroplating sludge and affected underlying soils/sediment from the Mill Pond. Remaining metal concentrations are well below their respective RBC for direct exposure. Attachment B also includes results of the verification testing upon completion of the final corrective measures action, documenting concentrations of key constituents in the underlying soils.

- Removal of all drummed wastes and raw materials in AOC 6 and AOC 8.

- Removal of residues and steam cleaning of AOC 10 (Former Plating Room), AOC 4 (Wastewater Treatment Room) and AOC 8 (Chemical Storage Room). All equipment was also removed from the plating room and the wastewater treatment room.

- Remediation of the AOC 3 (Tail Race). An extensive remediation program removed sediments containing various heavy metals associated with past site operations. Remaining metal concentrations are well below their respective RBC for direct exposure. Again, Attachment B provides results of the verification testing upon completion of this corrective action, documenting the concentration of key constituents in the underlying sediments.

- Removal of the Hypochlorite storage tank (AOC 9).

- Removal of the pressed sludge roll-off box (AOC 7)

As a result of these efforts, groundwater quality has improved throughout the eight well monitoring network that has been in place since 1984. The monitoring period for the more recently installed wells has been too short to establish trends. Attachment C includes a partial summary of nickel and perchloroethylene concentrations over time for the eight wells that have been in place since 1986.

Sampling of home drinking water wells down gradient of the site was performed as a coordinated effort with CTDEP. This program did not detected any site constituents in concentrations above their respective drinking water criteria and, with the possible exception of arsenic, their respective RBCs. As discussed under 750-2, the revised arsenic RBC (0.045 ug/L) is below detection limits of approved analytical methods, thereby preventing conclusive determination of the presence or absence of arsenic above this criterion. However, it should be emphasized that the analytical detection limit for arsenic (2 ug/L) is more than one order of magnitude below the drinking water criteria (50 ug/L). In addition, arsenic was not detected in either the on-site down gradient deep wells or home wells down gradient of the site. Therefore, the uncertainty of attainment of the arsenic RBC is not considered a significant matter for this evaluation. Attachment C contains the results of this home well sampling event, and a map depicting the location of these wells.

All AOC have been present for more than 20 years and, as discussed above, no site constituents have been detected in deep down gradient wells or home drinking water wells down gradient of the site at or above federal drinking water criteria. Given this preponderance of evidence, it can be concluded that future off-site migration of site constituents will not occur at concentrations above federal drinking water criteria.

750-4 Contaminated Groundwater Discharge to Surface Water Evaluation

Hydrogeologic studies performed during the Phase I and Phase II RFI determined that much of the groundwater discharges to two surface water expressions that cross the site. These are the Five Mile River and man-made diversion channel known as the Tail Race (AOC3). Data generated from monitoring wells down gradient of the AOCs and up gradient of the surface water expressions are representative of groundwater discharging to surface water. Monitoring wells that fit this category are MW 11, MW 12, MW 13, MW 15, MW 16 and MW 19.

Review of recent monitoring data for these wells indicated that arsenic in wells MW 11 and MW 13 and nickel in MW 13 exceeded their respective RBC. However, none of the parameters in this group of wells exceeded their respective federal drinking water criteria. In addition, no other site constituents were found to be present in this group of wells at concentrations in excess of their respective RBCs. Despite these low concentrations, for the purposes of this evaluation it must be concluded that impacted site groundwater is discharging to surface water.

750-5 Evaluation of Significance of Contaminated Groundwater Discharge to Surface Water

As noted under 750-4, groundwater impacted by nickel and arsenic is discharging to surface water expressions. As the concentrations of these constituents in the groundwater are below federal drinking water criteria before discharge, it is not considered significant for the current protection of human health.

The monitoring period for these wells has been short. Thus, there is no direct documentation to demonstrate that the noted concentrations of arsenic and nickel are not increasing. However, as discussed under 750-3, there have been significant remedial actions taken on the site. As a result of these actions, monitoring wells with a more extensive history have noted improvements in groundwater quality. As groundwater is flowing from these older wells toward the wells representative of discharge to surface water, there is no reasonable expectation that the concentration of site constituents discharging to surface water expressions will increase over time. With current discharge concentrations of site constituents below drinking water criteria and no reasonable potential for increases over time, future discharge of site groundwater to surface water is not considered significant for protection of human health.

During the Phase I RFI, an ecological survey of the Five Mile River was conducted. This survey was conducted using EPA's Rapid Bioassessment Protocol II. Habitat quality at the upstream (reference) station was considered excellent and is comprised of run and pool habitat. Habitat quality at the downstream location was also considered excellent, but was exclusively run habitat. Data from the survey did not clearly show whether the downstream station was or was not impaired. Although the data tend to indicate some minor impairment had occurred, the difference may be due to degraded substrate, changes in water quality due to road run-off (Route 101 and the adjacent health club parking lot) or impact from residential properties at the down stream location. There is no conclusive evidence of any current impact and the quality of groundwater discharging to the river is anticipated to improve over time. Thus, it can be concluded that neither current nor future groundwater discharge is reasonably anticipated to have an unacceptable impact to the ecology of this river.

A copy of the ecological assessment report is provided in Attachment D.

750-7 Future Groundwater Monitoring

As discussed under Section 750-4, several wells in the groundwater monitoring network measure shallow groundwater that is representative of what is discharging to the Five Mile River and the Tail Race. Prym will continue to monitor these wells (MW11, MW12, MW13, MW15, MW16 and MW19) for arsenic and nickel as long as is necessary to verify the future expectations stated under 750-3.

750-8 Migration of Contaminated Groundwater Status

Through the previous worksheets, associated notes and supporting data, it was determined that the Prym Dayville site has groundwater that is contaminated with arsenic, nickel trichloroethylene and tetrachloroethylene. Through extensive groundwater investigation, it has been determined that none of these constituents or their degradation products have migrated off-site in concentrations at or above their respective drinking water criteria, either through movement of groundwater or through discharge to surface water. In addition, with the possible exception of arsenic, none of these constituents have been detected in home wells immediately down gradient of the site above their respective tap water RBCs.

As noted above, it is uncertain if arsenic is present at on-site or off-site down gradient locations and the down gradient property boundary at concentrations above its tap water RBC. The available analytical detection limit for arsenic (2 ug/L) is well above its 0.045 ug/L tap water RBC, but well below the MCL of 50 ug/L. As this detection limit is more than one order of magnitude less than the MCL and the MCL is deemed protective of human health, this uncertainty is not considered a significant issue.

It has also been demonstrated that it is highly unlikely that down gradient concentrations will increase as there has been extensive remedial actions at those AOCs determined to be contributing to groundwater contamination. In addition, all AOCs have been present for more than 20 years, with some having been in existence for more than 70 years. It is extremely unlikely that any contamination would migrate off-site after this extensive time period, especially considering the remedial actions that have taken place, the highly permeable sand and gravel aquifer beneath the site and the relatively short distances between the AOCs and down gradient groundwater users.

It should also be noted that arsenic is a common in groundwater constituent throughout this part of Connecticut (Barosh, 1992). It is not certain if the noted arsenic in site groundwater is in part or fully associated with release from one or more of the AOCs or is associated with natural conditions.

Given this evidence, it is concluded that the migration of contaminated groundwater is under control at the Prym Dayville Site.

References:

P.J.Barosh, 1992, Arsenic in Ground Water in Southeastern New England and Sources of Metals Found in Ground Water at the Linemaster Switch Corporation Site, Woodstock, Connecticut.

SE Technologies, 1998, Phase II RFI Report.

SE Technologies, 1997, Phase I Report.

ATTACHMENT CA750-A

Site Layout Map
Well Construction Data
Boring Logs
November 1998 Monitoring Data
Site Geology/Hydrogeology Summary

US EPA New England
RCRA Document Management System (RDMS)
Image Target Sheet

RDMS Document ID# 995

Facility Name: Prym William Inc

Phase Classification: R-13

Document Title: Environmental Indicator (EI) Determination, Migration of Groundwater Under Control (CA750YE) - Prym William Inc

Date of Document: 09-29-1999

Document Type: EI Determination

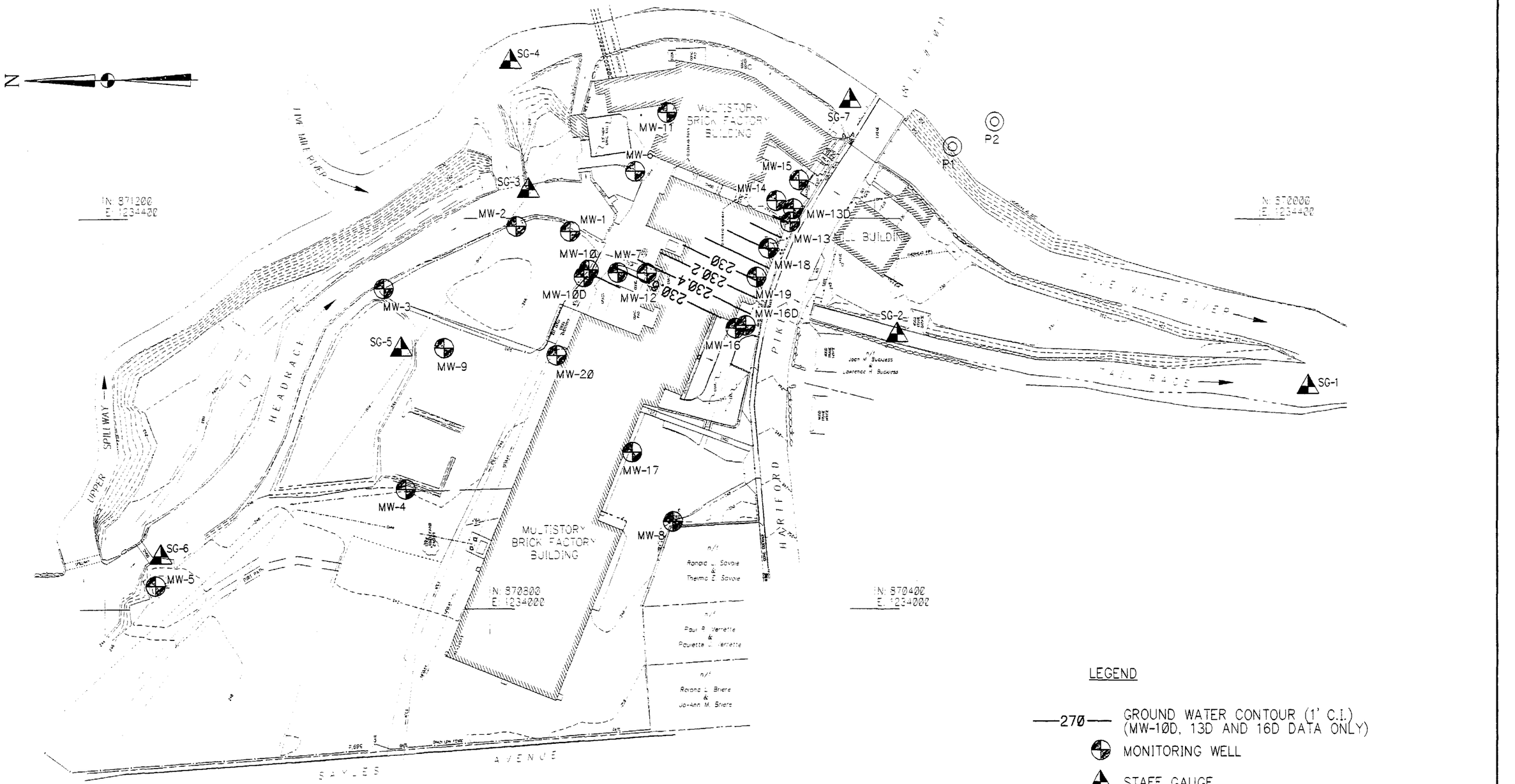
Purpose of Target Sheet:

[x] **Oversized** [ ] **Privileged**

[ ] **Page(s) Missing** [ ] **Other (Please Provide Purpose Below)**

Comments: Figure 2-1: Phase II RFI Investigation Area Base Map

*** Please Contact the EPA New England RCRA Records Center to View This Document ***



LEGEND

—270— GROUND WATER CONTOUR (1' C.I.) (MW-10D, 13D AND 16D DATA ONLY)

MONITORING WELL

STAFF GAUGE

PIEZOMETER

REFERENCE: "TOPOGRAPHIC SURVEY PREPARED FOR PRYM MILL" BY KWP ASSOCIATES, PROMFRET CENTER, CONNECTICUT DATED 6/10/97 (REV. 11/5/97, 2/12/98, 11/2/98)
ELEVATIONS BASED ON NAD29; HORIZONTAL COORDINATES BASED ON CONNECTICUT GRID SYSTEM

DRAWN BY	LPS
DATE	-
CHECKED BY	-
SET JOB NO.	980322
SET DWG FILE	98322B03.dwg
DRAWING SCALE	1"=100'

SE TECHNOLOGIES
98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

WILLIAM PRYM, INC
DAYVILLE, CONNECTICUT
DEEP GROUNDWATER CONTOUR MAP
OCTOBER 10, 1998

DRAWING NAME: FIGURE 3-8
REV: A

N

SG-4
228.07

SG-7
228.08

MW-11

MW-6

MW-15

MW-14

MW-13

MW-18

SG-3

MW-2

MW-1

MW-10

MW-7

MW-12

MW-19

SG-5

MW-9

MW-20

MW-16

SG-2
227.65

SG-1
227.69

MW-17

MW-4

MW-8

SG-6

MW-5

P1

P2

229

228.2

228

229.4

229.6

228.8

228.4

227.8

N: 871200
E: 1234400

N: 870800
E: 1234000

N: 870400
E: 1234000

FIVE MILE RIVER

DAM

SPILLWAY

UPPER

HEADRACE

MULTISTORY
BRICK FACTORY
BUILDING

PIKE ROAD

HARTFORD AVENUE

BAILEY AVENUE

Ronald L. Savoie
&
Thelma E. Savoie

Paul P. Verrette
&
Paulette C. Verrette

Roland L. Briere
&
Jo-Ann M. Briere

Joan M. Buckless
&
Lawrence H. Buckless

LEGEND

270 GROUP 1 GROUND WATER CONTOUR (0.2' C.I.)

270 GROUP 2 GROUND WATER CONTOUR (1' C.I.)

MONITORING WELL

STAFF GAUGE

PIEZOMETER

HORIZONTAL COMPONENT OF GROUNDWATER FLOW

EFERENCE: "TOPOGRAPHIC SURVEY PREPARED FOR PRYM MILL" BY
KWP ASSOCIATES, PROMFRET CENTER, CONNECTICUT
DATED 6/10/97 (REV. 11/5/97, 2/12/98, 11/2/98)
ELEVATIONS BASED ON NAD29; HORIZONTAL COORDINATES
BASED ON CONNECTICUT GRID SYSTEM

DRAWN BY	LPS
DATE	-
CHECKED BY	-
SET JOB NO.	980322
SET DWG FILE	98200B03.dwg
DRAWING SCALE	1"=100'

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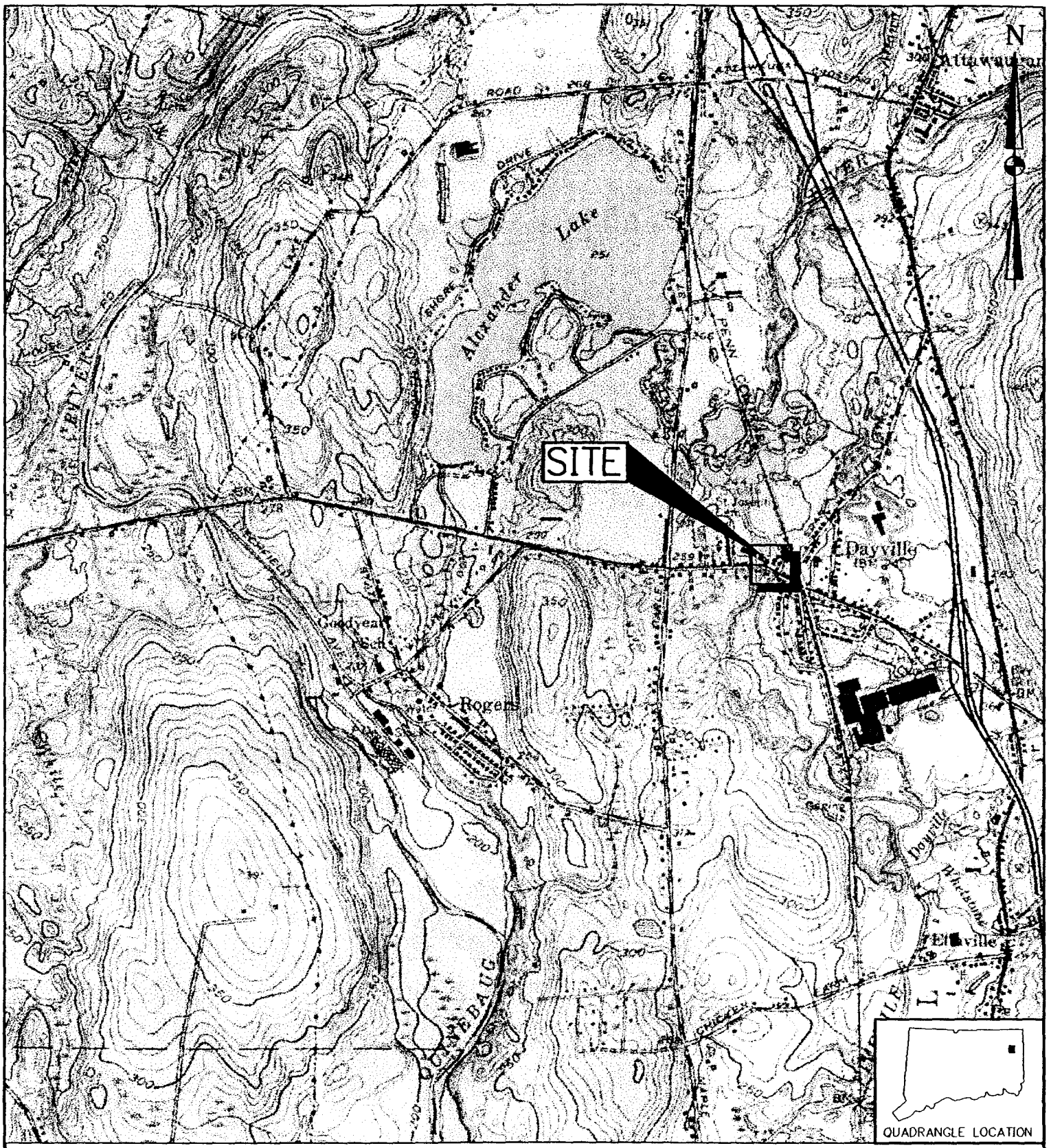
WILLIAM PRYM, INC
DAYVILLE, CONNECTICUT
SHALLOW GROUNDWATER CONTOUR MAP
DECEMBER 17, 1998

DRAWING NAME: FIGURE 3-10
REV. A



REFERENCE: USGS 7.5' QUADRANGLE MAP OF: DANIELSON, CONNECTICUT; DATED 1955, PHOTOREVISED 1970

DRAWN BY	LPS
DATE	-
CHECKED BY	RAD
SET JOB NO.	980322
SET DWG FILE	990177m01.dwg
DRAWING SCALE	1"=2000'

SE TECHNOLOGIES
98 Vanadium Road Bridgeville, PA 15017 (412) 221-1166

WILLIAM PRYM, INC.

DAYVILLE, CONNECTICUT
PHASE III RFI

SITE LOCATION MAP

DRAWING NO.	REV.
FIGURE 1-1	0

Plot: env024 09/09/1999 05:49 G:\Prym\990177\990177m01.dwg

SOIL SAMPLING LOG

CONNECTICUT TEST BORINGS, INC.

Sub-Surface Specialists

P.O. BOX 69
SEYMOUR, CONNECTICUT
(203) 888-3857

DATE START 6-13-85
DATE FINISH 6-13-85
WEIGHT OF HAMMER 140 x300
HAMMER FALL .....30" x24" .....

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH
6-13-85	0 hrs.	3'4"

SAMPLER O.D. 2" I.D. 1 3/8"
TYPE OF RIG Hydraulic Rotary

ESPECIALLY COMPILED FOR
Lancy International, Inc.
525 West New Castle Street
P.O.Box 490
Zelienople, PA 16063

SHEET 1 OF 1
PROJ. NO. .....
LOCATION Prym Company
[redacted]A. Dayville, CT
OFFSET
GROUND ELEVATION
HOLE. NO. B-5

	CASING	SAMPLER	CORE BA
TYPE	HSA	SS	
SIZE I.D.	3¼"	1 3/8"	

DEPTH BELOW SURFACE	SAMPLE NO. DEPTHS ELEV. FT	Type of Sample	BLOWS PER 6" ON SAMPLER From 0-6	TO 6-12	TO 12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH ELEV.	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE NO.	PEN	RI
								Br. m-sand, some m-c gravel, lit. medium sized cobbles.			
	5'to [illegible]		3	2	2	Loose	5'		1	18	2
	6'6"					damp		Br. m-sand, tr. brick fill.			
							9'				
10								br. f-sand, some silt.			
	15'to [illegible]	SS	5	5	6	M.Comp		Same	2	18	1
	16'6"					wet					
							18'	Augered to 18'.			
20											
								Bottom of boring 18'.			
30								NOTE: Installed 2" PVC water observation pipe w/10' screen 18' below grade, 2' above grade.			
40											

NOT RESPONSIBLE FOR SAMPLE STORAGE AFTER 30 DAYS

Proportions used: trace = 0-10%, little = 10-20%, some = 20-35%, and = 35-50%

DRILLER: D.P.
HELPER: D.C.
SOILS ENGINEER
DRILLING INSPECTOR

SAMPLE TYPE
C = CORED W = WASHED
SS = SPLIT SPOON
UP = UNDISTURBED PISTON
TP = TEST PIT
UT = UNDISTURBED THINWALL

COHESIONLESS DENSITY
0-10 LOOSE
10-30 MED. COMP.
30-50 DENSE
50+ VERY DENSE

TOTAL FOOTAGE:
Earth Boring Ft.
Rock Coring Ft.
HOLE NO.

SOIL SAMPLING LOG

SHEET 1 OF 1

CONNECTICUT TEST BORINGS, INC.

Sub-Surface Specialists

P.O. BOX 69
SEYMOUR, CONNECTICUT
(203) 888-3857

DATE START 5-13-85
DATE FINISH 5-13-85
WEIGHT OF HAMMER 140 300
HAMMER FALL 30" 24"

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH
5-13-85	5 hrs.	7'

SAMPLER O.D. 2" I.D. 1 3/8"
TYPE OF RIG Hydraulic rotary

ESPECIALLY COMPILED FOR
Lancy International, Inc.
525 West New Castle Street
P.O.Box 490
Zelienople, PA 16063

PROJ. NO.
LOCATION Prym Company
Dayville, CT
OFFSET
GROUND ELEVATION
HOLE. NO. B-6

	CASING	SAMPLER	CORE B
TYPE	HSA	SS	
SIZE I.D.	3¼"	1 3/8"	

DEPTH BELOW SURFACE	SAMPLE NO. DEPTHS ELEV. FT	Type of Sample	BLOWS PER 6" ON SAMPLER From 0-6	TO 6-12	TO 12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH ELEV.	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE NO.	SAMPLE PEN
							1'	Topsoil and roots.		
								Br. silty sand.		
							3'6"			
	5'to 5'6"	SS	5	12	14	M.Comp Moist	5'6"	Orange br. m-c sand, some f-c gravel.	1	18
							7'	Br. m-c sand, some m-c gravel.		
10	10'to 11'6"	SS	4	8	5	M.Comp wet		Gry br. v.f-sand, some silt, tr. clay.	2	18
	15'to 16'6"	SS	5	5	6	M.Comp wet	15'	Gry silt, tr. v.f-sand, tr. clay.	3	18
							18'			
20	20'to 21'6"	SS	13	8	13	M.Comp wet	21'	Orange br. c-v.c sand, some m-c gravel.	4	18
							21'6"	Br. silt, some f-sand.		
								Bottom of boring 21'6".		
30								NOTE: Installed 2" PVC water observation pipe w/10' screen 17' below grade, 2' above grade.		
40										

NOT RESPONSIBLE FOR SAMPLE STORAGE AFTER 30 DAYS

Proportions used: trace = 0-10%, little = 10-20%, some = 20-35%, and = 35-50%

DRILLER: E.P.
HELPER: D.C.
SOILS ENGINEER

SAMPLE TYPE
C = CORED W = WASHED
SS = SPLIT SPOON
UP = UNDISTURBED PISTON
TP = TEST PIT

COHESIONLESS DENSITY
0-10 LOOSE
10-30 MED. COMP.
30-50 DENSE
50+ VERY DENSE

TOTAL FOOTAGE:
Earth Boring
Rock Coring

SOIL SAMPLING LOG

SHEET 1 OF 1

CONNECTICUT TEST BORINGS, INC.

Sub-Surface Specialists

P.O. BOX 69
SEYMOUR, CONNECTICUT
(203) 888-3857

DATE START 6-14-85
DATE FINISH 6-14-85
WEIGHT OF HAMMER 140 #300
HAMMER FALL 30" 24"

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH
6-14-85	0 hrs.	16'

SAMPLER O.D. 2" I.D. 1 3/8"
TYPE OF RIG Hydraulic Rotary

ESPECIALLY COMPILED FOR

Lancy International, Inc.
525 West New Castle Street
P.O.Box 490
Zelienople, PA 16063

PROJ. NO.
LOCATION Prym Company
~~WEST~~ Dayville, CT
OFFSET
GROUND ELEVATION
HOLE. NO. B-7B

	CASING	SAMPLER	CORE
TYPE	HSA	SS	
SIZE I.D.	3¼"	1 3/8"	

DEPTH BELOW SURFACE	SAMPLE NO DEPTHS ELEV FT	Type of Sample	BLOWS PER 6" ON SAMPLER From 0-6	TO 6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH ELEV.	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE NO.	SAMPLE PEN
							7'	Drk Br. c-f sand, some c-f gravel, lit. cobbles (fill).		
							14'	Gry Br. f-sand, lit. silt.		
	15' to 16'	SS	16	18		Dense wet		Br. f-m sand, some weathered cobbles and gravel.	1	12
	20' to 20'9"	SS	22	78/3		V.Dense wet	22'	Same	2	9
								Refusal on HSA.		
								Bottom of boring 22'.		
								NOTE: Installed 2" PVC water observation pipe w/10' screen 22' below grade, 2' above grade.		

NOT RESPONSIBLE FOR SAMPLE STORAGE AFTER 30 DAYS

Proportions used: trace = 0-10%, little = 10-20%, some = 20-35%, and = 35-50%

DRILLER: E.P.
HELPER: D.C.
SOILS ENGINEER
DRILLING INSPECTOR

SAMPLE TYPE
C = CORED W = WASHED
SS = SPLIT SPOON
UP = UNDISTURBED PISTON
TP = TEST PIT
UT = UNDISTURBED THINWALL

COHESIONLESS DENSITY
0-10 LOOSE
10-30 MED. COMP.
30-50 DENSE
50+ VERY DENSE

TOTAL FOOTAGE:
Earth Boring
Rock Coring
HOLE NO.

SOIL SAMPLING LOG

SHEET 1 OF 1

CONNECTICUT TEST BORINGS, INC.

Sub-Surface Specialists

P.O. BOX 69
SEYMOUR, CONNECTICUT
(203) 888-3857

DATE START 5-14-85
DATE FINISH 5-14-85
WEIGHT OF HAMMER 140 300
HAMMER FALL 30" 24"

GROUND WATER OBSERVATIONS

DATE	TIME	DEPTH
-14-85	0 hrs.	18'

SAMPLER O.D. 2" I.D. 1 3/8"
TYPE OF RIG Hydraulic Rotary

ESPECIALLY COMPILED FOR
Lancy International, Inc.
525 West New Castle Street
P.O.Box 490
Zelienople, PA 16063

PROJ. NO.
LOCATION Prym Company
Dayville, CT
OFFSET
GROUND ELEVATION
HOLE. NO. B-8A

	CASING	SAMPLER	CORE
TYPE	HSA	SS	
SIZE I.D.	3¼"	1 3/8"	

DEPTH BELOW SURFACE	SAMPLE NO DEPTHS ELEV. FT	Type of Sample	BLOWS PER 6" ON SAMPLER From TO 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH ELEV.	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE NO.	SAMPLE PEN
							1'	Drk Br. f-sand, lit. silt.		
								Br. f-c sand, some c-m gravel, some cobbles.		
							6'6"			
								Br. m-f sand, tr. f-m gravel.		
							8'6"			
10	10' to 10'6"	SS	42			V.Dense dry		Br. m-sand, some c-m gravel, some cobbles, lit. small boulders.	1	6
	15' to 16'	SS	45	60		V.Dense dry	17'	Same	2	12
20	20' to 21'6"	SS	22	23	25	Dense wet		Gry Br. m-c sand, some c-f gravel.	3	18
	25' to 26'6"	SS	32	35	45	Very Dense wet		Br. m-c sand, some c-f gravel.	4	18
30	29' to 30'6"	SS	11	34	40	V.Dense wet	30'6"	Same	5	18
								Bottom of boring 30'6".		
								NOTE: Installed 2" PVC water observation pipe w/10' screen 23' below grade, 2' above grade.		
40										

NOT RESPONSIBLE FOR SAMPLE STORAGE AFTER 30 DAYS

Proportions used: trace = 0-10%, little = 10-20%, some = 20-35%, and = 35-50%

DRILLER: E.B.
HELPER:
SOILS ENGINEER
DRILLING INSPECTOR

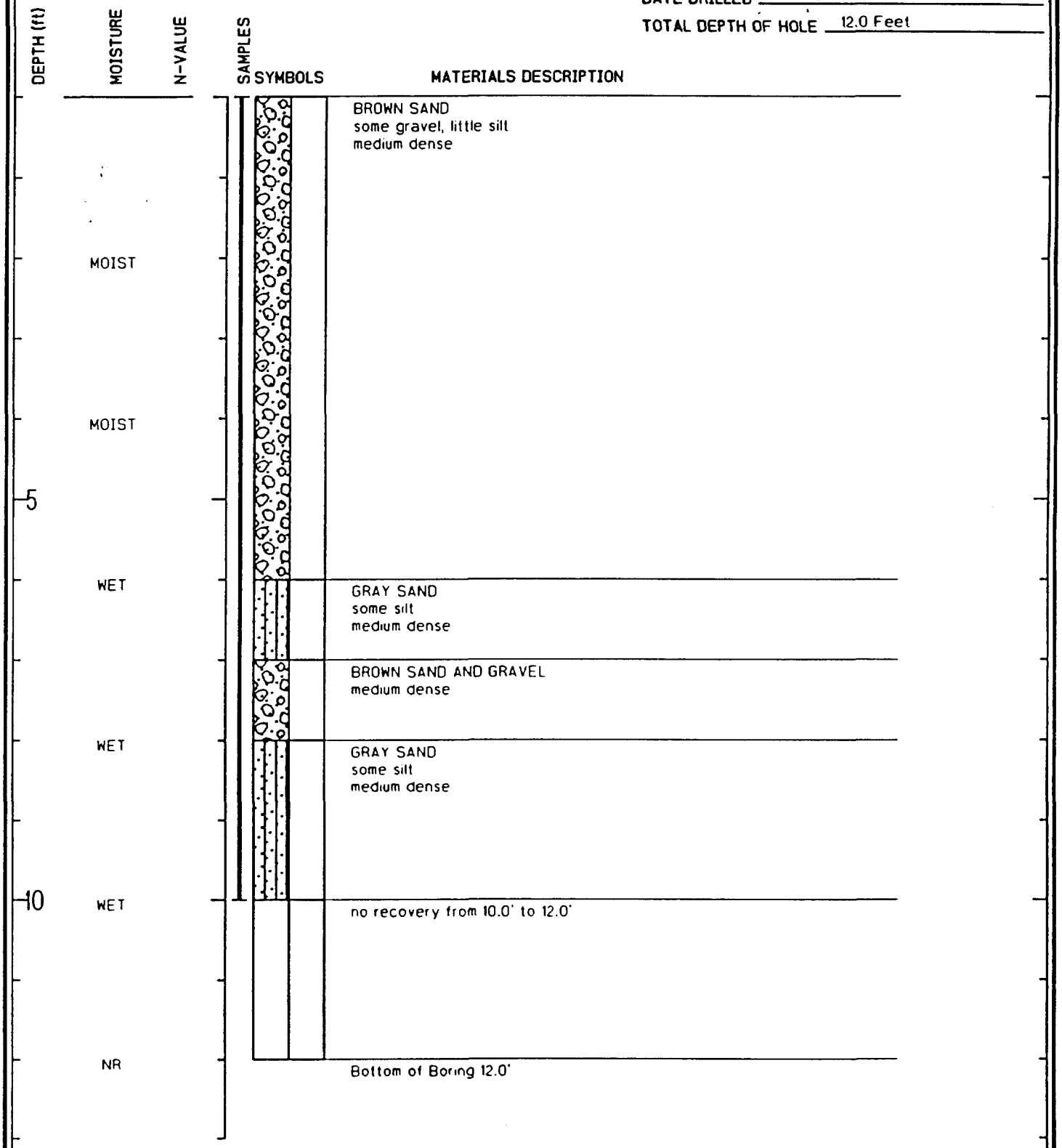
SAMPLE TYPE
C = CORED W = WASHED
SS = SPLIT SPOON
UP = UNDISTURBED PISTON
TP = TEST PIT
UT = UNDISTURBED THINWALL

COHESIONLESS DENSITY
0-10 LOOSE
10-30 MED. COMP.
30-50 DENSE
50+ VERY DENSE

TOTAL FOOTAGE:
Earth Boring
Rock Coring
HOLE NO.

BORING MW-09 *(Page 1 of 1)*

CLIENT NAME William Prym, Inc.
LOCATION AOC 1 (Mill Pond)
DATE DRILLED 10/08/97
TOTAL DEPTH OF HOLE 12.0 Feet



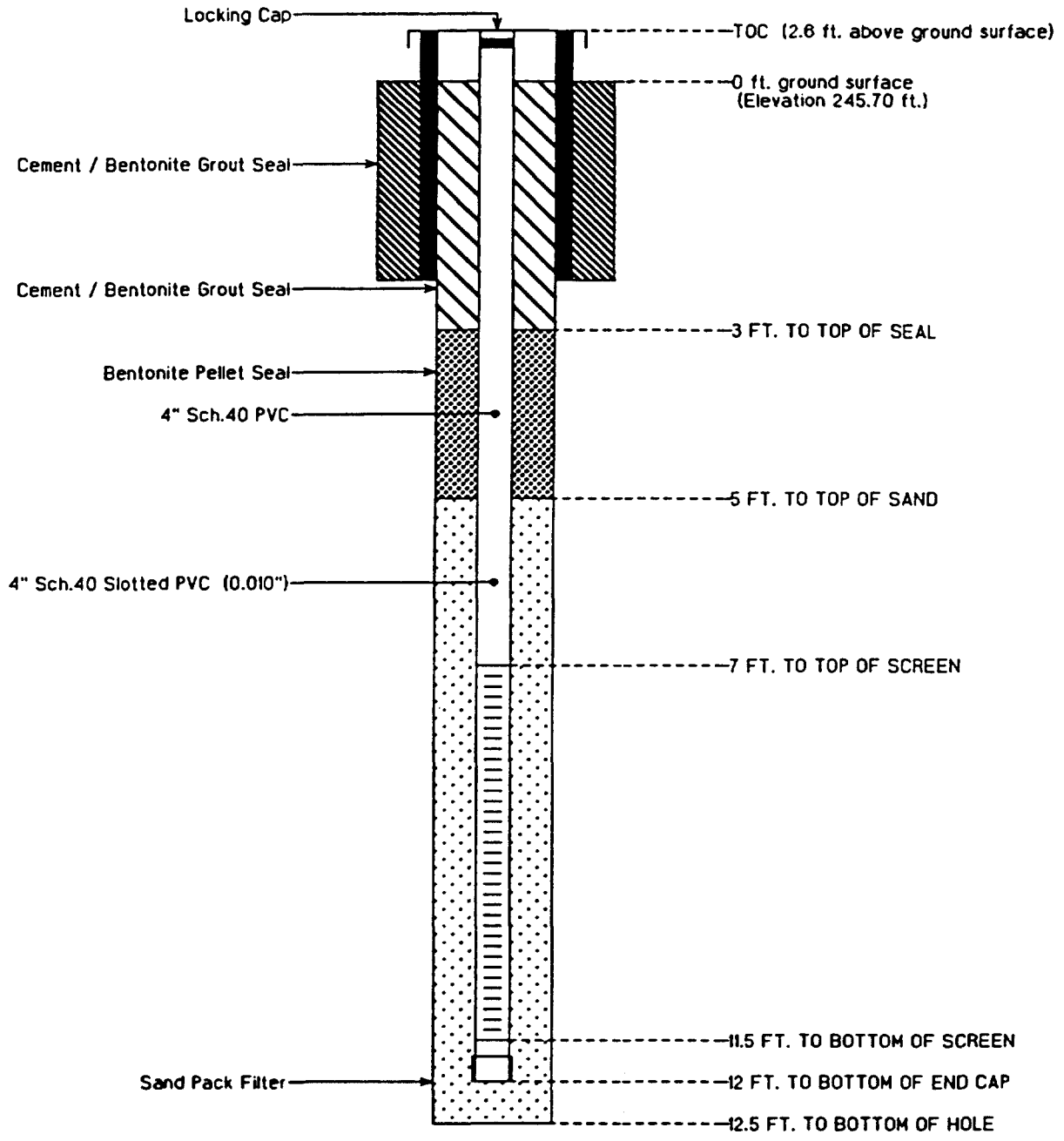
JOB NUMBER: 970330
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

Well Construction Log of MW-09

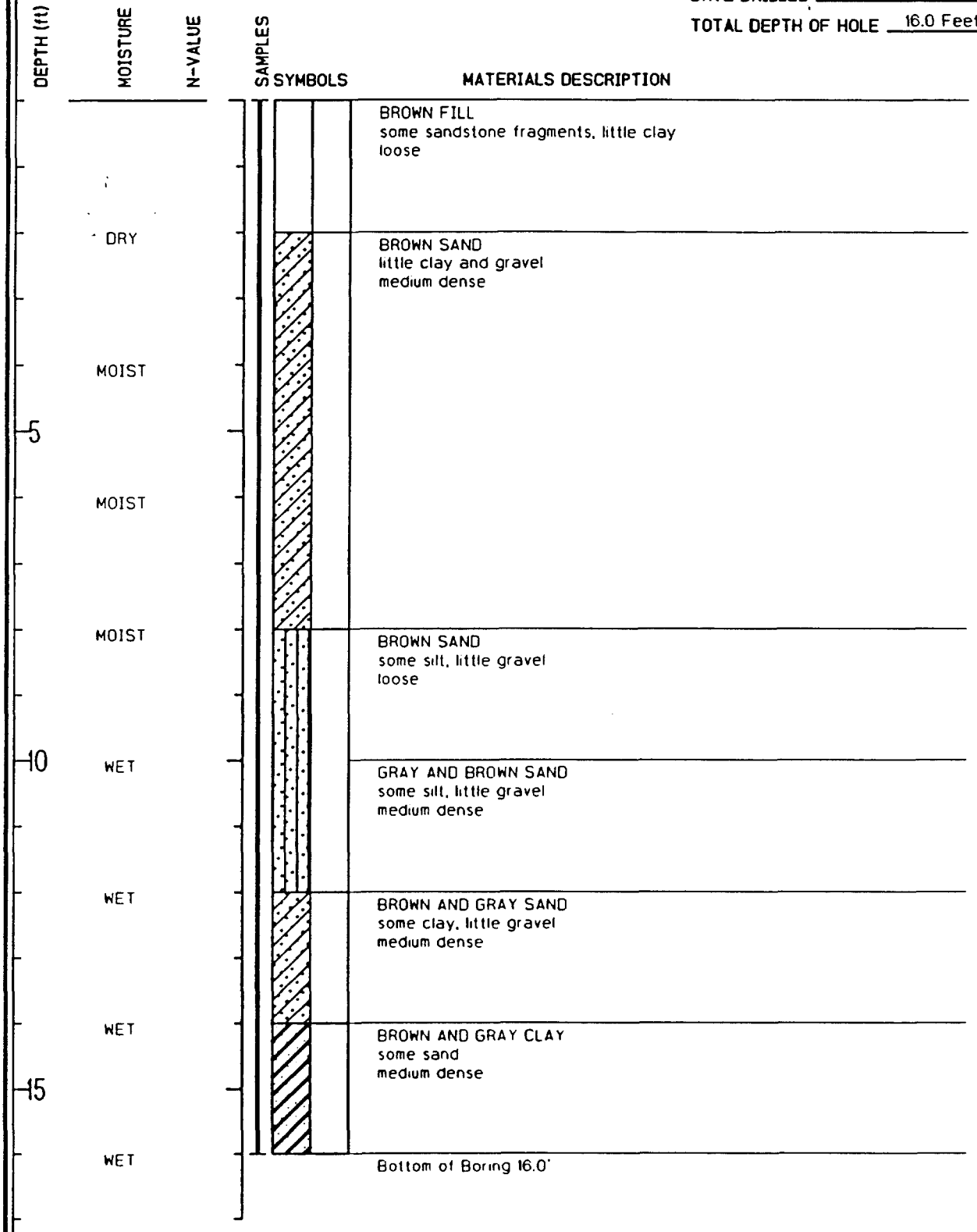
SE TECHNOLOGIES INC.,
98 VANADIUM RD
BRIDGEVILLE, PA

Project Name: William Prym Inc.,	Date: 10/08/97
Boring Location: AOC 9 (OLD MILL POND)	Well Install Date: 10/08/97



BORING MW-10 *(Page 1 of 1)*

CLIENT NAME William Prym, Inc.
LOCATION AOC 6
DATE DRILLED 10/08/97
TOTAL DEPTH OF HOLE 16.0 Feet



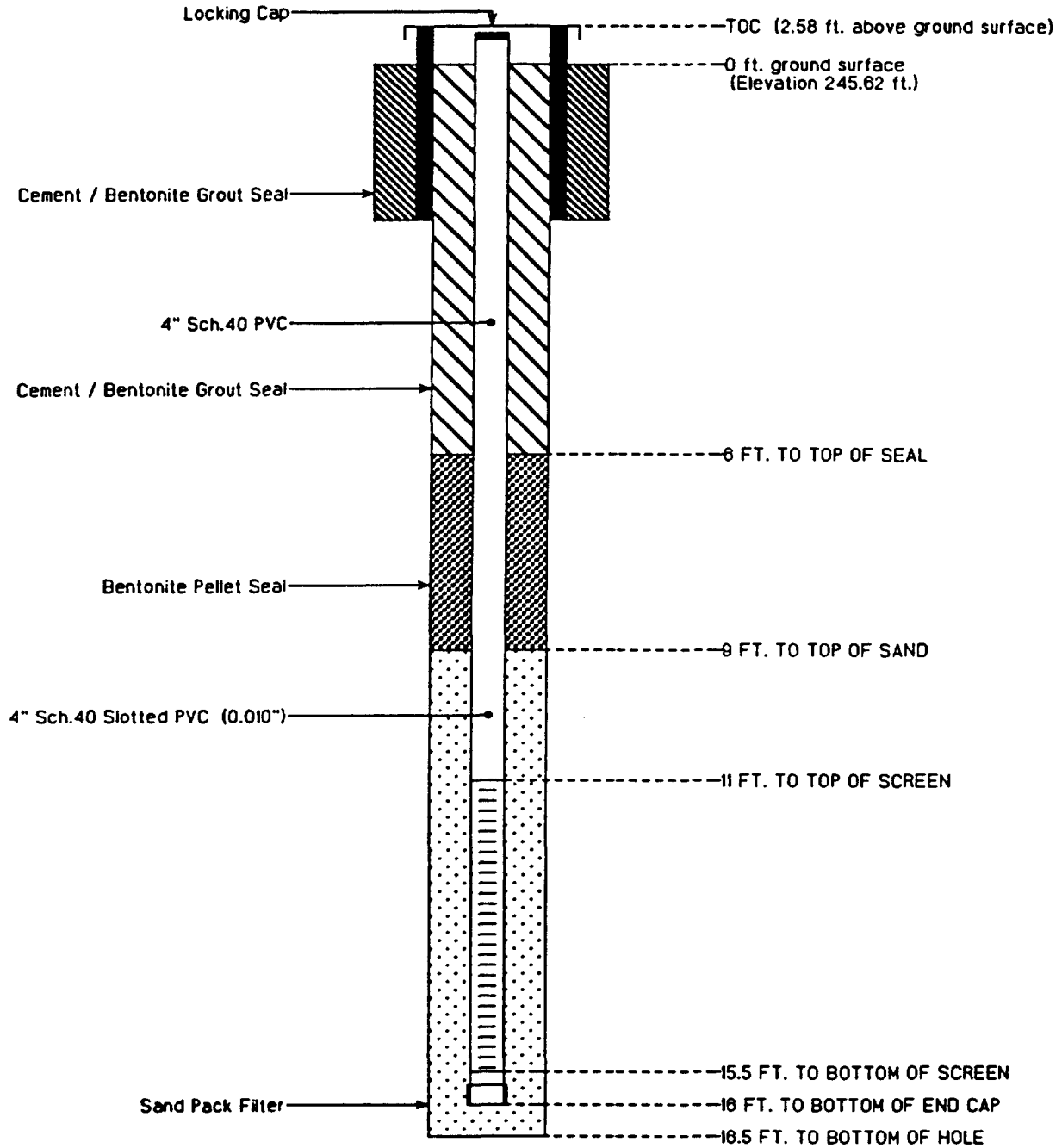
JOB NUMBER: 970330
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

Well Construction Log of MW-10

SE TECHNOLOGIES INC.,
98 VANADIUM RD
BRIDGEVILLE, PA

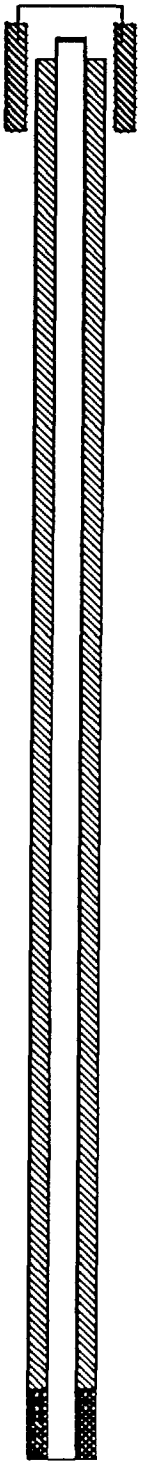
Project Name: William Prym Inc.,	Date: 10/08/97
Boring Location: AOC 6	Well Install Date: 10/08/97



WELL MW-10d *(Page 1 of 2)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville, CT
DATE DRILLED 9/10/98-9/11/98
TOTAL DEPTH OF HOLE 55.0 Feet

DEPTH (ft)	MOISTURE	N-VALUE	SAMPLES	SYMBOLS	MATERIALS DESCRIPTION
	MOIST	2.2			BROWN SAND little clay and little gravel loose
	MOIST	1.2			BROWN SAND little gravel loose
5	MOIST	2.8			BROWN SAND little gravel and silt loose
	WET	1.4			GRAY AND BROWN SAND very loose
	WET				GRAY SAND loose
10	WET				BROWN SAND little silt loose
	WET				
	WET				
15	WET				BROWN AND GRAY SILT AND SAND loose to medium dense
	WET				
	WET				BROWN AND ORANGE SAND loose
20	WET				
	WET				
	WET				BROWN GRAVEL loose
25	WET				BROWN SAND loose
	WET				
	WET				BROWN SAND some gravel medium dense
30	WET				BROWN SAND AND GRAVEL medium dense
	WET				
	WET				
35	WET				BROWN AND GRAY SAND AND GRAVEL medium dense to dense
	WET				
	WET				
40	WET				



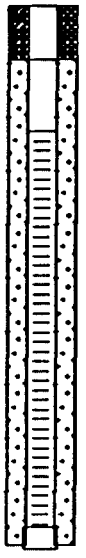
JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

WELL MW-10d *(Page 2 of 2)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville, CT
DATE DRILLED 9/10/98-9/11/98
TOTAL DEPTH OF HOLE 55.0 Feet

DEPTH (ft)	MOISTURE	N-VALUE	SAMPLES	SYMBOLS	MATERIALS DESCRIPTION
45	WET				GRAY SAND AND GRAVEL very dense
	WET				
	WET				
50	WET				
	WET				
	WET				
55					Bottom of Boring 55.0'
60					
65					
70					
75					
80					

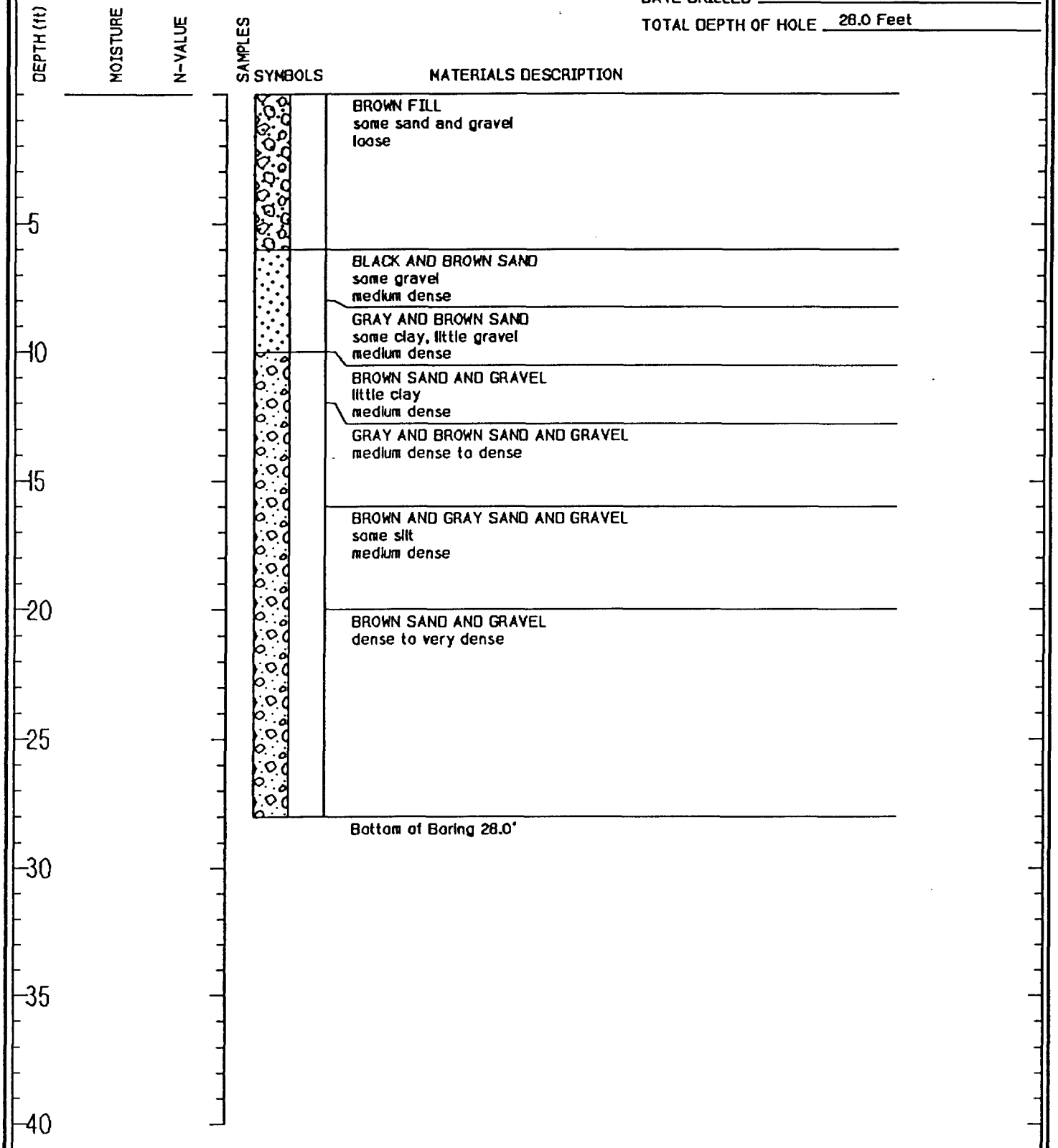


JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

BORING MW-11 *(Page 1 of 1)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville CT
DATE DRILLED 9/9/98
TOTAL DEPTH OF HOLE 28.0 Feet

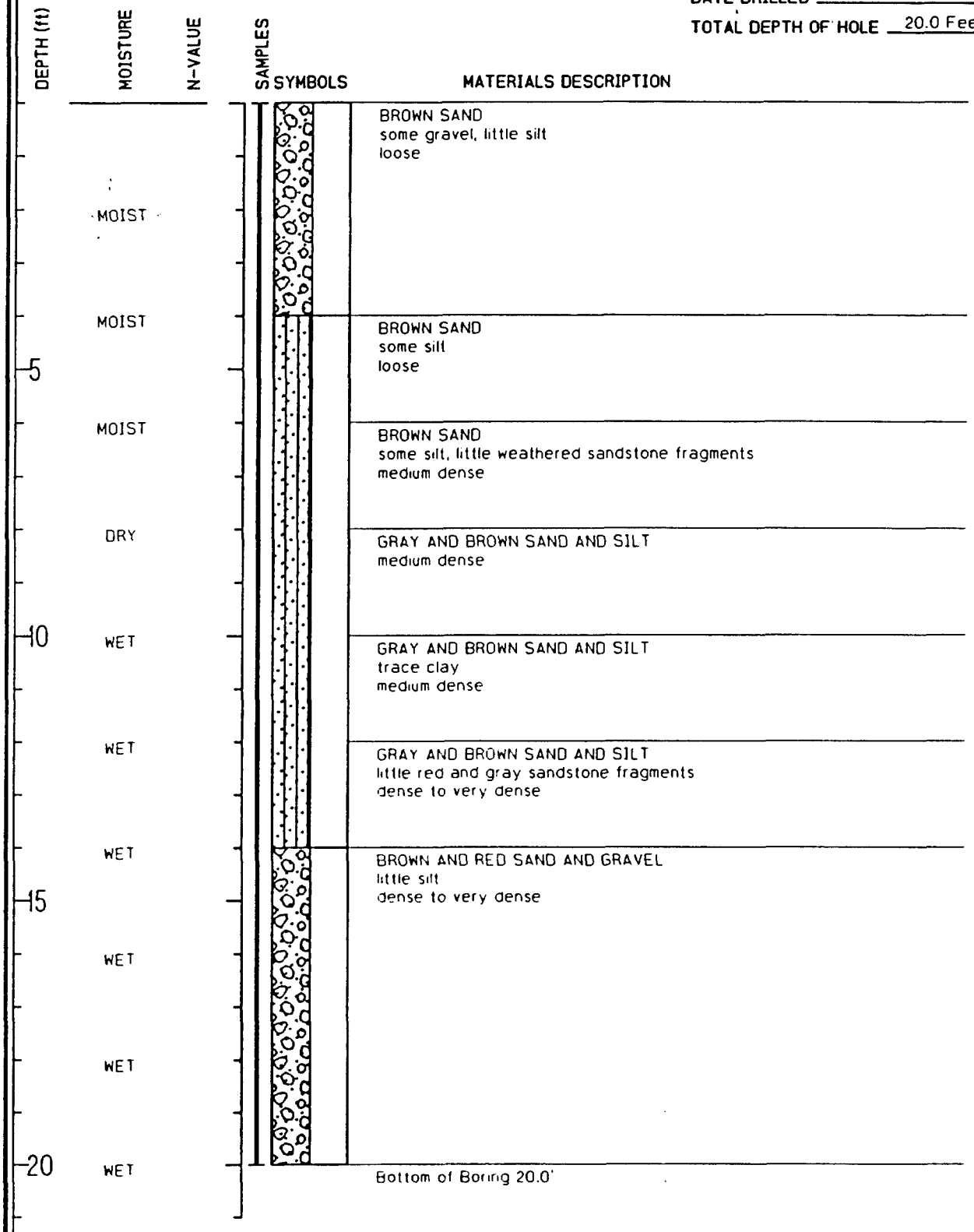


JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

BORING MW-12 *(Page 1 of 1)*

CLIENT NAME William Prym, Inc.
LOCATION AOC 6
DATE DRILLED 10/11/97
TOTAL DEPTH OF HOLE 20.0 Feet



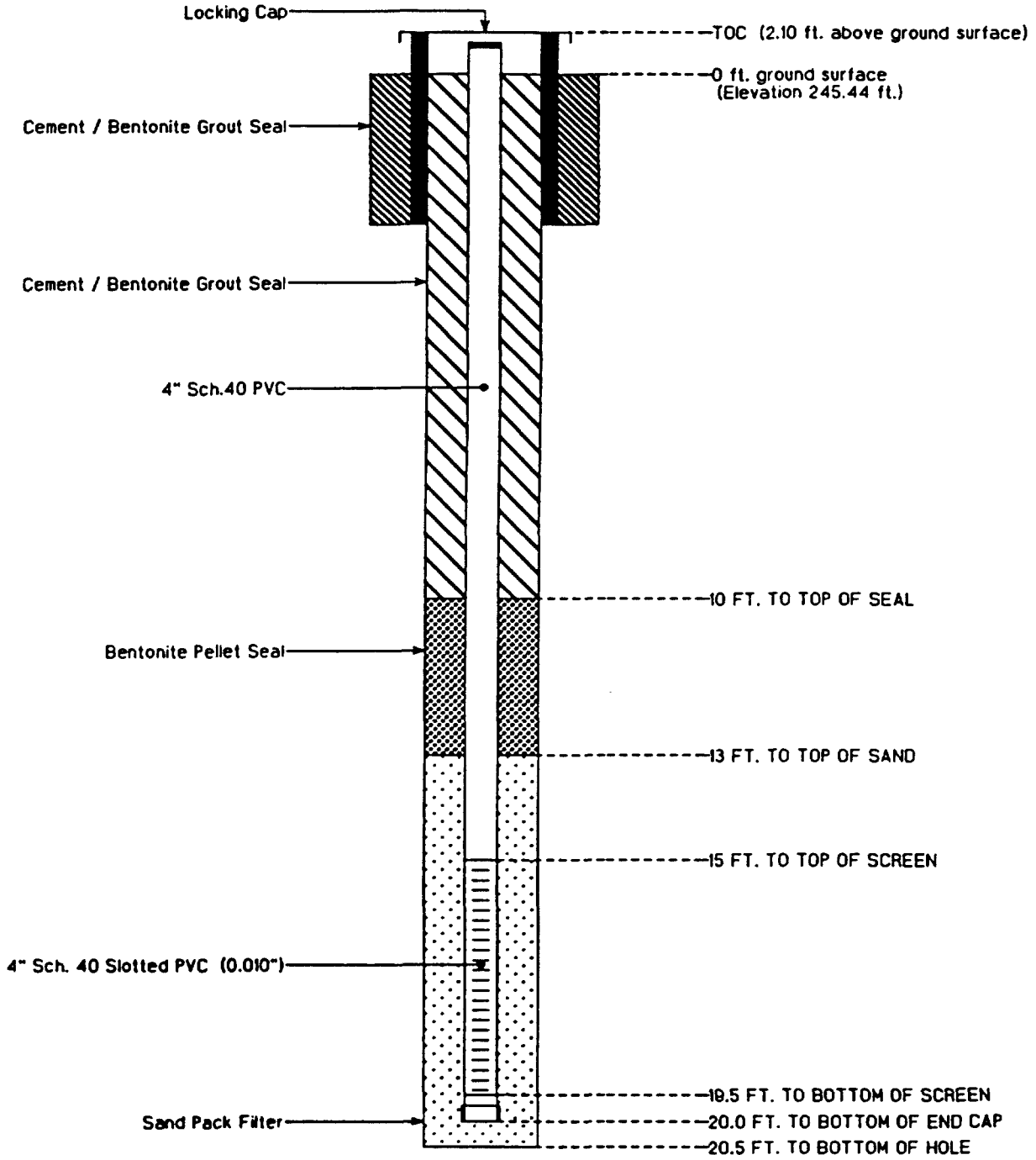
JOB NUMBER: 970330
LOGGED BY: Brian MacQuarrie

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

Well Construction Log of MW-12

SE TECHNOLOGIES INC.,
98 VANADIUM RD
BRIDGEVILLE, PA

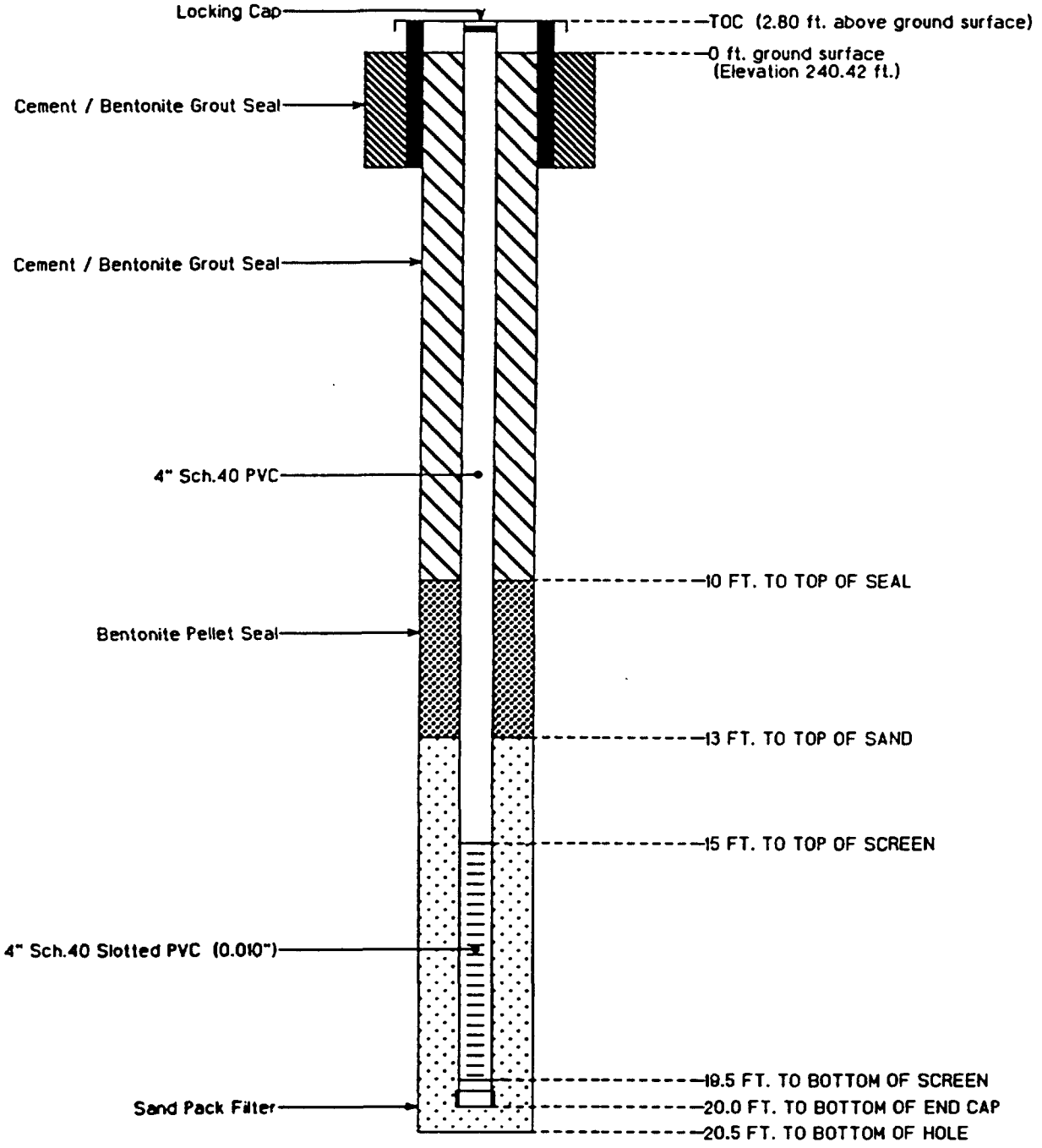
Project Name: William Prym Inc.,	Date: 10/12/97
Boring Location: AOC 6	Well Install Date: 10/12/97



Well Construction Log of MW-13

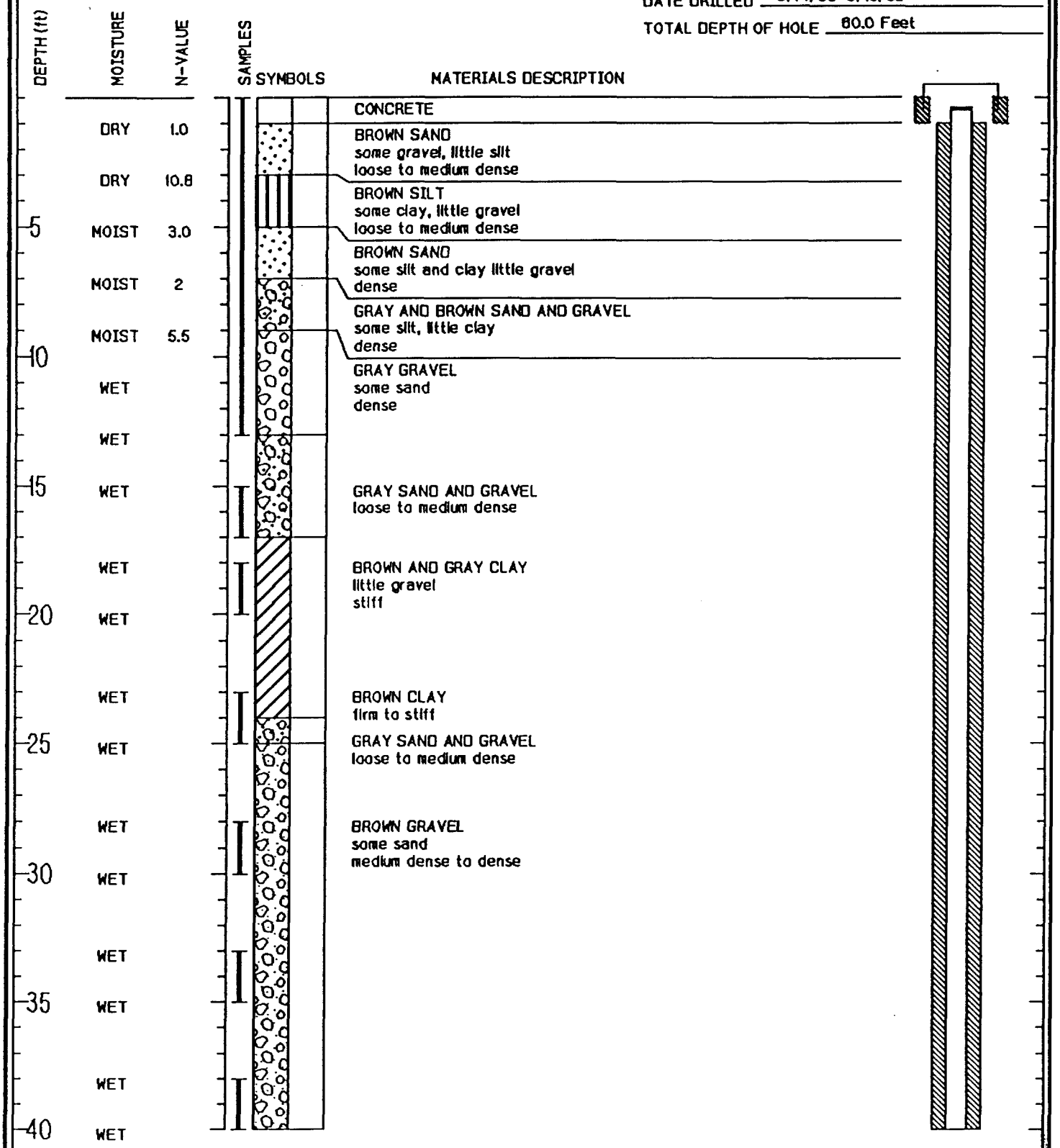
SE TECHNOLOGIES INC.,
98 VANADIUM RD
BRIDGEVILLE, PA

Project Name: William Prym Inc..	Date: 10/13/97
Boring Location: AOC 10	Well Install Date: 10/13/97



WELL MW-13d *(Page 1 of 2)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville, CT
DATE DRILLED 9/14/98-9/15/98
TOTAL DEPTH OF HOLE 80.0 Feet

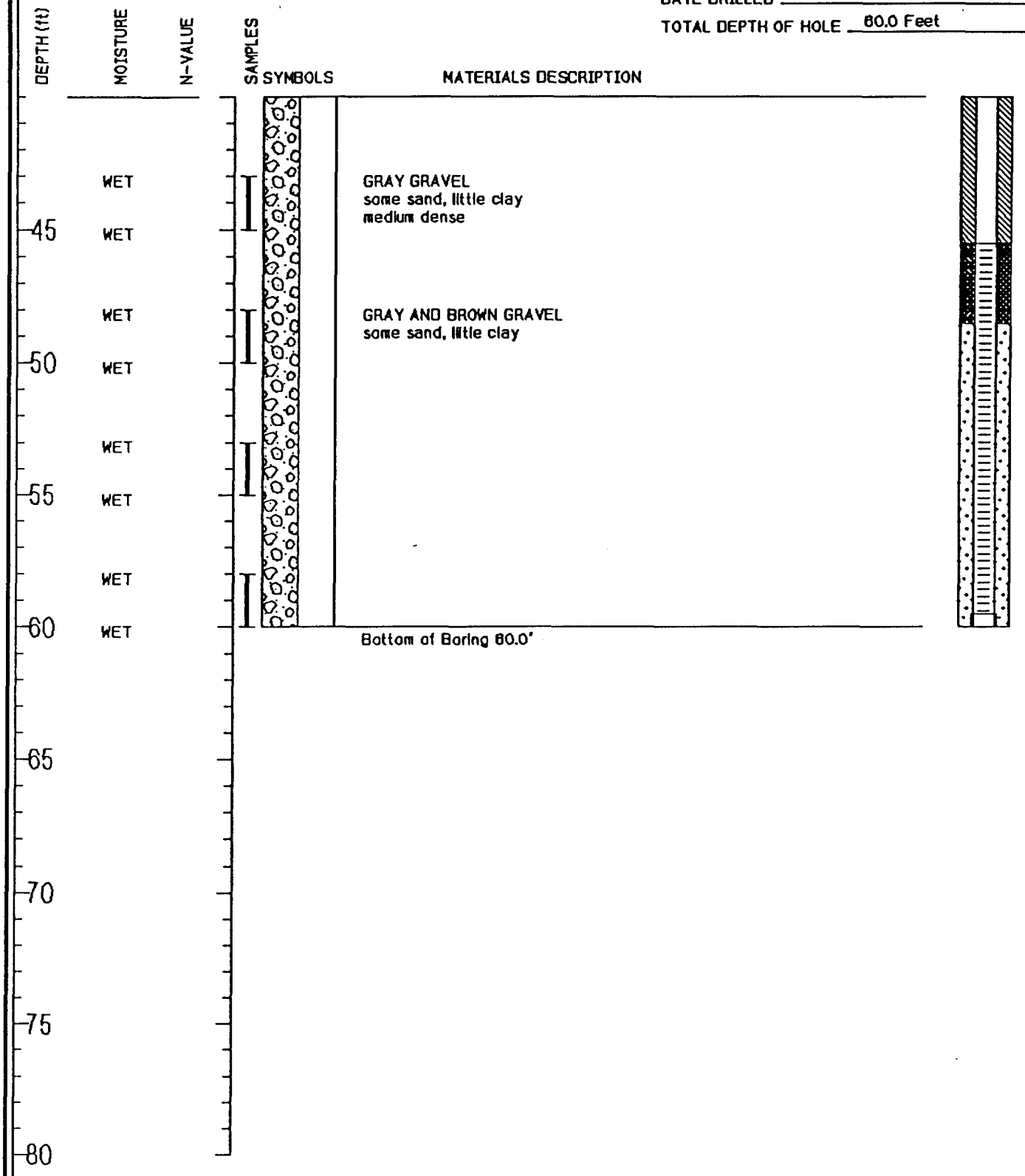


JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

WELL MW-13d *(Page 2 of 2)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville, CT
DATE DRILLED 9/14/98-9/15/98
TOTAL DEPTH OF HOLE 60.0 Feet



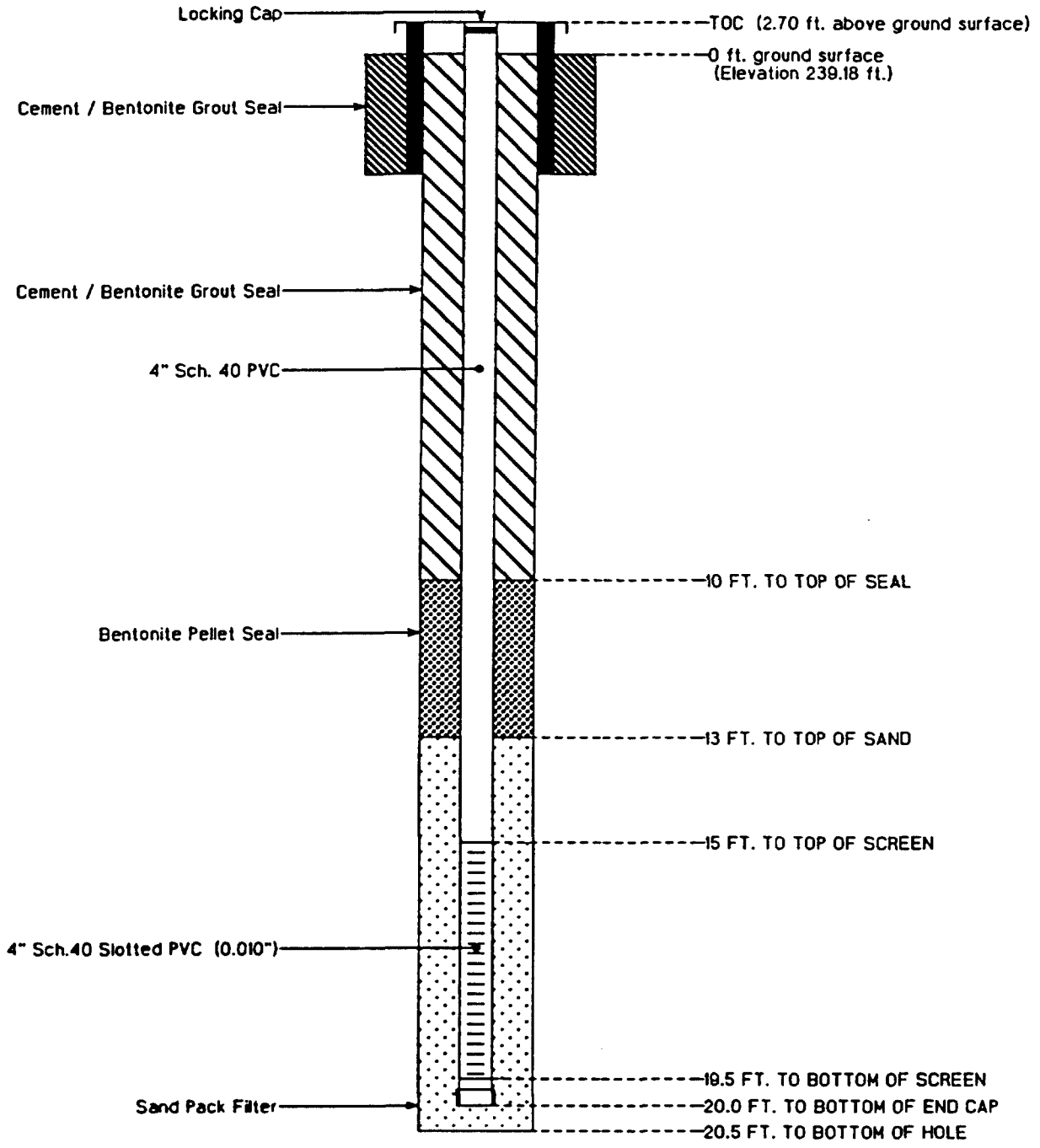
JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

Well Construction Log of MW-14

SE TECHNOLOGIES INC.,
98 VANADIUM RD
BRIDGEVILLE, PA

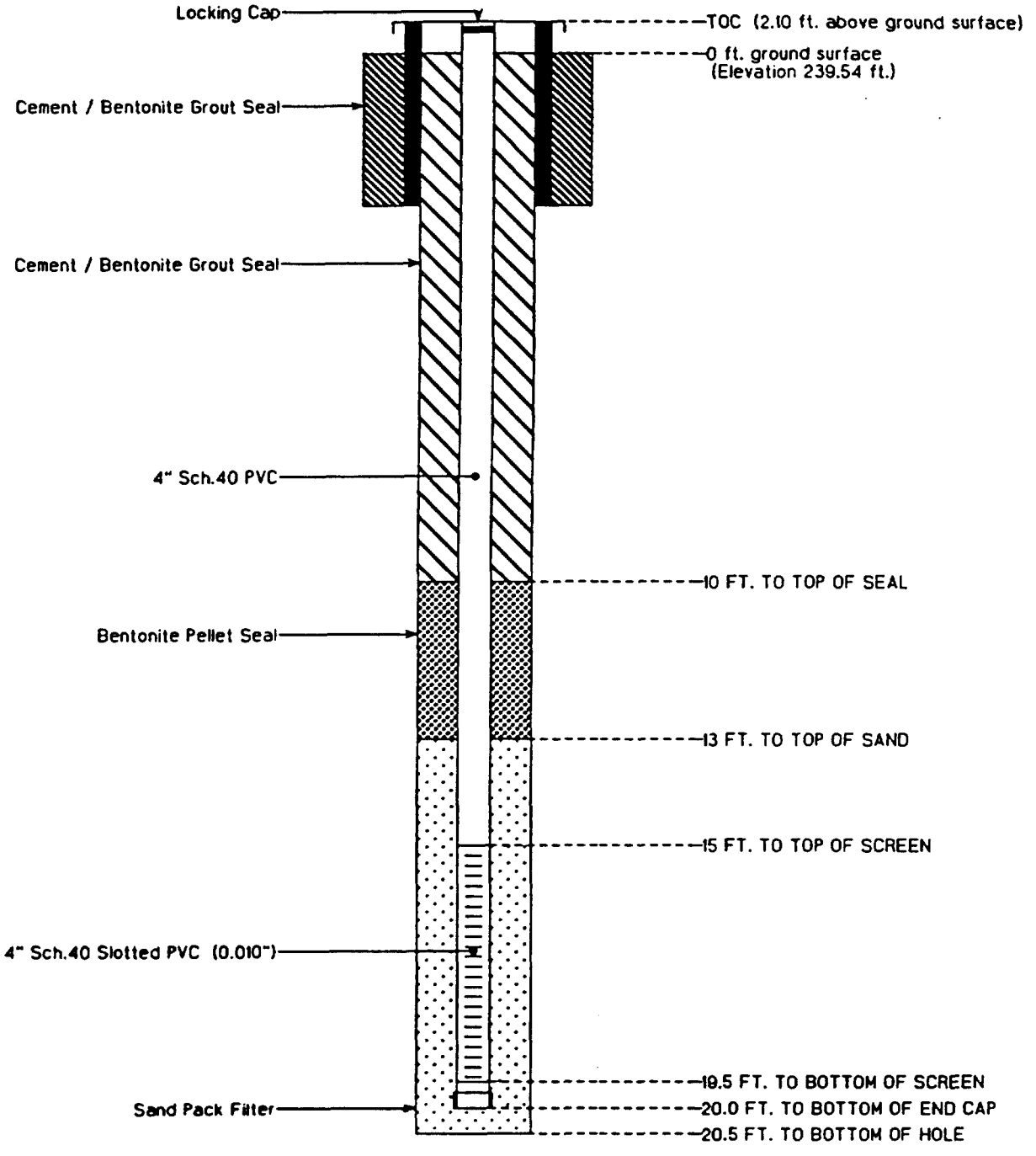
Project Name: William Prym Inc.,	Date: 10/13/97
Boring Location: AOC 10	Well Install Date: 10/13/97



Well Construction Log of MW-15

SE TECHNOLOGIES INC.,
98 VANADIUM RD
BRIDGEVILLE, PA

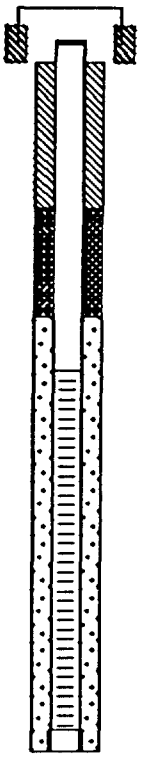
Project Name: William Prym Inc.,	Date: 10/15/97
Boring Location: AOC 10	Well Install Date: 10/15/97



WELL MW-16 *(Page 1 of 1)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville CT
DATE DRILLED 9/9/98
TOTAL DEPTH OF HOLE 20.0 Feet

DEPTH (ft)	SAMPLES		SYMBOLS	MATERIALS DESCRIPTION
				CONCRETE AND BOULDERS
	DRY	6.0		GRAY AND BROWN SAND some silt, little clay and gravel loose to medium dense
5	MOIST	1.0		GRAY GRAVEL some sand medium dense
	MOIST	1.0		BROWN SAND some gravel medium dense
	MOIST	1.2		BROWN AND GRAY SAND some gravel loose to medium dense
10	WET			GRAY GRAVEL some sand medium dense
	WET			GRAY SAND some gravel medium dense
15	WET			
	WET			
	WET			
20				Bottom of Boring 20.0'
25				
30				
35				
40				

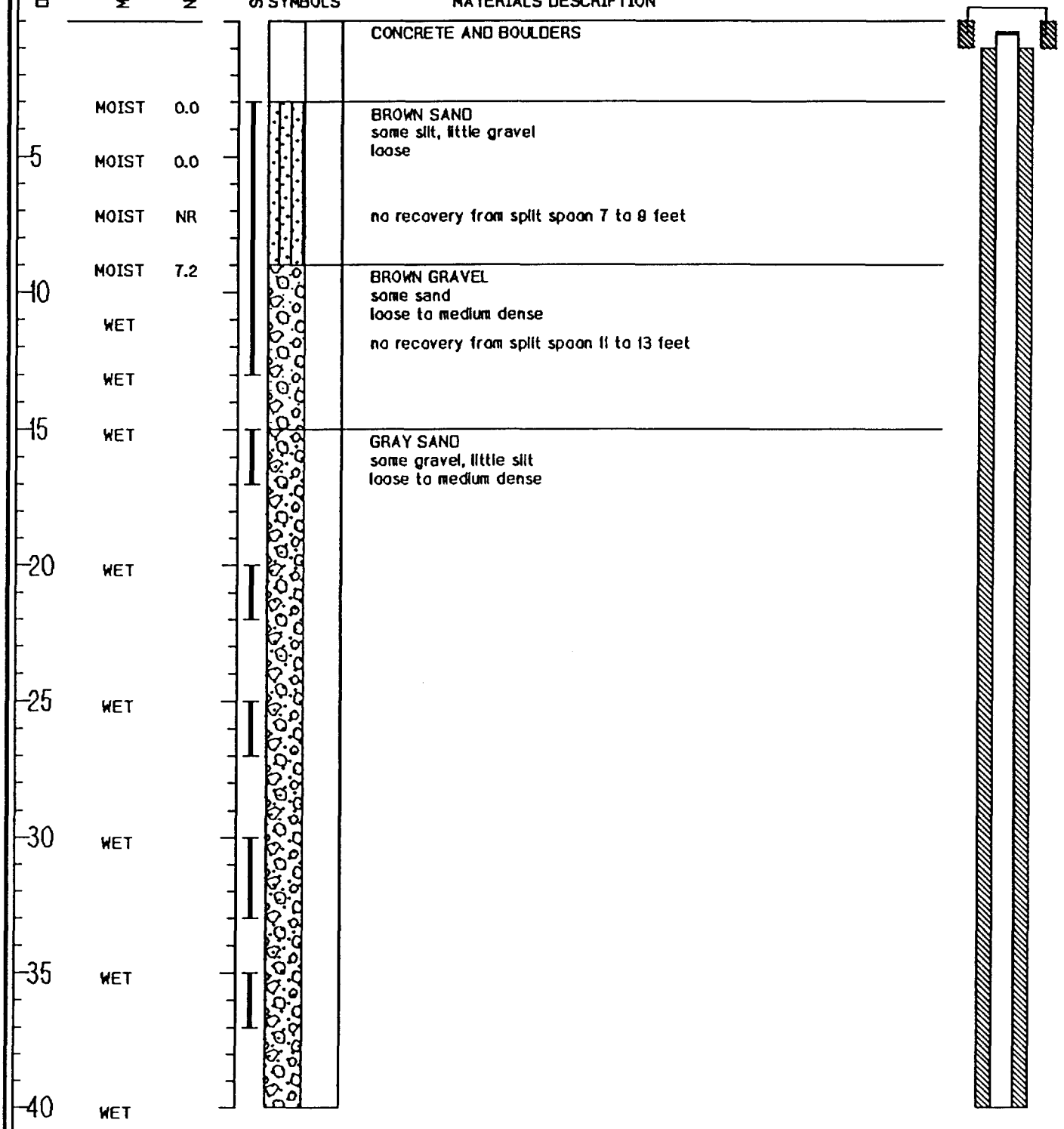


JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

WELL MW-16d *(Page 1 of 2)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville, CT
DATE DRILLED 9/16/98-9/17/98
TOTAL DEPTH OF HOLE 59.0 Feet

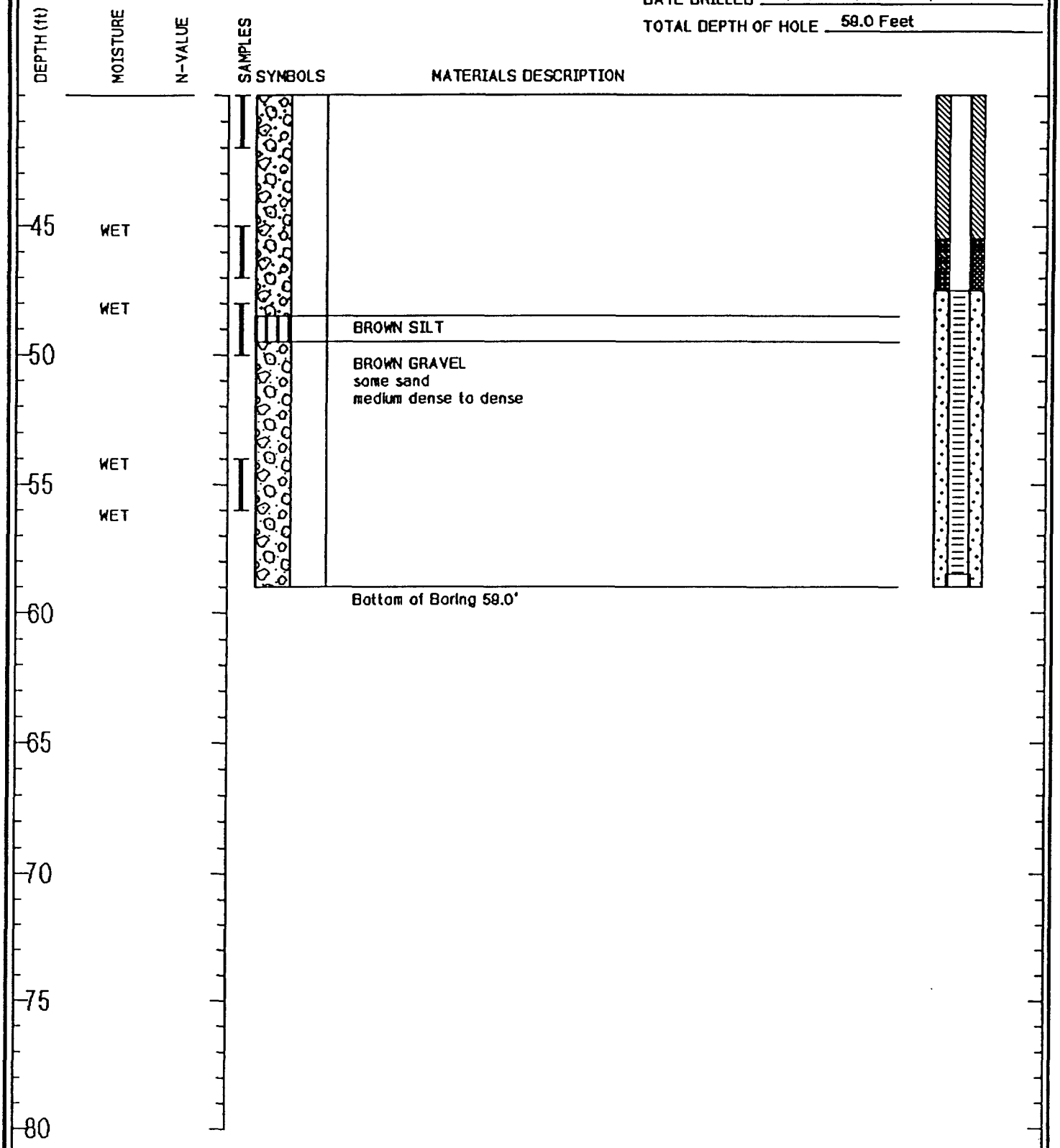


JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

WELL MW-16d *(Page 2 of 2)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville, CT
DATE DRILLED 9/16/98-9/17/98
TOTAL DEPTH OF HOLE 59.0 Feet



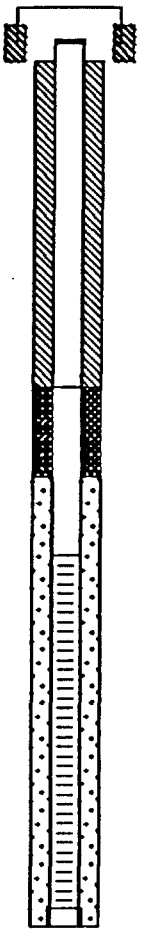
JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

WELL MW-17 *(Page 1 of 1)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville, CT
DATE DRILLED 9/18/98
TOTAL DEPTH OF HOLE 25.0 Feet

DEPTH (ft)	MOISTURE	N-VALUE	SAMPLES	SYMBOLS	MATERIALS DESCRIPTION
					CONCRETE
	MOIST	2.2			BROWN SAND some gravel, little silt loose to medium dense
	MOIST	0.0			
5	MOIST	NR			no recovery from split spoon 5 to 7 feet
	MOIST	0.0			GRAY AND BROWN GRAVEL some sand medium dense
	MOIST	0.5			BROWN AND GRAY SAND AND GRAVEL loose to medium dense
10	MOIST	0.8			BROWN SAND some gravel medium dense
	MOIST	0.5			
15	MOIST	1.2			BROWN GRAVEL some sand medium dense
	WET				
	WET				
20	WET				BROWN CLAY some silt soft to firm
	WET				BROWN GRAVEL some sand medium dense
	WET				
25	WET				no split spoon samples from 21 to 25' due to heaving sands
					Bottom of Boring 25.0'
30					
35					
40					



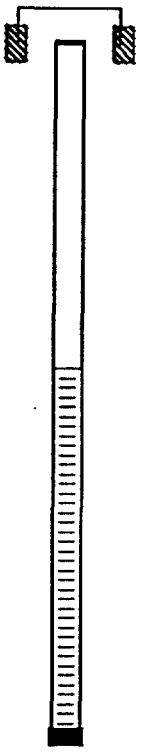
JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

WELL MW-18 *(Page 1 of 1)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville, CT
DATE DRILLED 9/10/98
TOTAL DEPTH OF HOLE 20.0 Feet

DEPTH (ft)	MOISTURE	N-VALUE	SAMPLES	SYMBOLS	MATERIALS DESCRIPTION
	DRY	0.5			BROWN SAND little gravel loose
	DRY	0.8			some brick fragments from 4 to 6"
5	MOIST	0.0			BROWN SAND some gravel medium dense
	MOIST	0.0			
10	MOIST	1.0			
	MOIST				BROWN AND GREEN SAND some gravel, very little clay dense to very dense
	WET				GREEN AND BROWN CLAY some sand, very little gravel very stiff to hard
15	WET				
	WET				
20					Bottom of Boring 20.0'
25					
30					
35					
40					



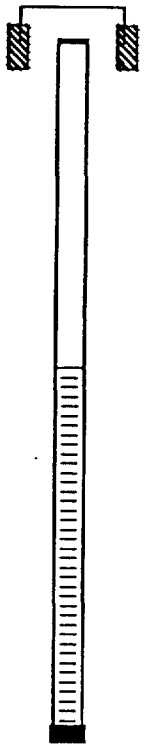
JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

WELL MW-19 *(Page 1 of 1)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville, CT
DATE DRILLED 8/10/98
TOTAL DEPTH OF HOLE 20.0 Feet

DEPTH (ft)	MOISTURE	N-VALUE	SAMPLES	SYMBOLS	MATERIALS DESCRIPTION
	DRY	0.0			BROWN SAND AND GRAVEL loose to medium dense
	DRY	0.0			some bricks from 2 to 4"
5	MOIST	0.0			BROWN SAND little gravel medium dense to dense
	MOIST	1.0			BROWN AND GRAY SAND some gravel dense
10	MOIST	1.5			GRAY AND BROWN GRAVEL some sand very dense
	MOIST	0.0			GREEN BROWN AND GRAY GRAVEL some sand very dense
	WET	2.0			
15	WET				
	WET				
20	WET				
					Bottom of Boring 20.0'
25					
30					
35					
40					



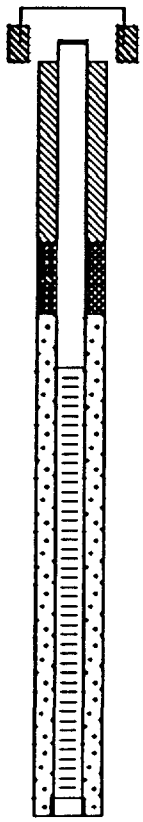
JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

WELL MW-20 *(Page 1 of 1)*

CLIENT NAME William Prym, Inc.
LOCATION Dayville, CT
DATE DRILLED 8/9/98
TOTAL DEPTH OF HOLE 22.0 Feet

DEPTH (ft)	MOISTURE	H-Nu VALUE	SAMPLES	SYMBOLS	MATERIALS DESCRIPTION
0					BROWN SAND little gravel loose
10					BROWN SAND little gravel some lenses of gray and green sand
15					BROWN SAND AND GRAVEL dense
20					Bottom of Boring 22.0'
25					
30					
35					
40					



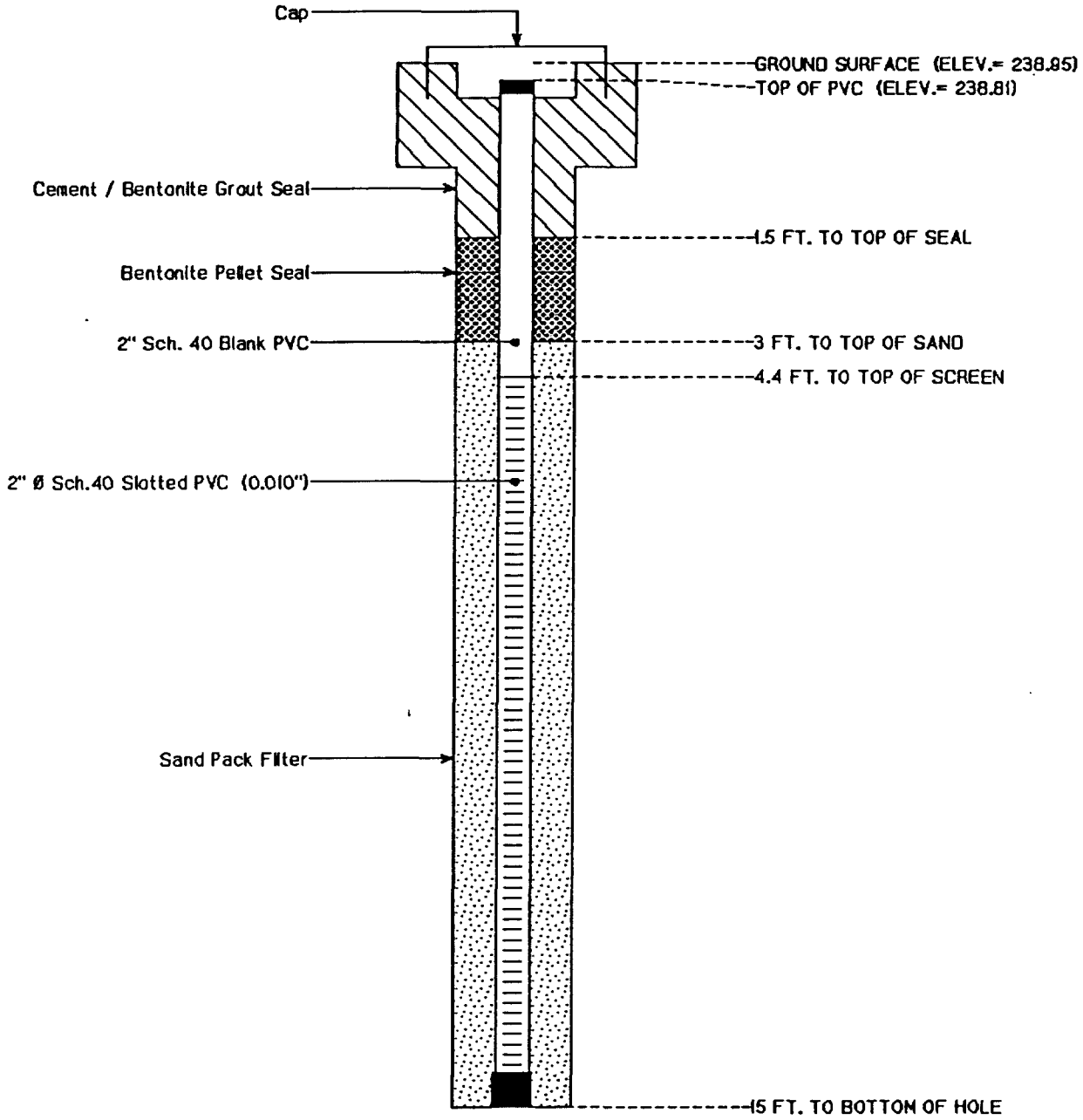
JOB NUMBER: 980322
LOGGED BY: Susan Seger

SE TECHNOLOGIES, INC.
98 VANADIUM RD. BRIDGEVILLE PA (412) 221-1100

Well Construction Log of P-1

SE Technologies, Inc.
98 Vanadium Road
Bridgeville, PA

Project Name: William Prym, Inc.	**Date:** 9/18/98
Boring Location: Dayville, CT	**Well Install Date:** 9/18/98



Well Construction Log of P-2

SE Technologies, Inc.
98 Vanadium Road
Bridgeville, PA

Project Name: William Prym, Inc.	**Date:** 8/18/98
Boring Location: Dayville, CT	**Well Install Date:** 8/18/98

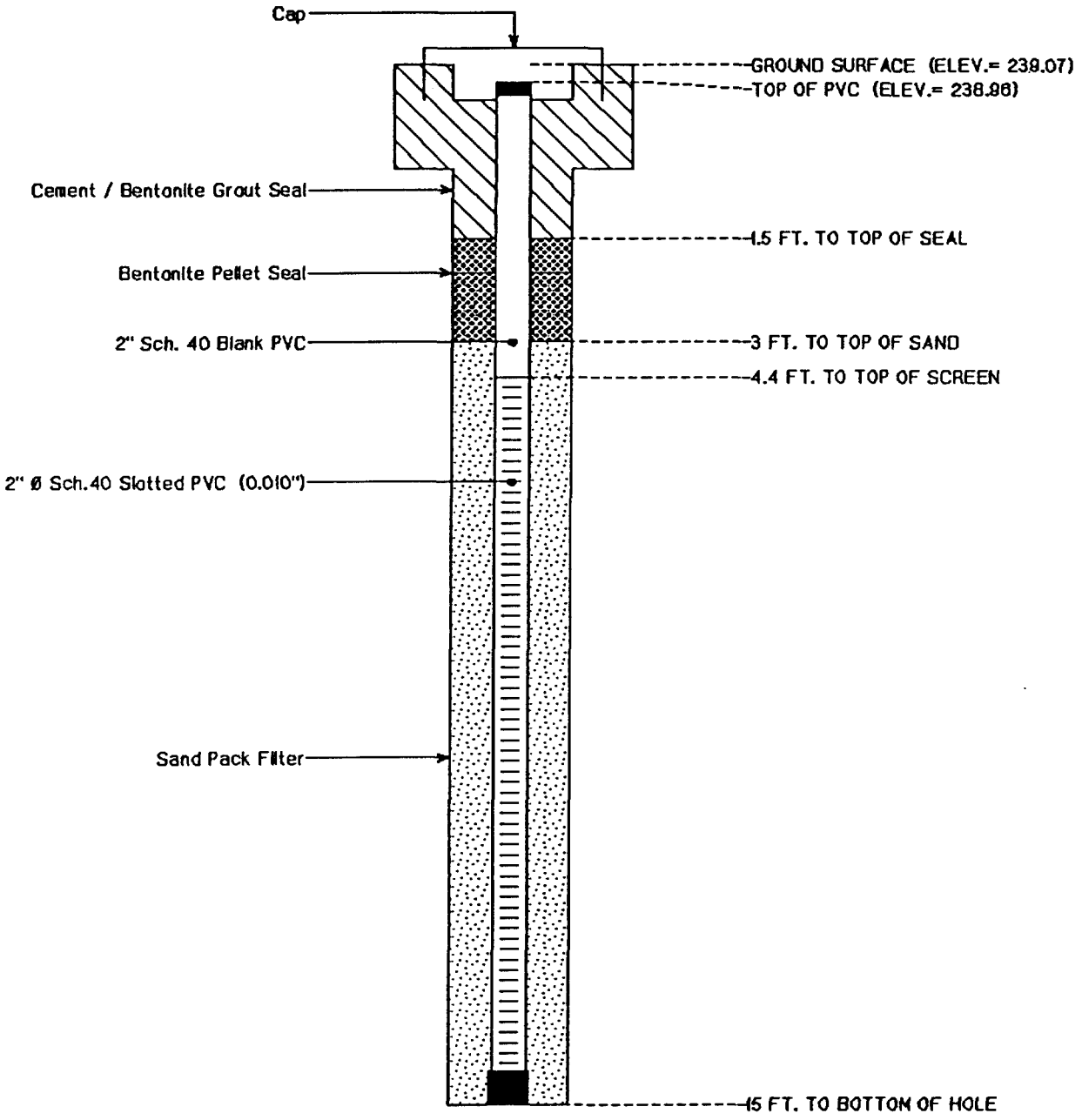


TABLE 3-9
SUMMARY OF MONITORING WELL CONSTRUCTION
PHASE II RFI
WILLIAM PRYM, INC.
DAYVILLE SITE

Monitoring Well	Top of Casing[1]	Top of Screen[2]	Screen Length[3]	Bottom of Well[2]	Depth to Bottom[3]
MW-1	245.91	240.91	5	230.93	14.98
MW-2	245.59	240.59	5	229.53	16.06
MW-3	245.98	240.98	5	230.32	15.66
MW-4	247.71	242.71	5	232.75	14.96
MW-5	252.37	242.37	10	232.87	19.50
MW-6	247.62	237.62	10	223.38	24.24
MW-7	246.73	236.73	10	227.61	19.12
MW-8	249.80	239.80	10	220.00	29.8
MW-9	248.20	243.20	5	233.60	14.6
MW-10	248.08	243.08	5	229.50	18.58
MW-10D	247.51	237.51	10	192.51	55.0
MW-11	249.77	244.77	5	219.54	30.23
MW-12	247.48	242.48	5	225.38	22.1
MW-13	240.05	235.05	5	217.25	22.8
MW-13D	239.20	224.20	15	179.20	60.0
MW-14	238.86	233.86	5	216.76	22.1
MW-15	238.44	233.44	5	215.74	22.7
MW-16	241.68	231.68	10	221.68	20.0
MW-16D	241.75	231.75	10	182.75	59.0
MW-17	246.90	236.90	10	221.90	25.0
MW-18	242.81	232.81	10	222.81	20.0
MW-19	242.81	232.81	10	222.81	20.0
MW-20	244.98	234.98	10	222.98	22.0
P-1	238.81	228.81	10	223.81	15.0
P-2	238.96	228.96	10	223.96	15.0

Notes:

1 - Feet MSL (Mean Sea Level), based on Survey conducted November 2, 1998.

2 - Measurements approximate based on well construction.

3 - Feet.

TABLE 3-10
GROUNDWATER AND SURFACE WATER ELEVATION READINGS
PHASE II RFI
WILLIAM PRYM, INC.
DAYVILLE SITE

Monitoring Well	Top of Casing[1]	GW Elevation 10/10/98	GW Elevation 12/17/98
MW-1	245.91	239.99	239.44
MW-2	245.59	240.57	239.85
MW-3	245.98	239.93	239.03
MW-4	247.71	242.22	239.95
MW-5	252.37	243.82	242.78
MW-6	247.62	230.44	229.57
MW-7	246.73	238.07	236.85
MW-8	249.80	232.38	230.33
MW-9	248.20	242.12	240.71
MW-10	248.08	238.61	237.59
MW-10D	247.51	230.87	230.15
MW-11	249.77	229.96	229.07
MW-12	247.48	232.56	231.10
MW-13	240.05	229.69	228.95
MW-13D	239.20	229.02	229.34
MW-14	238.86	229.78	229.02
MW-15	238.44	229.68	228.93
MW-16	241.68	230.62	229.94
MW-16D	241.75	230.55	229.89
MW-17	246.90	230.98	230.26
MW-18	242.81	230.03	229.41
MW-19	242.81	229.87	229.71
MW-20	244.98	231.68	230.44
P-1	238.81	228.86	227.95
P-2	238.96	228.99	228.27
SG-1	225.29	228.50	227.69
SG-2	225.85	228.50	227.65
SG-3	245.09	243.09	242.77
SG-4	225.57	229.15	228.07
SG-5	240.95	243.20	242.69
SG-6	246.06	243.21	242.87
SG-7	226.08	229.00	228.08

Notes:

1 - Feet MSL (Mean Sea Level), based on Survey conducted November 2, 1998.

TABLE 3-7
SUMMARY OF ANALYTICAL RESULTS - GROUNDWATER INORGANICS
PHASE II RFI
WILLIAM PRYM, INC.
DAYVILLE SITE

Field Sample ID	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	EPA RISK-BASED CONCENTRATIONS
Date Collected	10/13/98	10/13/98	10/13/98	10/12/98	10/12/98	10/13/98	10/14/98	10/12/98	TAP WATER
Cyanide (MG/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	
Metals, Dissolved (MG/L)									
BARIUM	<0.010	<0.010	<0.010	0.012	0.026	<0.010	<0.010	0.014	2.6
CADMIUM	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.018
COPPER	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	1.5
LEAD	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
ARSENIC	0.0041	<0.0020	<0.0020	0.009	<0.0020	<0.0020	0.0033	<0.0020	0.000045
NICKEL	0.0057	0.032	0.16	<0.0030	<0.0030	<0.0030	0.024	<0.0030	0.73
Metals, Total (MG/L)									
BARIUM	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	2.6
CADMIUM	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.018
COPPER	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	1.5
LEAD	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
ARSENIC	0.0062	0.0026	<0.0020	0.012	<0.0020	<0.0020	0.006	<0.0020	0.000045
NICKEL	0.0076	0.029	0.20	<0.0030	<0.0030	<0.0030	0.051	<0.0030	0.73

Field Sample ID	MW-9	MW-10	MW-10D	MW-11	MW-12	MW-13	MW-13D	MW-14	EPA RISK-BASED CONCENTRATIONS
Date Collected	10/13/98	10/13/98	10/14/98	10/14/98	10/14/98	10/14/98	10/15/98	10/15/98	TAP WATER
Cyanide (MG/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	
Metals, Dissolved (MG/L)									
BARIUM	<0.010	0.047	<0.010	<0.010	0.015	0.014	<0.010	<0.010	2.6
CADMIUM	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.018
COPPER	<0.024	0.029	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	1.5
LEAD	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
ARSENIC	0.0082	0.011	0.042	0.0074	<0.0020	<0.0020	<0.0020	0.0038	0.000045
NICKEL	0.065	0.34	0.0044	0.0092	<0.0030	0.84	0.0072	<0.0030	0.73
Metals, Total (MG/L)									
BARIUM	<0.010	0.059	0.012	<0.010	<0.010	<0.010	<0.010	0.024	2.6
CADMIUM	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.018
COPPER	<0.024	0.10	0.028	<0.024	<0.024	<0.024	<0.024	0.030	1.5
LEAD	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
ARSENIC	0.0078	0.017	0.051	0.011	<0.0020	0.0023	<0.0020	0.0063	0.000045
NICKEL	0.066	0.45	0.0055	0.0067	<0.0030	0.76	0.009	<0.0030	0.73

Field Sample ID	MW-15	MW-16	MW-16D	MW-17	MW-18	MW-19	MW-20		EPA RISK-BASED CONCENTRATIONS
Date Collected	10/15/98	10/16/98	10/15/98	10/14/98	10/16/98	10/15/98	10/14/98		TAP WATER
Cyanide (MG/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020		
Metals, Dissolved (MG/L)									
BARIUM	<0.010	<0.010	<0.010	0.017	<0.010	<0.010	0.017		2.6
CADMIUM	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		0.018
COPPER	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024		1.5
LEAD	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050		
ARSENIC	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020		0.000045
NICKEL	<0.0030	<0.0030	<0.0030	<0.0030	0.94	<0.0030	0.20		0.73
Metals, Total (MG/L)									
BARIUM	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	0.023		2.6
CADMIUM	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		0.018
COPPER	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024		1.5
LEAD	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050		
ARSENIC	<0.0020	<0.0020	<0.0020	<0.0020	0.0024	<0.0020	0.0061		0.000045
NICKEL	<0.0030	<0.0030	<0.0030	<0.0030	0.84	<0.0030	0.30		0.73

The samples for total metals were collected from 11/17 through 11/19/98.

TABLE 3-8
SUMMARY OF ANALYTICAL RESULTS -GROUNDWATER ORGANICS
PHASE II RFI
WILLIAM PRYM, INC.
DAYVILLE SITE

Field Sample ID	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	EPA RISK-BASED CONCENTRATIONS
Date Collected	10/13/98	10/13/98	10/13/98	10/12/98	10/12/98	10/13/98	10/14/98	10/12/98	TAP WATER
Volatiles (ug/l)									
BROMOBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
BROMODICHLOROMETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.17
BROMOFORM	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.33
BROMOMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.52
CARBON TETRACHLORIDE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.16
CHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	35
CHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.6
2-CHLOROETHYL VINYL ETHER	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
CHLOROFORM	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.15
CHLOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5
DIBROMOCHLOROMETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.13
DIBROMOMETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
1,2-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	64
1,3-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14
1,4-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.47
DICHLORODIFLUOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	350
1,1-DICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	800
1,2-DICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.12
1,1-DICHLOROETHENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.044
CIS-1,2-DICHLOROETHENE	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50	61
TRANS-1,2-DICHLOROETHENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	120
1,2-DICHLOROPROPANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.16
CIS-1,3-DICHLOROPROPENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
TRANS-1,3-DICHLOROPROPENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
METHYLENE CHLORIDE	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	4.10
1,2,3-TRICHLOROPROPANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.0015
1,1,1,2-TETRACHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.41
1,1,2,2-TETRACHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.053
TETRACHLOROETHENE	<0.50	<0.50	<0.50	3.5	<0.50	<0.50	<0.50	<0.50	1.1
1,1,1-TRICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	540
1,1,2-TRICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.19
TRICHLOROETHENE (TCE)	<0.50	<0.50	<0.50	0.90	<0.50	<0.50	<0.50	<0.50	1.6
TRICHLOROFLUOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,300.00
VINYL CHLORIDE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.019

1 = CTDEP Remediation Criteria
EPA Region III Risk Based Concentrations for Tap Water, April 1998

TABLE 3-8
SUMMARY OF ANALYTICAL RESULTS -GROUNDWATER ORGANICS
PHASE II RFI
WILLIAM PRYM, INC.
DAYVILLE SITE

Field Sample ID	MW-9	MW-10	MW-10D	MW-11	MW-12	MW-13	MW-13D	MW-14	EPA RISK-BASED CONCENTRATIONS
Date Collected	10/13/98	10/13/98	10/14/98	10/14/98	10/14/98	10/14/98	10/15/98	10/15/98	TAP WATER
Volatiles (ug/l)									
BROMOBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
BROMODICHLOROMETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.17
BROMOFORM	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.33
BROMOMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.52
CARBON TETRACHLORIDE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.16
CHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	35
CHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.6
2-CHLOROETHYL VINYL ETHER	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
CHLOROFORM	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.15
CHLOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5
DIBROMOCHLOROMETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.13
DIBROMOMETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
1,2-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	64
1,3-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14
1,4-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.47
DICHLORODIFLUOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	350
1,1-DICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	800
1,2-DICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.12
1,1-DICHLOROETHENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.044
CIS-1,2-DICHLOROETHENE	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	61
TRANS-1,2-DICHLOROETHENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	120
1,2-DICHLOROPROPANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.16
CIS-1,3-DICHLOROPROPENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
TRANS-1,3-DICHLOROPROPENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
METHYLENE CHLORIDE	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	4.10
1,2,3-TRICHLOROPROPANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.0015
1,1,1,2-TETRACHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.41
1,1,2,2-TETRACHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.053
TETRACHLOROETHENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.75	1.1
1,1,1-TRICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	0.68	<0.50	3.5	540
1,1,2-TRICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.19
TRICHLOROETHENE (TCE)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6
TRICHLOROFLUOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,300.00
VINYL CHLORIDE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.019

1 = CTDEP Remediation Criteria
EPA Region III Risk Based Concentrations for Tap Water, April 1998

TABLE 3-8
SUMMARY OF ANALYTICAL RESULTS -GROUNDWATER ORGANICS
PHASE II RFI
WILLIAM PRYM, INC.
DAYVILLE SITE

Field Sample ID	MW-15	MW-16	MW-16D	MW-17	MW-18	MW-19	MW-20	EPA RISK-BASED CONCENTRATIONS TAP WATER
Date Collected	10/15/98	10/16/98	10/15/98	10/16/98	10/15/98	10/15/98	10/14/98	
Volatiles (ug/l)								
BROMOBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
BROMODICHLOROMETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.17
BROMOFORM	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.33
BROMOMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.52
CARBON TETRACHLORIDE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.16
CHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	35
CHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.6
2-CHLOROETHYL VINYL ETHER	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
CHLOROFORM	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.15
CHLOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5
DIBROMOCHLOROMETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.13
DIBROMOMETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
1,2-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	64
1,3-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14
1,4-DICHLOROBENZENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.47
DICHLORODIFLUOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	350
1,1-DICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	800
1,2-DICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.12
1,1-DICHLOROETHENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.044
CIS-1,2-DICHLOROETHENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.71	61
TRANS-1,2-DICHLOROETHENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	120
1,2-DICHLOROPROPANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.16
CIS-1,3-DICHLOROPROPENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
TRANS-1,3-DICHLOROPROPENE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
METHYLENE CHLORIDE	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	4.10
1,2,3-TRICHLOROPROPANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.0015
1,1,1,2-TETRACHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.41
1,1,2,2-TETRACHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.053
TETRACHLOROETHENE	<0.50	<0.50	<0.50	0.93	<0.50	<0.50	30	1.1
1,1,1-TRICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	540
1,1,2-TRICHLOROETHANE	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.19
TRICHLOROETHENE (TCE)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.2	1.6
TRICHLOROFLUOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,300.00
VINYL CHLORIDE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.019

1 = CTDEP Remediation Criteria
EPA Region III Risk Based Concentrations for Tap Water, April 1998

2.6 General Groundwater

The Site is located in the Five Mile river valley, a north-south trending valley. The underlying strata is comprised of 80 to 100 feet of glacial sediments underlain by crystalline bedrock. The bedrock and surficial geology information of the general area is well documented by the U.S. Geological Survey and summarized in the Groundwater Assessment Report (Lancy, 1986). The glacial sediments consist primarily of coarse sand and gravel, with occasional lenses of finer materials, including silts and clays. This thick, unconsolidated aquifer is highly productive and used by residents and industry in the area. It should be noted that CTDEP has classified groundwater in the immediate vicinity of the site as GB, a classification not suitable for drinking water without treatment.

A total of fifteen shallow groundwater monitoring wells (MW-1 to MW-15) were present on the Site at completion of the Phase I RFI. Eight of these wells (MW-1 to MW-8) were installed in association with the former hydroxide sludge lagoons (AOC No. 2) and the other seven wells were installed as part of the Phase I RFI requirements. The locations of these monitoring wells are depicted in Figure 2-1. Two water supply wells for the facility, one screened within the shallow aquifer and one screened within the deeper bedrock aquifer, are also present on the Site. More detailed information on these supply wells is available within the Description of Current Conditions (DOCC), the RFA, and various other reports.

2.6.1 Previous Investigations of Groundwater

Groundwater monitoring data has been collected at the Prym facility for more than ten years. In addition, a groundwater assessment was performed in 1985. As a result of these efforts, the

general groundwater flow pattern for the shallow aquifer had been established in the immediate vicinity of AOC No. 2.

Groundwater flow patterns in developed portions of the Site are controlled by local topography and permeability of the soils and fill as well as the diversion of surface water flow from the Five Mile River into the pond and raceway network. By diverting a portion of the river's flow into Dayville Pond and into the raceway, a localized perched groundwater table was established in the vicinity of the existing Mill Pond (AOC No. 1) and the former sludge lagoons (AOC No. 2). An apparent aquitard beneath this portion of the property slows the rate of downward movement of this perched groundwater as it seeks the level of the local groundwater table. Both the headrace and pond appear to act as local groundwater recharge zones.

It is believed the woolen mill was originally built at the edge of a swamp located at the site of present day AOCs No. 1 and No. 2 (the original mill pond). The probable reason for selecting this site was that the original mill pond existed as a swamp, maintaining a higher water level than the adjacent river. This differential was used to power the mill. For the original mill pond area swamp to maintain a higher water level, it had to have an underlying soil layer of low permeability to create a perched water table. This natural phenomenon was exploited by diversion of river water into the swampy area, creating the original mill pond.

Historic groundwater monitoring data plus additional data gathered during the Phase I RFI determined that minor shallow groundwater contamination has resulted from the former sludge lagoons (AOC No. 2). In addition, the Phase I RFI indicated that some shallow groundwater contamination may have resulted from past activities within the former plating room (AOC No. 10) and the Mill Pond (AOC No. 1). The groundwater investigation contained within the Phase II RFI was designed to further define the shallow groundwater contamination in each of these areas, better define the interaction between the Five Mile River and shallow groundwater and determine the interaction between the shallow and deeper zones of the overburden aquifer.

2.6.2 Phase II RFI Investigation of Groundwater

The groundwater monitoring network in place at completion of the Phase I RFI did not adequately monitor shallow groundwater at locations downgradient of the AOCs that had been found to be potential sources of groundwater contamination. Accordingly, installation of additional wells was necessary.

Four additional shallow wells and two deep wells were installed to further define groundwater flow and quality in the vicinity of AOC No. 10. One shallow well (MW-16) was installed along the exterior of the manual plating room. A second well MW-17 was to also be installed in this area, but was erroneously installed approximately 130 feet further west along the main building wall and is actually west of the manual plating room. The intent of these wells was to help determine if the manual plating operations have had an impact on the shallow groundwater and help define the interaction of shallow groundwater in this area with the Tail Race. Impact of the improper placement of well MW-17 is discussed in Section 3.6.

The other two shallow wells (MW-18 and MW-19) were installed through the automatic plating room floor to give information on shallow groundwater quality beneath the plating room and determine whether groundwater in this area is flowing towards the Tail Race or the Five Mile River. Due to difficulties encountered during installation (see Section 3.2.1), the diameter of these

two wells were not in accordance with the Phase II RFI Work Plan, being 0.75 inch rather than 2 inch.

One deep well, MW-13D, was installed adjacent to MW-13 southeast of AOC No. 10. This well was installed to better define the vertical extent of nickel detected in MW-13 and provide data on the vertical groundwater gradient and stratigraphy in this area.

A second deep well, MW-16D was installed adjacent to MW-16 at AOC No. 10. This well was installed provide insight as to the horizontal and vertical extent of shallow contamination detected in the vicinity of the Mill Pond (AOC No.1), to provide further information on the general Site stratigraphy and hydrology and to determine the impact, if any, the manual plating line has had on the deeper aquifer.

Groundwater adjacent to AOC No. 2 was further defined with installation of an additional shallow monitoring well (MW-20) and a deep well (MW-10D) as depicted in Figure 2-1. Data from the existing wells in this area combined with these new wells provides more detail on the extent of nickel detected in groundwater in this portion of the Site, Site stratigraphy and vertical gradient. In addition, MW-10D also provides a third point in the deeper zone of the overburden aquifer, thereby allowing a determination of general flow direction at this depth.

In addition to the wells mentioned above, two piezometers (P1 and P2) were installed in the parking lot west of the river. These piezometers were installed to determine the interaction between shallow groundwater and the Five Mile River east of the Site.

All well installations (with the exception of MW-17 as noted above) and groundwater sampling took place in accordance with the Phase II RFI Work Plan. VOCs were analyzed by Method 8021 rather than Method 524 as specified in the Work Plan. The impact of these variations is discussed in Section 3.6.

ATTACHMENT CA750-B

Closure Certification Report Excerpts
Mill Pond Verification Data
Tail Race Verification Data

WILLIAM PRYM, INC.

Lagoon Closure Certification

Closure of the William Prym, Incorporated, electroplating sludge lagoons began during the week of May 8, 1989, with mobilization of equipment and site preparation.

The closure plan dated December 29, 1987, modified on February 29, 1988 and July 29, 1988, was conditionally approved by the Connecticut Department of Environmental Protection (CTDEP) and U.S. Environmental Protection Agency, Region I by letter dated August 19, 1988. Formal approval of the closure plan was received from the CTDEP on February 28, 1989 after receipt of all requested information discussed in their August 19, 1988 letter. These approval letters are provided as Attachment I.

The following is a chronological summary of closure activities that occurred and of those witnessed during my inspections and my designated representatives' inspections of William Prym's electroplating sludge lagoons. Geo-Con Incorporated performed the actual closure of the lagoons.

1.0 PRELIMINARY VERIFICATION TESTING

Following the conditional approval of the closure plan on August 19, 1988, Lancy Environmental Services Company conducted the verification testing program as specified in the closure plan.

The testing program was to involve two phases. The intent of this verification program was to determine the extent of berm side wall contamination and to statistically calculate the number of Phase II verification samples that would be collected and analyzed. Provided no samples exceeded the health based clean-up standards specified in Table 6-2 of the approved closure plan, excavation of the berm side walls would not be necessary, therefore, Phase II of verification testing would not be required.

Phase I of the verification testing involved collection of ten (10) soil samples at depths of 0 - 6 inches into the lagoon interior berms (side walls). One additional sample was also collected from the most heavily contaminated area of the lagoon for Appendix IX parameters. Samples were collected on September 27, 1988. Based on sample analyses, nine out of ten samples exceeded the soil ingestion limit for nickel. Because these sample results exceeded the health based criteria, berm side wall excavation was required.

The statistical procedure specified in the approved closure plan was applied to the ten soil samples collected in September, 1988. Using this procedure would have resulted in a Phase II verification sampling program with over 100 samples. An additional statistical method was employed and again 100 samples would be required. At the suggestion of USEPA Region I, Lancy Environmental Services Company collected a second series of berm soil

samples on April 11, 1989, which would reflect conditions following excavation of one foot of berm material.

Eight soil samples were collected at depths of 12 to 18 inches into the berms. Based on this data, only one sample (#7) greatly exceeded the health based criteria specified in the approved closure plan. The statistical formulas, however, again yielded an excessive number of Phase II verification samples. A letter was written to the CTDEP by Lancy Environmental Services Company On May 3, 1989, (included in Attachment I) explaining the problems with the statistical methods and proposed an alternative approach.

Lancy proposed that initial on-site closure activities involve excavation of at least one foot of soil from the sample #7 location. Four additional samples would then be collected from this area, representing more consistent data with the other seven sample locations. The SW-846 statistical procedure would then be applied to all eight data points and the number of Phase II verification samples determined.

2.0 STABILIZATION OF LAGOON FLOORS

On Monday, May 15, 1989, a CAT EL 240 excavator was utilized to initiate excavation of the berm side walls. The lagoon floors were wet, however, it was not expected to pose a problem for heavy equipment access. Excavation of the berm side walls was to occur from inside the lagoons. Test pits were excavated with the CAT EL 240. It was evident that 3 to 6 feet of wet bottom existed. It was not possible to use any equipment in the lagoon floor area until the bottom was stable. A gravel ramp was placed into the western lagoon on May 16, 1989 and was extended into the eastern lagoon on May 17, 1989. The ramp was placed in the lagoons to allow several drainage

sumps to be constructed in the wet base for dewatering. All accumulated water was pumped to William Prym's waste water treatment plant for treatment.

The CTDEP was contacted on May 17, 1989 regarding the use of cement kiln dust to physically stabilize the lagoon floors. Various mixtures of the wet base material from the lagoons and cement kiln dust, portland cement and lime were prepared on May 17, 18 and 19, 1989, in unconfined compressive strength cylinders and allowed to stand at least 72 hours prior to testing. The optimum mixture was determined to be 20 percent cement kiln dust. This was addressed in a May 23, 1989 letter to the CTDEP (included in Attachment I). Seven truck loads (174 tons) of cement kiln dust were added to the lagoon floors from May 22 through May 24, 1989. The lagoon floors were then sufficiently stabilized to support heavy equipment.

3.0 REMOVAL OF CONTAMINATED BERM MATERIALS

Approximately 12 yd^3 of soil were excavated from the western lagoon in the vicinity of the April 11, 1989 Sample #7 location. This excavation took place from outside the lagoon perimeter from May 11 through 18, 1989.

Four soil samples were then collected from this area on both May 16 and May 18, 1989. Of the four soil samples collected on May 18, 1989, the one with the highest total nickel value was selected for EP Toxicity Leachate analysis. The analytical results from this sample and the seven other samples collected on April 11, 1989 were subjected to the SW-846 statistical evaluation proposed in Lancy's May 3, 1989 letter to the CTDEP. A total of eight random berm soil samples would need to be collected during the Phase II verification testing program based on this statistical approach. A total of

ten random sample locations were, however, selected at my direction. Verification sampling is further discussed in Section 4.0.

On May 30, 1989, actual excavation of the one (1) foot of berm soils throughout the lagoons began. A staging area was prepared during the mobilization and site preparation phase of closure which included a 40 foot x 60 foot area bermed and lined with a 40 mil HDPE liner. The liner was held in place with a layer of 3/8 inch gravel. This staging area would serve as a contaminated soil storage area. A smaller bermed area, lined with 80 mil HDPE was also prepared west of the soil staging area for pressure washing of stones that would be screened out from the excavated contaminated soils. A Read Screen - All was used for screening.

Screening was necessitated as an indirect consequence of the land disposal restrictions for F006 wastes. Contaminated soil from William Prym's lagoons did not meet the treatment standards specified in 40 CFR 280 for F006 wastes, and required treatment prior to disposal in any hazardous waste landfill. Available treatment facilities could only accept the contaminated soil. Large rocks were pressure washed and placed back in the lagoons. The May 3, 1989 letter to the CTDEP from Lancy Environmental Services Company explains this issue.

From May 30, 1989 through June 14, 1989, a total of 528 tons or approximately 400 yd^3 of contaminated soil were excavated from the two hazardous waste electroplating sludge lagoons using the CAT EL 240 hydraulic excavator. Contaminated soils were placed in the lined soil staging area and subsequently into lined roll-off boxes to await disposal.

Sealand Environmental Services, a licensed hazardous waste transporter, ID #CTD058052180, shipped 23 truck loads of soil to Stablex of Canada Inc., ID #CND000000002, and 6 loads to Envirite Corporation in York, Pennsylvania, ID #PAD010154045, for treatment and disposal as a hazardous waste (F006). All hazardous waste manifests are included as Attachment II.

All contaminated soil was screened and placed in the lined soil staging area prior to transportation off-site. Rocks and stones were separated through the Read Screen - All and stockpiled in the lined washing area and pressure washed. During the pressure washing process, a total of four water samples were collected following decontamination of the stones. Laboratory analysis of the wash waters indicated all constituents were below the health based standards specified in the approved closure plan. Laboratory analysis reports from Eastern Scientific Associates are included as Attachment III.

4.0 PHASE II VERIFICATION TESTING

4.1 Verification Process

Required verification sampling and analysis was specified in the approved closure plan and Lancy Environmental Services Company, May 3, 1989 letter. A total of ten soil sampling locations were selected at random, based on the SW-846 statistical procedure to insure that the specified health based clean-up standards were met. A sample grid was established along the lagoon side wall perimeter. The grid was numbered from 1 to 53. A random number table was selected from the Handbook of Tables for Probability and Statistics, Chemical Rubber, 1968, W. H. Beyer. Numbers were obtained from column 6, taking the last two digits from left to right. The first ten numbers less than or equal to 53 were selected.

Two background soil samples were collected on May 17, 1989 from an area several hundred feet northwest of the impoundments. The purpose of the background samples was to show that arsenic is present at low levels in the background soil. The total arsenic health based clean-up criteria was 0.02 mg/Kg. The average of the two background samples was 12.7 mg/Kg as per the Eastern Scientific lab analysis report dated May 30, 1989 (included in Attachment III). Only the leachable arsenic health based criteria was considered appropriate as background soils exceeded the total arsenic criteria.

Twenty-two soil samples were collected from May 30 to June 14, 1989 from the ten locations selected at depths of 0 - 6 inches into the vertical side walls. See Attachment IV for sample locations. Samples were collected with a trowel and stainless steel spatulas. Upon completion of the initial laboratory analysis by Eastern Scientific Associates, only two of the ten samples met the health based clean-up criteria specified in the approved closure plan. Additional soil excavation was initiated between the mid-points of the closest sample locations adjacent to those of concern. At a minimum, a ten foot width of soil was excavated in the vicinity of the affected area. Subsequent soil sample analysis and additional excavation occurred in the berm area until the health based clean-up criteria were met for nine of the ten locations. Laboratory analysis reports from Eastern Scientific are included in Attachment III.

Several of the subsequent laboratory test reports indicate total and leachable nickel values only. This reduction in the health based clean-up criteria list was approved by the CTDEP on June 9, 1989 and documented in a letter of July 7, 1989 from William Prym, Inc. (included in Attachment I).

Verification sample location 10 did not meet the health based clean-up criteria specified for nickel. Excavation of this area encroached upon a portion of William Prym's manufacturing facility. Four concrete footers were located to the south of sample location 10, that supported a brick overhang portion of the building used for storage of old machinery. Excavation actually proceeded beneath the black top roadway between two of the concrete footers. Due to the concern over stability of the overhang and the roadway, excavation was discontinued. The July 7, 1989 letter to the CTDEP indicted the remaining levels of total and leachable nickel in this area. On July 6, 1989, a concrete cap was poured over the affected area to seal off rainwater infiltration from contact with these soils.

4.2 CONCLUSIONS

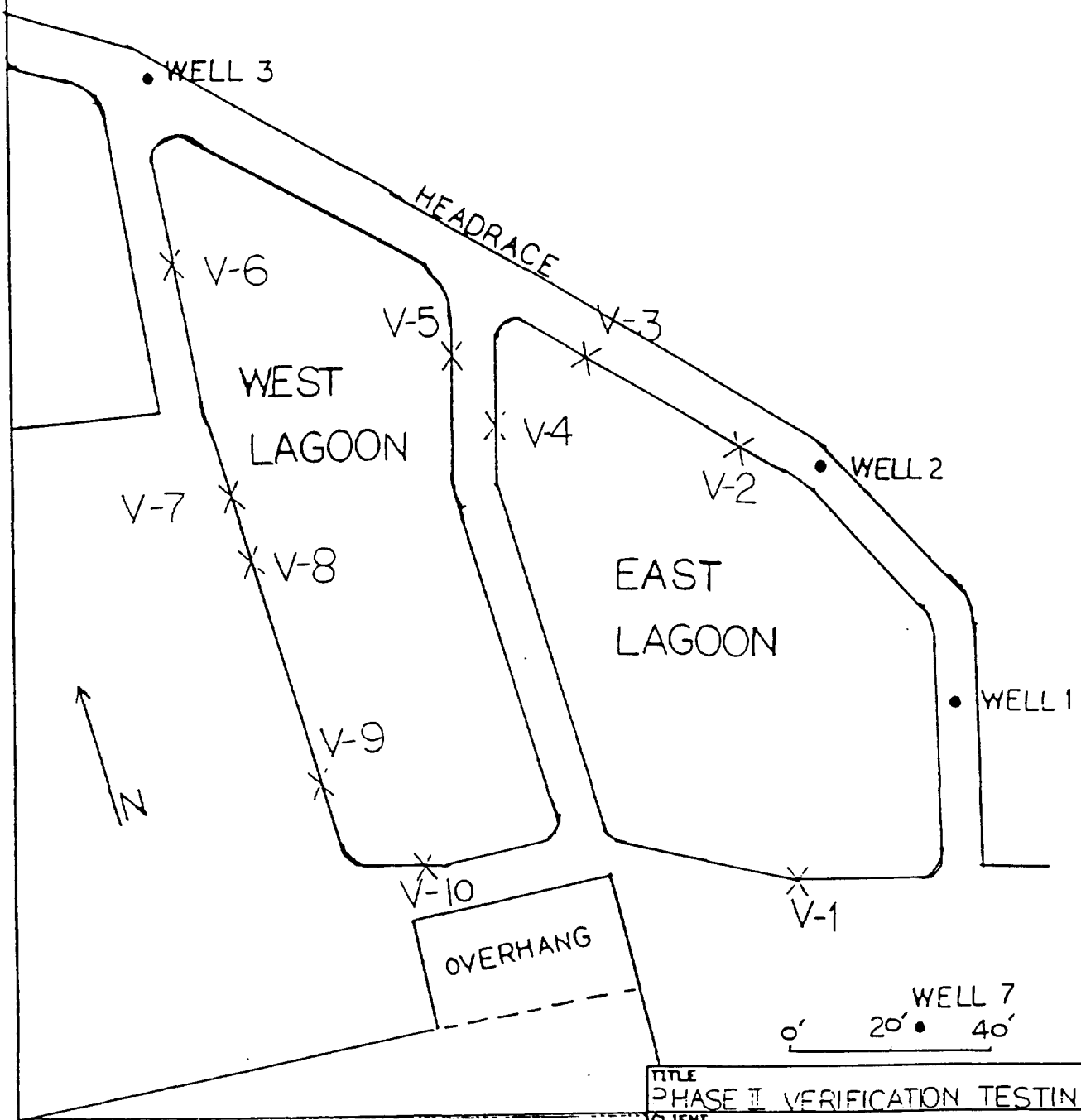
All contaminated berm soils within the two hazardous waste electroplating lagoons that exceeded the health based clean-up criteria specified in the approved closure plan have been removed, with the exception of those in the area of sample location 10. All Phase II verification sample analysis reports are included as Attachment III of this certification.

5.0 INITIAL BACKFILLING

A total of 3,044.73 tons of silty clay backfill material was placed in the electroplating lagoons from June 22 through June 29, 1989. A different source of backfill (the last 2 feet) was also utilized after placement of the silty clay. Placement and compaction of this material is discussed in Sections 7 and 8 of this certification.

A representative soil sample was obtained from the American Sand and Gravel yard on June 14, 1989 and sent to Goldberg-Zoino and Associates (GZA)

FIGURE I
VERIFICATION SAMPLE LOCATIONS



TITLE: PHASE II VERIFICATION TESTING			
CLIENT: WILLIAM PRYM, INC.			
DRAWN	DATE: 9/89	PROJECT NO.: 21029	DRAWING NO.: FIG-1

LANCY ENVIRONMENTAL SERVICES CO
DIVISION OF LANCY INTERNATIONAL,
AN ALCOA SEPARATIONS TECHNOLOGY COM
PITTSBURGH, PENNSYLVANIA

(203) 774-6814 CT LABORATORY PH 0465

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: V-1 EAST LAGOON

SAMPLE #: LAN8940

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/30/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
				SW-846
ARSENIC	12.9	------	--- 0.10 MG/KG -----	70
BARIUM	6.14	------	--- 0.11 MG/KG -----	7080
CADMIUM	ND	------	--- 1.1 MG/KG -----	7130
HEXAVALENT CHROMIUM	ND	------	--- 1.1 MG/KG -----	7190
MERCURY	0.046	------	--- 0.038 MG/KG -----	7471
SELENIUM	2.51	------	--- 0.10 MG/KG -----	7740
LEAD	19.1	------	--- 1.1 MG/KG -----	7420
SILVER	0.55	------	--- 0.45 MG/KG -----	7760
COPPER	19	------	--- 2.3 MG/KG -----	7210
ZINC	25	------	--- 2.3 MG/KG -----	7950
NICKEL	23	------	--- 1.1 MG/KG -----	7520
CYANIDE	ND	------	--- 0.4 MG/KG -----	9012
ACETONE	948	------	--- 250 MG/KG -----	8015

ND = NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL. IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

6/07

FM/RIBLK

(203) 774-6814

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BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: V-1 EAST LAGOON

SAMPLE #: LAN8940

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/30/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC	0.005	6/05/89	0.005	5.0	7060
BARIUM	0.140	6/02/89	0.005	100.0	7080
CADMIUM	ND	6/01/89	0.01	1.0	7130
HEXAVALENT CHROMIUM	ND	6/01/89	0.05	5.0	7190
MERCURY	ND	6/05/89	0.0010	0.20	7471
SELENIUM	ND	6/05/89	0.005	1.0	7740
LEAD	0.06	6/01/89	0.05	5.0	7420
SILVER	ND	6/01/89	0.02	5.0	7760
COPPER	ND	6/01/89	0.1		7210
NICKEL	ND	6/01/89	0.1		7520
ZINC	ND	6/01/89	0.05		7950
CYANIDE	ND	6/01/89	0.02		9012

ND=NONE DETECTED

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6/07/89

T.F. MCCOMMAS, DIRECTOR DATE
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FM/EPTOX

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P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-2

SAMPLE #: LAN8944

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/23/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
				SW-846
ARSENIC	11.3		--- 0.12 MG/KG	7060
BARIUM	467		--- 0.12 MG/KG	7080
CADMIUM	2.8		--- 1.2 MG/KG	7130
HEXAVALENT CHROMIUM	ND		--- 1.2 MG/KG	7190
MERCURY	ND		--- 0.046 MG/KG	7471
SELENIUM	2.53		--- 0.12 MG/KG	7740
LEAD	10		--- 1.2 MG/KG	7420
SILVER	ND		--- 0.5 MG/KG	7760
COPPER	225		--- 2.5 MG/KG	7210
ZINC	140		--- 1.2 MG/KG	7950
NICKEL	990		--- 2.5 MG/KG	7520
CYANIDE	ND		--- 0.4 MG/KG	9012
ACETONE	440		--- 250 MG/KG	8015

ND = NONE DETECTED

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T. F. McCommas 6/06/..

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

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P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-2

SAMPLE #: LAN8944

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/31/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC	ND	6/05/89	0.005	5.0	7060
BARIUM	0.195	6/02/89	0.005	100.0	7080
CADMIUM	ND	6/01/89	0.01	1.0	7130
HEXAVALENT CHROMIUM	ND	6/01/89	0.05	5.0	7190
MERCURY	ND	6/05/89	0.0010	0.20	7471
SELENIUM	0.020	6/05/89	0.005	1.0	7740
LEAD	0.07	6/01/89	0.05	5.0	7420
SILVER	ND	6/01/89	0.02	5.0	7760
COPPER	2.9	6/01/89			7210
ZINC	0.20	6/01/89			7950
NICKEL	1.1	6/01/89			7520
CYANIDE	ND	6/01/89	0.02		9012

ND=NONE DETECTED

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6/06/89

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DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-3

SAMPLE #: LAN8945

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/31/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG		DATE OF ANALYSIS	DETECTION LIMITS			METHOD OF ANALYSIS
							SW-846
ARSENIC	6.93	------	--	0.12	MG/KG	-----	7060
BARIUM	4.03	------	--	0.10	MG/KG	-----	7080
CADMIUM	3.5	------	--	1.0	MG/KG	-----	7130
HEXAVALENT CHROMIUM	ND	------	--	1.0	MG/KG	-----	7190
MERCURY	ND	------	--	0.045	MG/KG	-----	7471
SELENIUM	2.72	------	--	0.12	MG/KG	-----	7740
LEAD	19	------	--	1.0	MG/KG	-----	7420
SILVER	1.2	------	--	0.41	MG/KG	-----	7760
COPPER	300	------	--	2.0	MG/KG	-----	7210
ZINC	187	------	--	1.0	MG/KG	-----	7950
NICKEL	104	------	--	2.0	MG/KG	-----	7520
CYANIDE	ND	------	--	0.4	MG/KG	-----	9012
ACETONE	ND	------	--	250	MG/KG	-----	8015

ND = NONE DETECTED

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T.F. McCommas 6/06/

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

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CT LABORATORY PH 0465

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DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
131 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-3

SAMPLE #: LAN8945

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/31/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC	ND	6/05/89	0.005	5.0	7060
BARIUM	0.125	6/02/89	0.005	100.0	7080
CADMIUM	ND	6/01/89	0.01	1.0	7130
HEXAVALENT CHROMIUM	ND	6/01/89	0.05	5.0	7190
MERCURY	ND	6/05/89	0.0010	0.20	7471
SELENIUM	ND	6/05/89	0.005	1.0	7740
LEAD	0.05	6/01/89	0.05	5.0	7420
SILVER	ND	6/01/89	0.02	5.0	7760
COPPER	0.5	6/01/89			7210
ZINC	[illegible]	6/01/89			7950
NICKEL	[illegible]	6/01/89			7520
CYANIDE	[illegible]	6/01/89	0.02		9012

ND=NONE DETECTED

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6/07/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

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DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON ORIG #2

SAMPLE #: LAN8946

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/31/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS		METHOD OF ANALYSIS
					SW846 3RD
ARSENIC	7.16	--	0.12	MG/KG	7060
BARIUM	6.31	--	0.11	MG/KG	7080
CADMIUM	1.5	--	1.1	MG/KG	7130
HEXAVALENT	ND	--	1.1	MG/KG	7190
MERCURY	0.046	--	0.042	MG/KG	7471
SELENIUM	2.55	--	0.12	MG/KG	7740
LEAD	5.8	--	1.1	MG/KG	7420
SILVER	ND	--	0.43	MG/KG	7780
COPPER	461	--	2.2	MG/KG	7210
ZINC	42	--	1.1	MG/KG	7950
NICKEL	291	--	2.2	MG/KG	7520
CYANIDE	ND	--	0.4	MG/KG	9012
ACETONE	ND	--	250	UG/KG	8015

ND = NONE DETECTED

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T. F. McCommas 6/06.

T.F. MCCOMMAS, DIRECTOR DATE
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FM/RIBLK

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P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB SAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON
ORIG #2

SAMPLE #: LAN8946

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/31/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC	ND	6/05/89	0.005	5.0	7060
BARIUM	0.200	6/02/89	0.005	100.0	7080
CADMIUM	ND	6/01/89	0.01	1.0	7130
HEXAVALENT-CHROMIUM	ND	6/01/89	0.05	5.0	7190
MERCURY	ND	6/05/89	0.0010	0.20	7471
SELENIUM	0.006	6/05/89	0.005	1.0	7740
LEAD	ND	6/01/89	0.05	5.0	7420
SILVER	ND	6/01/89	0.02	5.0	7760
COPPER	1.7	6/01/89			7210
ZINC	0.11	6/01/89			7950
NICKEL	0.7	6/01/89			7520
CYANIDE	ND	6/01/89	0.02		9012

ND=NONE DETECTED

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T. F. McCommas 6/06/89

T.F. MCCOMMAS, DIRECTOR DATE
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REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-4

SAMPLE #: LAN8947

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/31/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
				SW-846
ARSENIC	17.1		0.12 MG/KG	7060
BARIUM	4.88		0.086 MG/KG	7080
CADMIUM	1.1		0.86 MG/KG	7130
HEXAVALENT CHROMIUM	ND		0.86 MG/KG	7190
MERCURY	0.061		0.035 MG/KG	7471
SELENIUM	4.5		0.12 MG/KG	7740
LEAD	21		0.86 MG/KG	7420
SILVER	0.63		0.34 MG/KG	7760
COPPER	26		1.7 MG/KG	7210
ZINC	32		0.86 MG/KG	7950
NICKEL	152		1.7 MG/KG	7520
CYANIDE	ND		0.4 MG/KG	9012
ACETONE	619		250 MG/KG	8015

ND = NONE DETECTED

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REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-4

SAMPLE #: LAN8947

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/31/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC	ND	6/05/89	0.005	5.0	7060
BARIUM	0.185	6/02/89	0.005	100.0	7080
CADMIUM	ND	6/01/89	0.01	1.0	7130
HEXAVALENT CHROMIUM	ND	6/01/89	0.05	5.0	7190
MERCURY	ND	6/05/89	0.0010	0.20	7471
SELENIUM	0.015	6/05/89	0.005	1.0	7740
LEAD	ND	6/01/89	0.05	5.0	7420
SILVER	ND	6/01/89	0.02	5.0	7760
COPPER	0.1	6/01/89			7210
ZINC	0.06	6/01/89			7950
NICKEL	1.3	6/01/89			7520
CYANIDE	ND	6/01/89	0.02		9012

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6/06/89

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REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #5 WEST LAGOON

SAMPLE #: LAN8948

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/31/89
1410

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
				SW-846
ARSENIC	14.3		0.071 MG/KG	7060
BARIUM	14.5		0.063 MG/KG	7080
CADMIUM	1.26		0.13 MG/KG	7130
HEXAVALENT CHROMIUM	ND		0.63 MG/KG	7190
MERCURY	0.051		0.024 MG/KG	7471
SELENIUM	0.215		0.071 MG/KG	7740
LEAD	17.3		1.3 MG/KG	7420
SILVER	0.31		0.25 MG/KG	7760
COPPER	53.4		1.3 MG/KG	7210
ZINC	64.4		0.63 MG/KG	7950
NICKEL	864		1.3 MG/KG	7520
CYANIDE	ND		0.4 MG/KG	9012
ACETONE	ND		250 µG/KG	8015

ND = NONE DETECTED

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T.F. McCOMMAS 6/07/

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

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BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #5 WEST LAGOON

SAMPLE #: LAN8948

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/31/89
1410

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC	ND	6/05/89	0.005	5.0	7060
BARIUM	0.130	6/06/89	0.005	100.0	7080
CADMIUM	ND	6/06/89	0.01	1.0	7130
HEXAVALENT CHROMIUM	ND	6/05/89	0.05	5.0	7190
MERCURY	ND	6/05/89	0.0010	0.20	7471
SELENIUM	ND	6/05/89	0.005	1.0	7740
LEAD	ND	6/06/89	0.05	5.0	7420
SILVER	ND	6/06/89	0.02	5.0	7760
COPPER	ND	6/06/89	0.1		7210
ZINC	0.05	6/06/89	0.05		7950
NICKEL	3.3	6/06/89	0.1		7520
CYANIDE	ND	6/01/89	0.02		9012

ND=NONE DETECTED

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T.F. McCOMMAS, DIRECTOR — DATE 6/07/89
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

(203) 774-6814 CT LABORATORY PH 04

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #6 WEST LAGOON

SAMPLE #: LAN8949

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/01/89
0945

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
				SW-846
ARSENIC	12.2	------	--- 0.069 MG/KG -----	7060
BARIUM	27.45	------	--- 0.060 MG/KG -----	7080
CADMIUM	1.02	------	--- 0.12 MG/KG -----	7130
HEXAVALENT CHROMIUM	0.73	------	--- 0.60 MG/KG -----	7190
MERCURY	0.118	------	--- 0.031 MG/KG -----	7471
SELENIUM	0.849	------	--- 0.069 MG/KG -----	7740
LEAD	46.2	------	--- 1.2 MG/KG -----	7420
SILVER	0.29	------	--- 0.24 MG/KG -----	7760
COPPER	190	------	--- 1.2 MG/KG -----	7210
ZINC	102	------	--- 0.60 MG/KG -----	7950
NICKEL	365	------	--- 1.2 MG/KG -----	7520
CYANIDE	ND	------	--- 3.4 MG/KG -----	9012
ACETONE	ND	------	--- 250 MG/KG -----	8015

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T.F. McCommas 6/07/

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

(203) 774-6814

CT LABORATORY PH 0465

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
131 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #6 WEST LAGOON

SAMPLE #: LAN8949

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/01/89
0945

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC ---	ND	--- 6/05/89 --	0.005	--- 5.0 ---	7060
BARIUM ----	0.130	--- 6/06/89 --	0.005	--- 100.0	7080
CADMIUM ---	0.04	--- 6/06/89 --	0.01	--- 1.0 ---	7130
HEXAVALENT CHROMIUM -	ND	--- 6/05/89 --	0.05	--- 5.0 ---	7190
MERCURY ---	ND	--- 6/05/89 --	0.0010	--- 0.20	7471
SELENIUM --	0.008	--- 6/05/89 --	0.005	--- 1.0 ---	7740
LEAD ------	0.06	--- 6/06/89 --	0.05	--- 5.0	7420
SILVER -----	ND	--- 6/06/89 --	0.02	--- 5.0 ---	7760
COPPER -----	0.2	--- 6/06/89 --	0.1	---	7210
ZINC ------	0.19	--- 6/06/89 --	0.05	--- ---	7950
NICKEL -----	0.5	--- 6/06/89 --	0.1	---	7520
CYANIDE ---	ND	--- 6/01/89 --	0.02	--- ---	9012

ND=NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY.

T.F. McCommas 6/07/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

(203) 774-6814

CT LABORATORY PH 046

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #7 WEST LAGOON

SAMPLE #: LAN8950

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/01/89
0953

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
				SW-846
ARSENIC	14.6	------	--- 0.066 MG/KG -----	7060
BARIUM	8.21	------	--- 0.085 MG/KG -----	7080
CADMIUM	ND	------	--- 0.17 MG/KG -----	7130
HEXAVALENT CHROMIUM	ND	------	--- 0.85 MG/KG -----	7190
MERCURY	0.104	------	--- 0.017 MG/KG -----	7471
SELENIUM	0.160	------	--- 0.066 MG/KG -----	7740
LEAD	22.6	------	--- 1.7 MG/KG -----	7420
SILVER	0.41	------	--- 0.34 MG/KG -----	7760
COPPER	82	------	--- 1.7 MG/KG -----	7210
ZINC	45.1	------	--- 0.85 MG/KG -----	7950
NICKEL	205	------	--- 1.7 MG/KG -----	7520
CYANIDE	ND	------	--- 0.4 MG/KG -----	9012
ACETONE	ND	------	--- 250 MG/KG -----	8015

ND = NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL. IF NUTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY

T. F. McCommas 6/07/

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

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EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #7 WEST LAGOON

SAMPLE #: LAN8950

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/01/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC	ND	6/05/89	0.005	5.0	7060
BARIUM	0.180	6/06/89	0.005	100.0	7080
CADMIUM	ND	6/06/89	0.01	1.0	7130
HEXAVALENT CHROMIUM	ND	6/05/89	0.05	5.0	7190
MERCURY	ND	6/05/89	0.0010	0.20	7471
SELENIUM	ND	6/05/89	0.005	1.0	7740
LEAD	ND	6/06/89	0.05	5.0	7420
SILVER	ND	6/06/89	0.02	5.0	7760
COPPER	0.1	6/06/89	0.1		7210
ZINC	0.21	6/06/89	0.05		7950
NICKEL	1.4	6/06/89	0.1		7520
CYANIDE	ND	6/01/89	0.02		9012

ND=NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY.

T.F. McCommas 6/07/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

(203) 774-6814 CT LABORATORY PH 046

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #8 WEST LAGOON

SAMPLE #: LAN8951

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/01/89
1010

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
				SW-846
ARSENIC	11.9		0.049 MG/KG	7060
BARIUM	33.6		0.074 MG/KG	7080
CADMIUM	ND		0.15 MG/KG	7130
HEXAVALENT CHROMIUM	ND		0.74 MG/KG	7190
MERCURY	0.209		0.028 MG/KG	7471
SELENIUM	0.862		0.049 MG/KG	7740
LEAD	25.6		1.5 MG/KG	7420
SILVER	0.37		0.30 MG/KG	7760
COPPER	12.8		1.5 MG/KG	7210
ZINC	27.6		0.74 MG/KG	7950
NICKEL	20.1		1.5 MG/KG	7520
CYANIDE	ND		0.4 MG/KG	9012
ACETONE	ND		250 MG/KG	8015

ND = NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL. IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY

T. F. McCommas 6/07

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

(203) 774-6814

CT LABORATORY PH 0465

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #8 WEST LAGOON

SAMPLE #: LAN8951

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/01/89
1010

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC ---	ND	--- 6/05/89 --	0.005	--- 5.0 ---	7060
BARIUM ----	0.075	--- 6/06/89 --	0.005	--- 100.0	7080
CADMIUM ---	ND	--- 6/06/89 --	0.01	--- 1.0 ---	7130
HEXAVALENT CHROMIUM -	ND	--- 6/05/89 --	0.05	--- 5.0 ---	7190
MERCURY ---	ND	--- 6/05/89 --	0.0010	--- 0.20	7471
SELENIUM --	ND	--- 6/05/89 --	0.005	--- 1.0 ---	7740
LEAD ------	ND	--- 6/06/89 --	0.05	--- 5.0	7420
SILVER ----	ND	--- 6/06/89 --	0.02	--- 5.0 ---	7760
COPPER ----	0.1	--- 6/06/89 --	0.1	---	7210
ZINC ------	3.1	--- 6/06/89 --	0.05	---	7950
NICKEL ----	0.3	--- 6/06/89 --	0.1	---	7520
CYANIDE ---	ND	--- 6/01/89 --	0.02	---	9012

ND=NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY.

T.F. McCOMMAS 6/07/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

(203) 774-6814 CT LABORATORY PH 04c.

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #9 WEST LAGOON

SAMPLE #: LAN8952

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/01/89
1030

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
				SW-846
ARSENIC	18.5		0.068 MG/KG	7060
BARIUM	24.31		0.058 MG/KG	7080
CADMIUM	ND		0.12 MG/KG	7130
HEXAVALENT CHROMIUM	ND		0.58 MG/KG	7190
MERCURY	0.176		0.020 MG/KG	7471
SELENIUM	0.379		0.068 MG/KG	7740
LEAD	74.2		1.2 MG/KG	7420
SILVER	0.43		0.23 MG/KG	7760
COPPER	14.6		1.2 MG/KG	7210
ZINC	59.7		0.58 MG/KG	7950
NICKEL	11.6		1.2 MG/KG	7520
CYANIDE	ND		0.4 MG/KG	9012
ACETONE	940		250 MG/KG	8015

ND = NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL. IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY

T. F. McCommas 6/07/

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

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EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #9 WEST LAGOON

SAMPLE #: LAN8952

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/01/89
1030

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC	0.005	6/05/89	0.005	5.0	7060
BARIUM	0.240	6/06/89	0.005	100.0	7080
CADMIUM	ND	6/06/89	0.01	1.0	7130
HEXAVALENT CHROMIUM	ND	6/05/89	0.05	5.0	7190
MERCURY	ND	6/05/89	0.0010	0.20	7471
SELENIUM	ND	6/05/89	0.005	1.0	7740
LEAD	0.08	6/06/89	0.05	5.0	7420
SILVER	ND	6/06/89	0.02	5.0	7760
COPPER	ND	6/06/89	0.1		7210
ZINC	4.43	6/06/89	0.05		7950
NICKEL	ND	6/06/89	0.1		7520
CYANIDE	ND	6/01/89	0.02		9012

ND=NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY.

T.F. McCommas 6/07/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

(203) 774-6814 CT LABORATORY PH 046_

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #10 WEST LAGOON

SAMPLE #: LAN8954

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/02/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG		DATE OF ANALYSIS	DETECTION LIMITS		METHOD OF ANALYSIS
						SW-846
ARSENIC	13.4	------	---	0.12	MG/KG -----	7060
BARIUM	5.9	------	---	0.12	MG/KG -----	7080
CADMIUM	ND	------	---	1.2	MG/KG -----	7130
HEXAVALENT CHROMIUM	ND	------	---	0.46	MG/KG -----	7190
MERCURY	0.154	------	---	0.041	MG/KG -----	7471
SELENIUM	2.30	------	---	0.12	MG/KG -----	7740
LEAD	5.1	------	---	2.3	MG/KG -----	7420
SILVER	0.51	------	---	0.46	MG/KG -----	7760
COPPER	26.2	------	---	2.3	MG/KG -----	7210
NICKEL	230	------	---	2.3	MG/KG -----	7950
ZINC	19.5	------	---	1.2	MG/KG -----	7520
CYANIDE	ND	------	---	0.4	MG/KG -----	9012
ACETONE	1,917	------	--	250	UG/KG -----	8015

ND = NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL. IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY

6/08/

T.F. MCGUMMAS, DIRECTOR DATE
ROBERT L. FERRIERE, CHIEF CHEMIST

FM/RIBLK

(203) 774-6814

CT LABORATORY PH 0465

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: #10 WEST LAGOON

SAMPLE #: LAN-8954

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/2/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC	ND	6/07/89	0.005	5.0	7060
BARIUM	0.140	6/08/89	0.005	100.0	7080
CADMIUM	ND	6/07/89	0.01	1.0	7130
HEXAVALENT CHROMIUM	ND	6/07/89	0.05	5.0	7190
MERCURY	ND	6/07/89	0.0010	0.20	7471
SELENIUM	ND	6/07/89	0.005	1.0	7740
LEAD	ND	6/07/89	0.05	5.0	7420
SILVER	ND	6/07/89	0.02	5.0	7760
COPPER	0.1	6/08/89	0.1		7210
NICKEL	0.2	6/08/89	0.1		7950
ZINC	0.13	6/08/89	0.05		7520
CYANIDE	ND	6/05/89	0.02		9012

ND=NONE DETECTED

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VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY.

6/08/89

T.F. MCCORMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

(203) 774-6814 . CT LABORATORY PH 046

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

(RETEST)

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-1
P.O. #L30147

SAMPLE #: LAN8967

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/30/89

ANALYSIS PERFORMED		RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
E.P. TOX. LEAD	TOTAL	ND	6/10/89	0.05 MG/L	STANDARD METHODS -- 16TH EDITION

ND = NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL. IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY

T.F. MCCOMMAS, DIRECTOR 6/12/
ROBERT LAFERRIERE, CHIEF CHEMIST DATE

FM/RIBLK

(203) 774-6814

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EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: ORIGINAL LOCATION 2-A

SAMPLE #: LAN8958

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/05/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG		DATE OF ANALYSIS	DETECTION LIMITS		METHOD OF ANALYSIS
						SWA 846
ARSENIC	9.70		---	0.12	MG/KG	7060
BARIUM	1.78		---	0.037	MG/KG	7080
CADMIUM	ND		---	0.37	MG/KG	7130
HEXAVALENT CHROMIUM	ND		---	0.37	MG/KG	7190
MERCURY	0.072		---	0.047	MG/KG	7471
SELENIUM	5.11		---	0.12	MG/KG	7740
LEAD	1.62		---	0.74	MG/KG	7420
SILVER	ND		---	0.15	MG/KG	7760
COPPER	76.8		---	0.74	MG/KG	7210
NICKEL	121		---	0.74	MG/KG	7950
ZINC	9.7		---	0.37	MG/KG	7520
CYANIDE	ND		---	0.4	MG/KG	9012
ACETONE	ND		---	37	UG/KG	8015

ND = NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL. IF NOTED BELOW.

CERTIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY

6/08/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

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P.O. BOX 700
BROOKLYN, CT 06234

EPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON
2-A ORIGINAL
LOCATION

SAMPLE #: LAN-8958

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/5/89

E.P. TOXICITY

ALYSIS FORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ENIC ---	ND	--- 6/07/89 --	0.005	--- 5.0	--- 7060
UM -----	0.088	--- 6/06/89 --	0.005	--- 100.0	--- 7080
MIUM ---	ND	--- 6/06/89 --	0.01	--- 1.0	--- 7130
ENT					
OMIUM -	ND	--- 6/07/89 --	0.05	--- 5.0	--- 7190
URY ---	ND	--- 6/07/89 --	0.0010	--- 0.20	--- 7471
NIUM --	0.005	--- 6/07/89 --	0.005	--- 1.0	--- 7740
-------	ND	--- 6/06/89 --	0.05	--- 5.0	--- 7420
ER -----	ND	--- 6/06/89 --	0.02	--- 5.0	--- 7760
L -----	1.2	--- 6/06/89 --	0.1	---	--- 7210
ER -----	1.9	--- 6/06/89 --	0.1	---	--- 7950
-------	0.16	--- 6/06/89 --	0.05	---	--- 7520
DE ---	ND	--- 6/05/89 --	0.02	---	--- 9013

ND=NONE DETECTED

S A CERTIFIED SAMPLE TAKEN BY ERSONNEL IF NOTED BELOW.

ED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY.

6/08/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

203) 774-6814 CT LABORATORY PH 0465

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

EPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-2A

SAMPLE #: LAN8957

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/05/89

NALYSIS ERFORMED	TOTAL	RESULTS MG/KG		DATE OF ANALYSIS	DETECTION LIMITS		METHOD OF ANALYSIS
							SWA 846
SENIC		23.1		---	0.11	MG/KG	7060
RIUM		1.82		---	0.035	MG/KG	7080
MIUM		ND		---	0.35	MG/KG	7130
VALENT CHROMIUM	-	ND		---	0.35	MG/KG	7190
Y		0.063		---	0.04	MG/KG	7471
LENIUM		3.58		---	0.11	MG/KG	7740
AD		1.5		---	0.70	MG/KG	7420
LVER		ND		---	0.14	MG/KG	7760
PPER		18.9		---	0.70	MG/KG	7210
CKEL		98		---	0.70	MG/KG	7950
NC		29.5		---	0.35	MG/KG	7520
ANIDE		ND		---	0.4	MG/KG	9012
ETONE		ND		---	250	MG/KG	3015

ND = NONE DETECTED

S IS A CERTIFIED SAMPLE TAKEN LAB. PERSONNEL. IF NOTED BELOW.

IFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

RIBLK

(203) 774-6814

CT LABORATORY PH 0465

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-2A

SAMPLE #: LAN-8957

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 5/5/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-84 3RD)
ARSENIC	ND	6/07/89	0.005	5.0	7060
BARIUM	0.050	6/06/89	0.005	100.0	7080
CADMIUM	ND	6/06/89	0.01	1.0	7130
HEXAVALENT CHROMIUM	ND	6/07/89	0.05	5.0	7190
MERCURY	ND	6/07/89	0.0010	0.20	7471
SELENIUM	0.005	6/07/89	0.005	1.0	7740
LEAD	ND	6/06/89	0.05	5.0	7420
SILVER	ND	6/06/89	0.02	5.0	7760
NICKEL	1.1	6/06/89	0.1		7210
COPPER	0.1	6/06/89	0.1		7950
ZINC	0.16	6/06/89	0.05		7520
CYANIDE	ND	6/05/89	0.02		9012

ND=NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY.

T.F. MCCOMMAS, DIRECTOR — DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

(203) 774-6814 CT LABORATORY PH 0465

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-3A

SAMPLE #: LAN8956

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/05/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
				SWA 846
ARSENIC	21.6		0.10 MG/KG	7060
BARIUM	2.24		0.031 MG/KG	7080
CADMIUM	ND		0.31 MG/KG	7130
HEXAVALENT CHROMIUM	ND		0.31 MG/KG	7190
MERCURY	0.163		0.035 MG/KG	7471
SELENIUM	4.42		0.10 MG/KG	7740
LEAD	1.40		0.62 MG/KG	7420
SILVER	ND		0.12 MG/KG	7760
COPPER	6.15		0.62 MG/KG	7210
NICKEL	77		0.62 MG/KG	7950
ZINC	5.03		0.1 MG/KG	7520
CYANIDE	ND		1 MG/KG	9012
ACETONE	ND		25.0 MG/KG	8015

ND = NONE DETECTED

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VERIFIED BY:

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6/08/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

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EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-3A

SAMPLE #: LAN-8956

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/5/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC	ND	6/07/89	0.005	5.0	7060
BARIUM	0.110	6/06/89	0.005	100.0	7080
CHROMIUM	ND	6/06/89	0.01	5.0	7130
HEXAVALENT CHROMIUM	ND	6/07/89	0.05	5.0	7190
MERCURY	ND	6/07/89	0.0010	0.20	7471
SELENIUM	ND	6/07/89	0.005	1.0	7740
LEAD	0.05	6/06/89	0.03	5.0	7420
SILVER	ND	6/06/89	0.02	5.0	7760
NICKEL	0.7	6/06/89	0.1		7210
COPPER	ND	6/06/89	0.1		7950
ZINC	ND	6/06/89	0.05		7520
CYANIDE	ND	6/05/89	0.02		9012

ND=NONE DETECTED

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DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-4A

SAMPLE #: LAN8955

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/05/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
				SW-846
ARSENIC	24.8	------	--- 0.10 MG/KG	7060
BARIUM	3.82	------	--- 0.046 MG/KG	7080
CADMIUM	ND	------	--- 0.46 MG/KG	7130
HEXAVALENT CHROMIUM	ND	------	--- 0.46 MG/KG	7190
MERCURY	0.082	------	--- 0.041 MG/KG	7471
SELENIUM	4.45	------	--- 0.10 MG/KG	7740
LEAD	9.3	------	--- 0.93 MG/KG	7420
SILVER	0.23	------	--- 0.19 MG/KG	7760
COPPER	11.6	------	--- 0.93 MG/KG	7210
NICKEL	58	------	--- 0.93 MG/KG	7950
ZINC	14.1	------	--- 0.46 MG/KG	7520
CYANIDE	ND	------	--- 0.4 MG/KG	9012
ACETONE	1,466	------	--- 250 MG/KG	8015

ND = NONE DETECTED

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T.F. McCommas 6/08/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

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EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: EAST LAGOON V-4A

SAMPLE #: LAN-8955

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/5/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC ---	ND	--- 6/07/89 --	0.005	--- 5.0	--- 7060
BARIUM ----	0.150	--- 6/06/89 --	0.005	--- 100.0	--- 7080
CADMIUM ---	ND	--- 6/06/89 --	0.01	--- 1.0	--- 7130
HEXAVALENT CHROMIUM -	ND	--- 6/07/89 --	0.05	--- 5.0	--- 7190
MERCURY ---	ND	--- 6/07/89 --	0.0010	--- 0.20	--- 7471
SELENIUM --	ND	--- 6/07/89 --	0.005	--- 1.0	--- 7740
LEAD ------	ND	--- 6/06/89 --	0.05	--- 5.0	--- 7420
SILVER ----	ND	--- 6/06/89 --	0.02	--- 5.0	--- 7760
NICKEL ----	0.1	--- 6/06/89 --	0.1	---	--- 7210
COPPER ----	0.1	--- 6/06/89 --	0.1	---	--- 7950
ZINC ------	ND	--- 6/06/89 --	0.05	---	--- 7520
CYANIDE ---	ND	--- 6/05/89 --	0.02	---	--- 9012

ND=NONE DETECTED

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T.F. McCommas 6/08/89

T.F. MCCOMMAS, DIRECTOF DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

(203) 774-6814 CT. LABORATORY PH 0465

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DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: WEST LAGOON #4A
WILLIAM PRYM RETEST

SAMPLE #: LAN8963

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/07/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG		DATE OF ANALYSIS	DETECTION LIMITS		METHOD OF ANALYSIS
						SW 846
ARSENIC	13.2			0.075	MG/KG	7060
BARIUM	7.34			0.063	MG/KG	7080
CADMIUM	ND			0.63	MG/KG	7130
HEXAVALENT CHROMIUM	ND			0.63	MG/KG	7190
MERCURY	0.027			0.026	MG/KG	7471
SELENIUM	2.07			0.075	MG/KG	7740
LEAD	5.3			1.3	MG/KG	7420
SILVER	ND			0.25	MG/KG	7760
COPPER	16			1.3	MG/KG	7210
ZINC	15			0.63	MG/KG	7950
NICKEL	133			1.3	MG/KG	7520
CYANIDE	ND			0.4	MG/KG	9012
ACETONE	ND			250	UG/KG	8015

ND = NONE DETECTED

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T. F. McCommas 6/12/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

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CT LABORATORY PH 0465

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: WEST LAGOON 4-A
WILLIAM PRYM
RETEST

SAMPLE #: LAN-8963

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/7/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 1310 (SWA-846 3RD)
ARSENIC ---	ND	--- 6/09/89 --	0.005	--- 5.0 ---	7060
BARIUM ----	0.200	--- 6/08/89 --	0.005	--- 100.0 ---	7080
CADMIUM ---	ND	--- 6/08/89 --	0.01	--- 1.0 ---	7130
HEXAVALENT CHROMIUM -	ND	--- 6/09/89 --	0.05	--- 5.0 ---	7190
MERCURY ---	ND	--- 6/09/89 --	0.0010	--- 0.20 ---	7471
SELENIUM --	ND	--- 6/09/89 --	0.005	--- 1.0 ---	7740
LEAD ------	ND	--- 6/08/89 --	0.05	--- 5.0 ---	7420
SILVER ----	ND	--- 6/08/89 --	0.02	--- 5.0 ---	7760
COPPER ----	0.1	--- 6/08/89 --	0.1	---	7210
ZINC ------	0.08	--- 6/08/89 --	0.05	---	7950
NICKEL ----	1.5	--- 6/08/89 --	0.1	---	7520
CYANIDE ---	ND	--- 6/08/89 --	0.02	---	9012

ND=NONE DETECTED

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T.F. MCCOMMAS, DIRECTOR DAT
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FM/EPTOX

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DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: WEST LAGOON V-5A
WILLIAM PRYM

SAMPLE #: LAN8964

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/07/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG		DATE OF ANALYSIS	DETECTION LIMITS		METHOD OF ANALYSIS
						SW-846
ARSENIC	13.7		---	0.098	MG/KG	7060
BARIUM	15.6		---	0.074	MG/KG	7080
CADMIUM	1.8		---	0.74	MG/KG	7130
HEXAVALENT CHROMIUM	ND		---	0.74	MG/KG	7190
MERCURY	0.059		---	0.032	MG/KG	7471
SELENIUM	2.22		---	0.098	MG/KG	7740
LEAD	19		---	1.5	MG/KG	7420
SILVER	0.32		---	0.29	MG/KG	7760
COPPER	399		---	1.5	MG/KG	7210
ZINC	120		---	0.74	MG/KG	7950
NICKEL	798		---	1.5	MG/KG	7520
CYANIDE	ND		---	0.4	MG/KG	9012
ACETONE	ND		---	250	UG/KG	8015

ND = NONE DETECTED

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6/12/89

T.F. MCCOMMAS, DIRECTOR DATE
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(203) 774-6814 CT LABORATORY PH

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: WEST LAGOON V-5
WILLIAM PRYM

SAMPLE #: LAN-8964

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/7/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS (SWA-846 3RI
ARSENIC ---	ND	--- 6/09/89 --	0.005	--- 5.0 ---	70
BARIUM ----	0.135	--- 6/08/89 --	0.005	--- 100.0 ---	7(
CADMIUM ---	0.02	--- 6/08/89 --	0.01	--- 1.0 ---	7130
HEXAVALENT CHROMIUM -	ND	--- 6/09/89 --	0.05	--- 5.0 ---	7190
MERCURY ---	ND	--- 6/09/89 --	0.0010	--- 0.20 ---	7471
SELENIUM --	ND	--- 6/09/89 --	0.005	--- 1.0 ---	7740
LEAD ------	ND	--- 6/08/89 --	0.05	--- 5.0 ---	7420
SILVER ----	ND	--- 6/08/89 --	0.02	--- 5.0 ---	7760
COPPER ----	0.9	--- 6/08/89 --	0.1	--- ---	7210
ZINC ------	0.64	--- 6/08/89 --	0.05	--- ---	7950
NICKEL ----	8.0	--- 6/08/89 --	0.1	--- ---	7520
CYANIDE ---	ND	--- 6/08/89 --	0.02	--- ---	9012

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VERIFIED BY:

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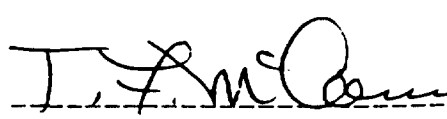

6/12/8

T.F. MCCOMMAS, DIRECTOR
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

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P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: WEST LAGOON V-6A
WILLIAM PRYM

SAMPLE #: LAN8965

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/07/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG		DATE OF ANALYSIS	DETECTION LIMITS		METHOD OF ANALYSIS
						SW-846
ARSENIC	14.5			0.066	MG/KG	7060
BARIUM	7.68			0.080	MG/KG	7080
CADMIUM	ND			0.80	MG/KG	7130
HEXAVALENT CHROMIUM	ND			0.80	MG/KG	7190
MERCURY	0.122			0.033	MG/KG	7471
SELENIUM	1.35			0.066	MG/KG	7740
LEAD	52			1.6	MG/KG	7420
SILVER	ND			0.32	MG/KG	7760
COPPER	16			1.6	MG/KG	7210
ZINC	31			0.80	MG/KG	7950
NICKEL	12			1.6	MG/KG	7520
CYANIDE	ND			0.4	MG/KG	9012
ACETONE	ND			250	UG/KG	8015

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T.F. McCommas 6/12/89

T.F. MCCOMMAS, DIRECTOR DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

(203) 774-6814 CT LABORATORY PH

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DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: WEST LAGOON V-6
WILLIAM PRYM

SAMPLE #: LAN-8965

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/7/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 131 (SWA-846 3RD
ARSENIC ---	ND	--- 6/09/89 --	0.005	--- 5.0 ---	7060
BARIUM ----	0.175	--- 6/08/89 --	0.005	--- 100.0 ---	70
CADMIUM ---	ND	--- 6/08/89 --	0.01	--- 1.0 ---	7130
HEXAVALENT CHROMIUM -	ND	--- 6/09/89 --	0.05	--- 5.0 ---	7190
MERCURY ---	ND	--- 6/09/89 --	0.0010	--- 0.20 ---	7471
SELENIUM --	ND	--- 6/09/89 --	0.005	--- 1.0 ---	7740
LEAD ------	0.05	--- 6/08/89 --	0.05	--- 5.0 ---	7420
SILVER ----	ND	--- 6/08/89 --	0.02	--- 5.0 ---	7760
COPPER ----	ND	--- 6/08/89 --	0.1	--- ---	7210
ZINC ------	0.05	--- 6/08/89 --	0.05	--- ---	7950
NICKEL ----	0.1	--- 6/08/89 --	0.1	--- ---	7520
CYANIDE ---	ND	--- 6/08/89 --	0.02	--- ---	9012

ND=NONE DETECTED

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6/12/8

T.F. MCCOMMAS, DIRECTOR
ROBERT LAFERRIERE, CHIEF CHEMIS

FM/EPTOX

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DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: WEST LAGOON V-7A
WILLIAM PRYM

SAMPLE #: LAN8966

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/07/89

ANALYSIS PERFORMED TOTAL	RESULTS MG/KG		DATE OF ANALYSIS	DETECTION LIMITS		METHOD OF ANALYSIS
						SW846
ARSENIC	17.6	------	---	0.061	MG/KG -----	7060
BARIUM	6.07	------	---	0.065	MG/KG -----	7080
CADMIUM	ND	------	---	0.65	MG/KG -----	7130
HEXAVALENT CHROMIUM	ND	------	---	0.65	MG/KG -----	7190
MERCURY	0.055	------	---	0.024	MG/KG -----	7471
SELENIUM	1.58	------	---	0.061	MG/KG -----	7740
LEAD	23	------	---	1.3	MG/KG -----	7420
SILVER	0.28	------	---	0.26	MG/KG -----	7760
COPPER	110	------	---	1.3	MG/KG -----	7210
ZINC	33	------	---	0.65	MG/KG -----	7950
NICKEL	95	------	---	1.3	MG/KG -----	7520
CYANIDE	ND	------	---	0.4	MG/KG -----	9012
ACETONE	ND	------	---	250	UG/KG -----	8015

ND = NONE DETECTED

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T.F. MCCOMMAS, DIRECTOR 6/12/89 DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

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EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: WEST LAGOON V-7
WILLIAM PRYM

SAMPLE #: LAN-8966

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/7/89

E.P. TOXICITY

ANALYSIS PERFORMED	RESULTS (MG/L)	DATE OF ANALYSIS	DETECTION LIMITS (MG/L)	MAXIMUM PERMISSIBLE LIMITS(MG/L)	METHOD OF ANALYSIS 131 (SWA-846 3RD
ARSENIC ---	0.005	--- 6/09/89 --	0.005	--- 5.0 ---	7060
BARIUM ----	0.180	--- 6/08/89 --	0.005	--- 100.0 ---	70
CADMIUM ---	ND	--- 6/08/89 --	0.01	--- 1.0 ---	7130
HEXAVALENT CHROMIUM -	ND	--- 6/09/89 --	0.05	--- 5.0 ---	7190
MERCURY ---	ND	--- 6/09/89 --	0.0010	--- 0.20 ---	7471
SELENIUM --	ND	--- 6/09/89 --	0.005	--- 1.0 ---	7740
LEAD ------	0.05	--- 6/08/89 --	0.05	--- 5.0 ---	7420
SILVER ----	ND	--- 6/08/89 --	0.02	--- 5.0 ---	7760
COPPER ----	0.10	--- 6/08/89 --	0.1	--- ---	7210
ZINC ------	0.8	--- 6/08/89 --	0.05	--- ---	7950
NICKEL ----	ND	--- 6/08/89 --	0.1	--- ---	7520
CYANIDE ---	ND	--- 6/08/89 --	0.02	--- ---	9012

ND=NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL IF NOTED BELOW.

VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY.

6/12/8

T.F. MCCOMMAS, DIRECTOR D
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/EPTOX

(203) 774-6814 CT LABORATORY PH 0465

EASTERN SCIENTIFIC ASSOCIATES
DIV. OF LABORATORY RESOURCES, INC.
P.O. BOX 700
BROOKLYN, CT 06234

(RETEST)

REPORT TO: LANCY INTERNATIONAL
ATTN: ROB BAER
181 THORN HILL ROAD
WARRENDALE, PA 15086

SOURCE OF SAMPLE: WEST LAGOON V-9
P.O. #L30147

SAMPLE #: LAN8968

TYPE OF SUPPLY: SOIL

DATE/TIME COLLECTED: 6/01/89

ANALYSIS PERFORMED	TOTAL	RESULTS MG/KG	DATE OF ANALYSIS	DETECTION LIMITS	METHOD OF ANALYSIS
E.P. TOX. LEAD	--------	0.07	-------- 6/10/89	--- 0.05 MG/L	STANDARD METHODS -- 16TH EDITION

ND = NONE DETECTED

THIS IS A CERTIFIED SAMPLE TAKEN BY LAB. PERSONNEL. IF NOTED BELOW.

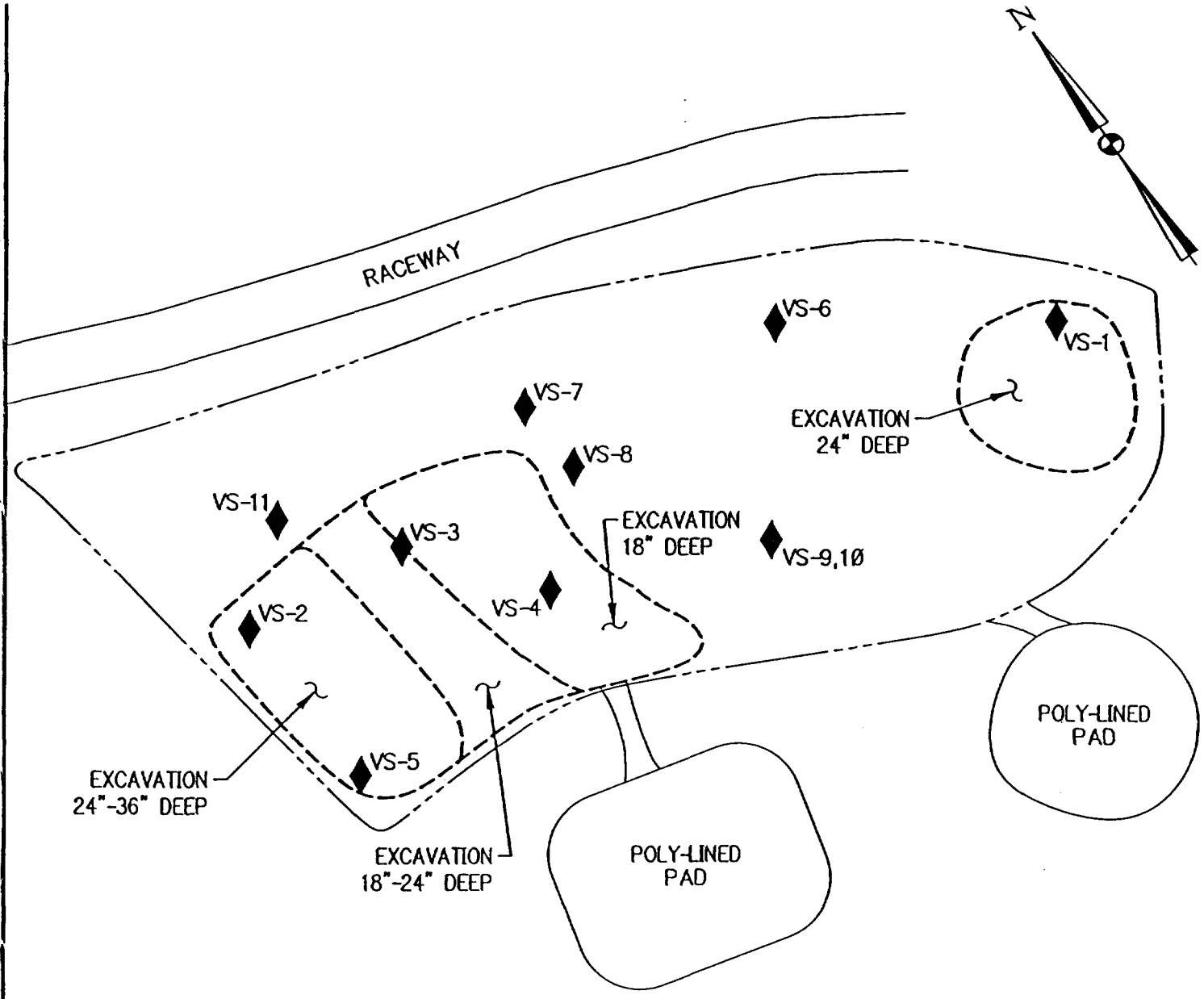
VERIFIED BY:

REPORT IS AN ACCURATE ANALYSIS OF SAMPLE RECEIVED IN THIS LABORATORY

T.F. MCCOMMAS, DIRECTOR 6/12/89 DATE
ROBERT LAFERRIERE, CHIEF CHEMIST

FM/RIBLK

ATTACHMENT IV



DRAWN BY: NLR	SE TECHNOLOGIES 98 Vanadium Road Bridgeville, PA 15017 (412) 221-1188	WILLIAM PRYM, INC. DAYVILLE, CONNECTICUT MILL POND ICM VERIFICATION SAMPLE LOCATION MAP	
DATE			
CHECKED BY			
SET JOB NO. 970179			
SET DWG FILE 97179A02.DWG			
DRAWING SCALE 1"=20' APPROX.		FIGURE 4	REV. Ø

Plot: env023 02/16/1999 07:55 G:\Prym\970179\97179a02.dwg

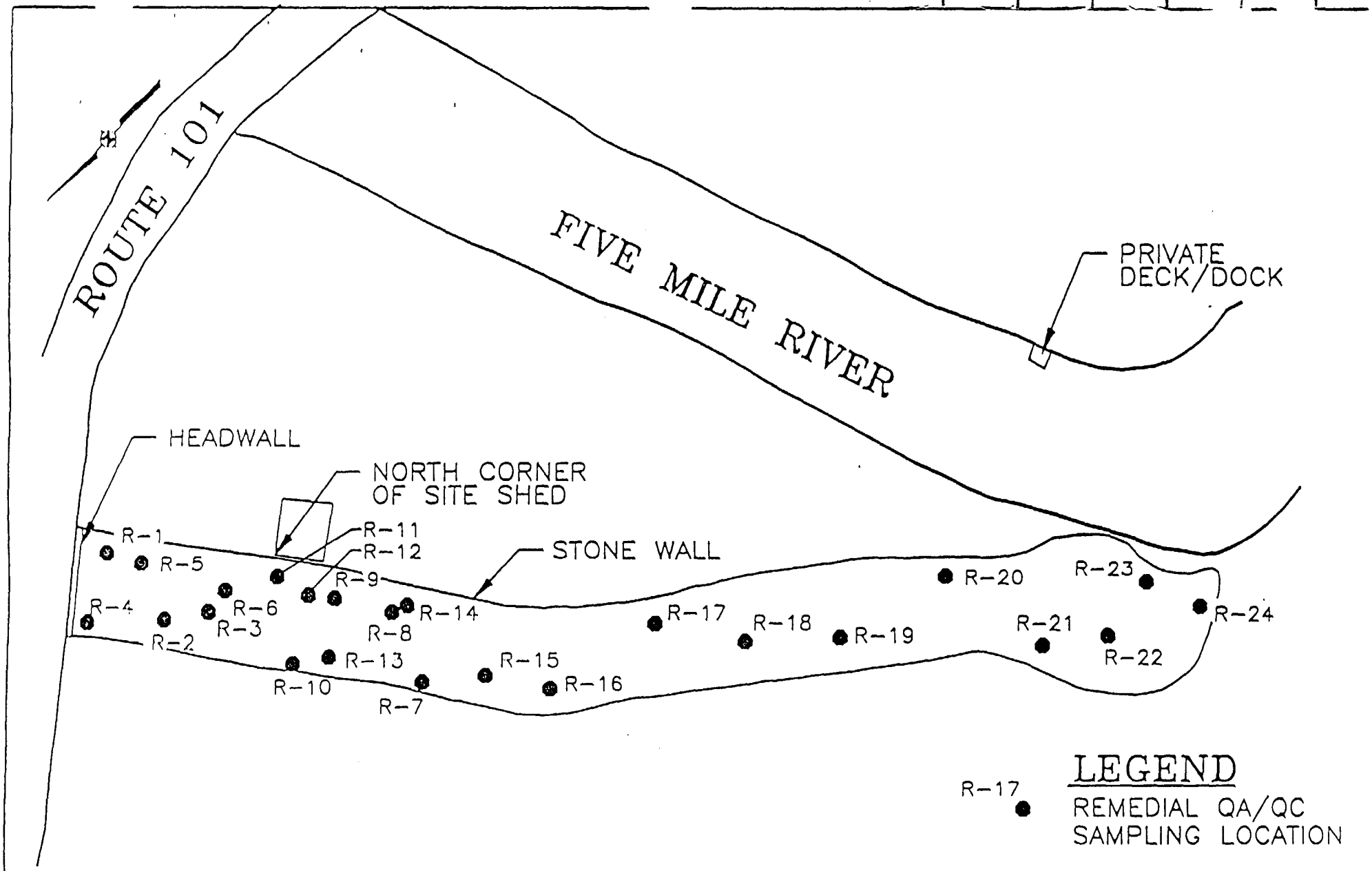
TABLE 2
VERIFICATION SEDIMENT SAMPLING RESULTS
PRYM FACILITY - MILL POND
DAYVILLE, CONNECTICUT
MAY 1997

Sample ID		Parameters					
		Total mg/kg		TCLP mg/l		mg/kg	
		Cu	Ni	Cu	Ni	Total Lead	Cyanide
VS-1		18	180	0.032	0.58	N/A	N/A
VS-2		42	150	0.17	0.96	N/A	N/A
VS-3		69	240	0.062	1.4	N/A	N/A
VS-4		86	260	0.27	0.96	14	N/D
VS-5		17	68	0.034	0.57	N/A	N/A
VS-6		18	54	0.035	0.13	N/A	N/A
VS-7		6.5	53	N/D	0.089	N/A	N/A
VS-8		34	110	0.38	0.14	N/A	N/A
VS-9		71	230	0.087	0.30	N/A	N/A
VS-10		28	130	0.13	0.35	N/A	N/A
VS-11		160	320	0.84	0.79	N/D	N/D
VS-12		N/D	N/D	N/D	N/D	N/A	N/A
Direct Exposure Criteria for Soil							
Residential	ppm	2,500	1,400	--	--	500	1,400
Industrial	ppm	76,000	7,500	--	--	1,000	41,000
Pollutant Mobility Criteria for GB Areas							
GB	TCLP-mg/l	--	--	13	1.0	0.15	2

Summary of Sediment/Soil Analytical Testing Results
William Prym, Inc. Tail Race Remediation
November, 1994

Sample ID	Reference ID	Date	Time	Location	Copper Cu (mg/kg) EPA 6010	Lead Pb (mg/kg) EPA 6010	Nickel Ni (mg/kg) EPA 6010	Cadmium Cd (mg/kg) EPA 6010	Zinc Zn (mg/kg) EPA 6010	Chromium Cr (mg/kg) EPA 6010	Iron Fe (mg/kg) EPA 6010
S105-1	R-1	10/17/94	15:35	13' sw of tail race headwall 3' nw of tail race sidewall	70	56					
S107-1	R-2	10/19/94	08:00	42' sw of tail race headwall 10' nw of tail race sidewall	180	89					
S108-1	R-3	10/20/94	08:07	66' sw of tail race headwall 10' nw of tail race sidewall	41	7.2					
S109-1	R-4	10/21/94	15:00	8' sw of tail race headwall 13' nw of tail race sidewall	28	32					
S109-2	R-5	10/21/94	15:05	30' sw of tail race headwall 4' nw of tail race sidewall	110	53					
S109-3	R-6	10/21/94	15:11	71' sw of tail race headwall 6' nw of tail race sidewall	100	24					
S109-4 *	R-7	10/21/94	15:24	85' sw of north corner of shed 14' nw of tail race sidewall	120	53					
S109-5 *	R-8	10/21/94	15:30	60' sw of north corner of shed 5' nw of tail race sidewall	36	20					
S109-6 *	R-9	10/21/94	15:35	33' sw of north corner of shed 6' nw of tail race sidewall	19	10					
S109-7 *	R-10	10/21/94	15:40	15' sw of north corner of shed 14' nw of tail race sidewall	99	140					
S113-1	R-11	10/27/94	11:45	1' sw of north corner of shed 3' nw of tail race sidewall	66	58					
S113-2	R-12	10/27/94	11:48	19' sw of north corner of shed 5' nw of taile race sidewall	140	60					
S113-3	R-13	10/27/94	11:52	32' sw of north corner of shed 12' nw of tail race sidewall	49	28	20				
S113-4	R-14	10/27/94	11:58	64' sw of north corner of shed 3' nw of tail race sidewall	62	49					
S113-5	R-15	10/27/94	12:03	101' sw of north corner of shed 10' nw of tail race sidewall	79	46					
S113-6	R-16	10/27/94	15:03	8' sw of tail race bend 11' nw of tail race sidewall	180	110	43				
S113-7	R-17	10/27/94	15:15	58' sw of tail race bend 6' nw of tail race sidewall	260	130					
S113-8	R-18	10/27/94	15:26	97' sw of tail race bend 9' nw of tail race sidewall	92	37					
S113-9	R-19	10/27/94	15:39	139' sw of tail race bend 10' nw of tail race sidewall	130	85	31				
S113-10	R-20	10/27/94	15:45	189' sw of tail race bend 4' nw of tail race sidewall	86	43					
S117-1	R-21	11/02/94	11:33	238' sw of tail race bend 8' se of tail race sidewall	4.4	ND					
S117-2	R-22	11/02/94	11:42	275' sw of tail race bend 15' se of tail race sidewall	5.2	ND	ND				
S117-3	R-23	11/02/94	11:50	286' sw of tail race bend 2' nw of tail race sidewall	9.6	ND					
S117-4	R-24	11/02/94	11:54	312' sw of tail race bend 4' se of tail race sidewall	7.1	7.4					

Note * indicates program sample only Area of sample reworked and resampled



APPROXIMATE HORIZONTAL SCALE: 1" = 60'
VERTICAL SCALE: 1" = 15'
EXAGERATION=3x

RUST ENVIRONMENT & INFRASTRUCTURE

PROJ. NO.: 89906.100 DATE: 11/94

RUST DWG. NUMBER: FIGURE 3

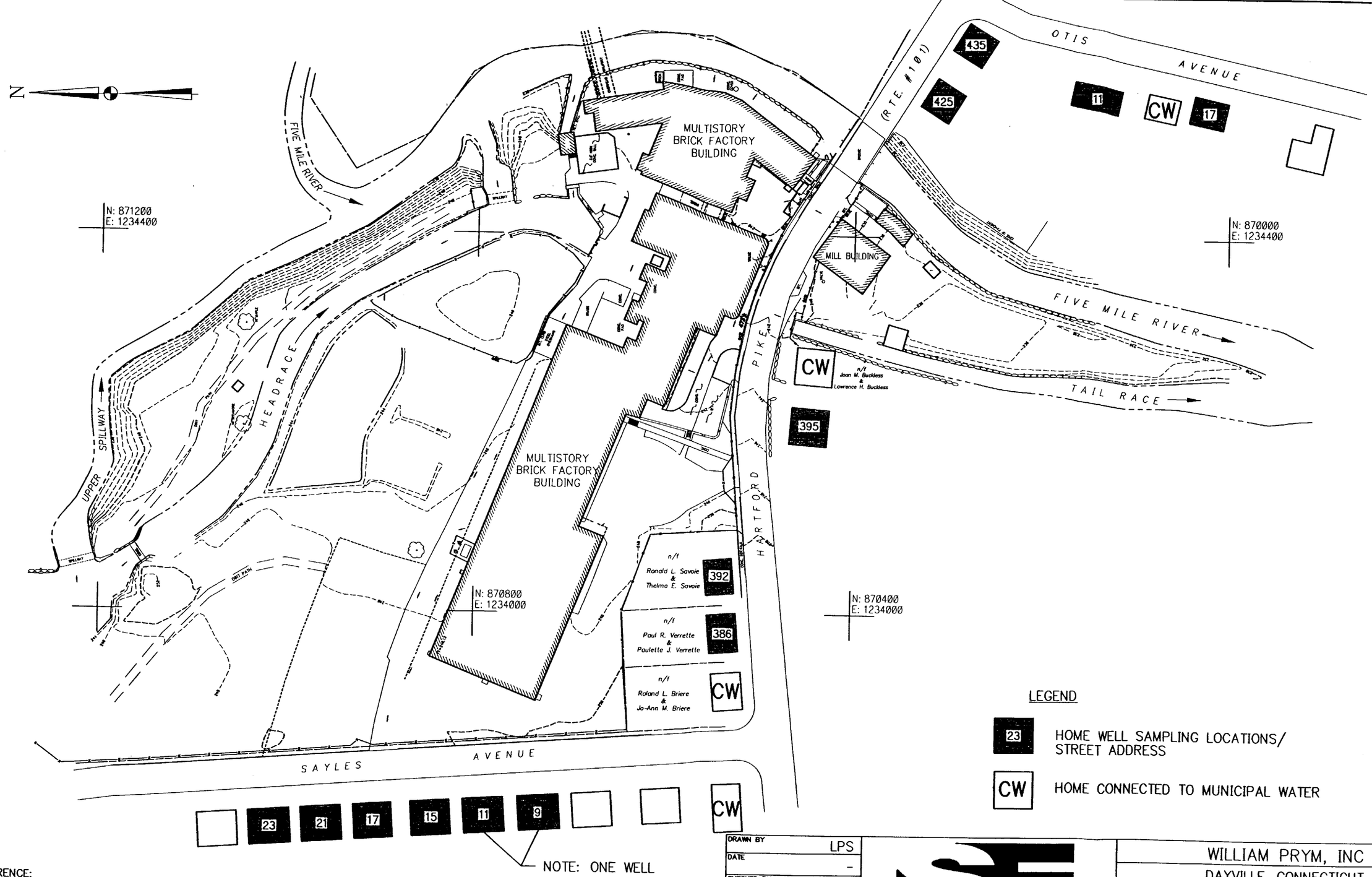
SAMPLE LOCATIONS MAP

TAIL RACE REMEDIATION CONSTRUCTION
WILLIAM PRYM, INC.

DAYVILLE CONNECTICU

ATTACHMENT CA750-C

Home Well Sampling Data
Home Well Location Map



LEGEND

23 — HOME WELL SAMPLING LOCATIONS/ STREET ADDRESS

CW — HOME CONNECTED TO MUNICIPAL WATER

REFERENCE:
"TOPOGRAPHIC SURVEY PREPARED FOR PRYM MILL" BY
KWP ASSOCIATES, PROMFRET CENTER, CONNECTICUT
DATED 6/10/97

ELEVATIONS BASED ON NAD29; HORIZONTAL COORDINATES
BASED ON CONNECTICUT GRID SYSTEM

DRAWN BY	LPS
DATE	-
CHECKED BY	RAD
SET JOB NO.	970177
SET DWG FILE	990177B01.dwg
DRAWING SCALE	1"=100'

SE TECHNOLOGIES
98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

WILLIAM PRYM, INC
DAYVILLE, CONNECTICUT
PHASE III RFI
ADJACENT RESIDENTIAL WELL SAMPLING LOCATIONS

DRAWING NAME: FIGURE 1-2
REV.: 0

Plot: env024 09/09/1999 07:13 G:\Prym\990177\990177B04.dwg

TABLE 4-14
SUMMARY OF ANALYTICAL RESULTS FOR CYANIDE AND METALS
HOME WELL WATER SAMPLES
WILLIAM PRYM, INC.
DAYVILLE SITE

Field Sample ID Date Collected	11 Sayles Ave 4/8/98	15 Sayles Ave 4/8/98	17 Sayles Ave 4/23/98	21 Sayles Ave 4/8/98	23 Sayles Ave 4/8/98	386 Hartford Trpk 4/8/98	386 Hartford Trpk (Dup) 4/8/98	392 Hartford Trpk 4/23/98	EPA RISK-BASED CONCENTRATIONS TAP WATER
Cyanide (MG/l)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.73
Metals (MG/l), total									
BARIUM	<0.01	<0.02	<0.01	<0.01	<0.01	0.012	0.012	0.016	2.6
LEAD	<0.002	<0.002	0.0023	<0.002	<0.002	0.0045	<0.0020	0.0037	
ZINC	0.022	0.03	0.02	0.018	0.016	0.021	0.024	0.035	11.0
ARSENIC	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.002 UJ	0.011
CADMIUM	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.018
COPPER	0.03	0.02	0.0065	<0.004	0.012	0.045	0.046	0.014	130.0
NICKEL	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.73

Field Sample ID Date Collected	435 Hartford Trpk 4/8/98	Method Blank 4/8/98	11 Otis Ave 4/15/98	Method Blank 4/15/98	395 Hartford Trpk 4/23/98	425 Hartford Trpk 4/23/98	17 Otis Ave 4/23/98	Method Blank 4/23/98	EPA RISK-BASED CONCENTRATIONS TAP WATER
Cyanide (MG/l)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.73
Metals (MG/l), total									
BARIUM	0.026	<0.01	<0.01	<0.01	0.011	<0.01	<0.01	<0.01	2.6
LEAD	0.0033	<0.002	<0.002	<0.002	0.0024	<0.002	<0.002	<0.002	
ZINC	0.037	<0.05	0.14	<0.05	0.024	0.027	0.025	<0.05	11.0
ARSENIC	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.002 UJ	0.011
CADMIUM	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.018
COPPER	0.092	<0.004	0.021	<0.004	0.023	0.067	0.016	<0.004	130.0
NICKEL	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.73

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

EPA Region III Risk-Based Concentrations for Tap Water, October 22, 1997
DUP = Duplicate sample

TABLE 4-14
SUMMARY OF ANALYTICAL RESULTS FOR TPH AND VOCS
HOME WELL WATER SAMPLES
WILLIAM PRYM, INC.
DAYVILLE SITE

Field Sample ID Date Collected	11 Sayles Ave 4/8/98	15 Sayles Ave 4/8/98	17 Sayles Ave 4/23/98	21 Sayles Ave 4/8/98	23 Sayles Ave 4/8/98	386 Hartford Trpk 4/8/98	386 Hartford Trpk (Dup) 4/8/98	392 Hartford Trpk 4/23/98	435 Hartford Trpk 4/8/98	EPA RISK-BASED CONCENTRATIONS TAP WATER
TPH (mg/l)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5[1]
Volatiles (ug/l)										
ACETONE	<20	<20	<20	<20	<20	<20	<20	<20	<20	3,700
ACRYLONITRILE	<50	<50	<50	<50	<50	<50	<50	<50	<50	0.12
BENZENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.36
BROMODICHLOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.17
BROMOFORM	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.4
BROMOMETHANE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.7
CARBON DISULFIDE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,000
CARBON TETRACHLORIDE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.16
CHLOROBENZENE	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	1	<1.0	<1.0	39
CHLOROETHANE	<10 UJ	<10 UJ	<10 UJ	<10 UJ	<10 UJ	<10 UJ	<10 UJ	<10 UJ	<10 UJ	8,600
CHLOROFORM	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.15
CHLOROMETHANE	<10	<10	<10	<10	<10	<10	<10	<10	<10	1.4
DIBROMOCHLOROMETHANE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
DIBROMOMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.048
DICHLORODIFLUOROMETHANE	<10	<10	<10	<10	<10	<10	<10	<10	<10	390
1,1-DICHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	810
1,2-DICHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.12
1,1-DICHLOROETHENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.044
TRANS-1,2-DICHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	120
1,2-DICHLOROPROPANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.16
CIS-1,3-DICHLOROPROPENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.077
TRANS-1,3-DICHLOROPROPENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
ETHYLBENZENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,300
2-HEXANONE	<10	<10	<10	<10	<10	<10	<10	<10	<10	1,500
METHACRYLONITRILE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	3.7
4-METHYL-2-PENTANONE (MIBK)	<10	<10	<10	<10	<10	<10	<10	<10	<10	
METHYLENE CHLORIDE	<10	<10	<10	<10	<10	<10	<10	<10	<10	4.1
STYRENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,600
1,1,1,2-TETRACHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.41
1,1,2,2-TETRACHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.052
TETRACHLOROETHENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1
TOLUENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	750
1,1,1-TRICHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	540
1,1,2-TRICHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.19
TRICHLOROETHENE (TCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6
TRICHLOROFLUOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,300
VINYL ACETATE	<10	<10	<10	<10	<10	<10	<10	<10	<10	37,000
VINYL CHLORIDE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	0.019
XYLENES (TOTAL)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	12,000

U = The analyte was analyzed for, but was not detected above the Action Level for blank contamination.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

1 = CTDEP Remediation Criteria
EPA Region III Risk-Based Concentrations for Tap Water, October 22, 1997
DUP = Duplicate sample

TABLE 4-14
SUMMARY OF ANALYTICAL RESULTS FOR TPH AND VOCS
HOME WELL WATER SAMPLES
WILLIAM PRYM, INC.
DAYVILLE SITE

Field Sample ID Date Collected	425 Hartford Trpk 4/23/98	17 Otis Ave 4/23/98	Method Blank 4/23/98	11 Otis Ave 4/15/98	Method Blank 4/15/98	Trip Blank 4/23/98	Method Blank 4/8/98	395 Hartford Trpk 4/23/98	EPA RISK-BASED CONCENTRATIONS TAP WATER
TPH (mg/l)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5[1]
Volatiles (ug/l)									
ACETONE	<20	<20	<20	<20	<20	<20	<20	<20	3,700
ACRYLONITRILE	<50	<50	<50	<50	<50	<50	<50	<50	0.12
BENZENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.36
BROMODICHLOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.17
BROMOFORM	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.4
BROMOMETHANE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.7
CARBON DISULFIDE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,000
CARBON TETRACHLORIDE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.16
CHLOROBENZENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	39
CHLOROETHANE	<10	<10	<10	<10	<10	<10	<10	<10	8,600
CHLOROFORM	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.15
CHLOROMETHANE	<10	<10	<10	<10	<10	<10	<10	<10	1.4
DIBROMOCHLOROMETHANE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
DIBROMOMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.048
DICHLORODIFLUOROMETHANE	<10	<10	<10	<10	<10	<10	<10	<10	390
1,1-DICHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	810
1,2-DICHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.12
1,1-DICHLOROETHENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.044
TRANS-1,2-DICHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	120
1,2-DICHLOROPROPANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.16
CIS-1,3-DICHLOROPROPENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.077
TRANS-1,3-DICHLOROPROPENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
ETHYLBENZENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,300
2-HEXANONE	<10	<10	<10	<10	<10	<10	<10	<10	1,500
METHACRYLONITRILE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	3.7
4-METHYL-2-PENTANONE (MIBK)	<10	<10	<10	<10	<10	<10	<10	<10	
METHYLENE CHLORIDE	<10	<10	<10	<10	<10	<10	<10	<10	4.1
STYRENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,600
1,1,1,2-TETRACHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.41
1,1,2,2-TETRACHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.052
TETRACHLOROETHENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1
TOLUENE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	750
1,1,1-TRICHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	540
1,1,2-TRICHLOROETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.19
TRICHLOROETHENE (TCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6
TRICHLOROFLUOROMETHANE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,300
VINYL ACETATE	<10	<10	<10	<10	<10	<10	<10	<10	37,000
VINYL CHLORIDE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	0.019
XYLENES (TOTAL)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	12,000

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

1 = CTDEP Remediation Criteria
EPA Region III Risk-Based Concentrations for Tap Water, October 22, 1997
DUP = Duplicate sample

ATTACHMENT CA750-D

Five Mile River Ecological Assessment Report

ECOLOGICAL ASSESSMENT OF FIVEMILE RIVER

Prepared for

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R-17469.000

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Table of Contents

List of Figures

Page

List of Tables

1.0 INTRODUCTION

SE Technologies contracted Normandeau Associates, Inc. (Normandeau) in late October 1997 to conduct an ecological assessment of the Fivemile River aquatic biological community near the former William Prym Inc. Facility in Dayville, CT. The purpose of this ecological assessment was to determine whether groundwater in the vicinity of the facility entering the river, past discharges and/or surface runoff have had an adverse effect on the aquatic biota in Fivemile River. To observe the potential impact, the benthic macroinvertebrate community in Fivemile River was sampled using the U.S. Environmental Protection Agency (EPA) Rapid Bioassessment Protocols (RBP, Plafkin et al. 1989). RBP is an assessment methodology that is accepted by State and Federal regulatory agencies for evaluating impacts to aquatic biological communities. The RBP method is based on a comparison of metrics (parameters) characterizing the aquatic community in similar river habitats sampled at locations upstream (reference) and adjacent to (experimental) potential sources of contamination.

In addition, a search for rare, threatened, and endangered species was conducted in the river. The late time of year precluded searches for terrestrial rare, threatened, and endangered species; a search for these species is planned for spring/summer 1998.

2.0 MATERIALS AND METHODS

2.1 FIELD STUDY

The benthic macroinvertebrate survey was conducted on 7 November 1997 following procedures described in EPA's Rapid Bioassessment Protocol II (RBP II, Plafkin et al. 1989). Two stations were established in Fivemile River. The reference station was located upstream of any influence from the facility at an area immediately downstream of the railroad bridge that crosses Fivemile River east of the property (Figure 1). The experimental station was located south of the property, immediately downstream of the Route 101 bridge. At each biological sampling station, RBP habitat data were recorded as well as current velocity, temperature, pH, and conductivity.

Biological sampling at each station included qualitative kick samples and coarse particulate organic matter (CPOM) samples following RBP II guidelines. Kick samples were collected by placing a 500μm mesh dip net perpendicular to the flow and disturbing the substrate immediately upstream of the net. Animals and detritus dislodged from the substrate were carried into the net. This process was repeated at four locations at each sampling station, two in fast water and two in slow water. CPOM samples were collected by removing several handfuls of leaf litter from the substrate and placing them into a labeled sample container. CPOM samples were collected to determine the shredder component of the benthic biological community. Shredders (Cummins 1973) are benthic organisms that feed on leaf litter, bark, small branches, etc. larger than 1.0 mm; they are instrumental in the initial breakdown of this allochthonous material which falls into the stream.

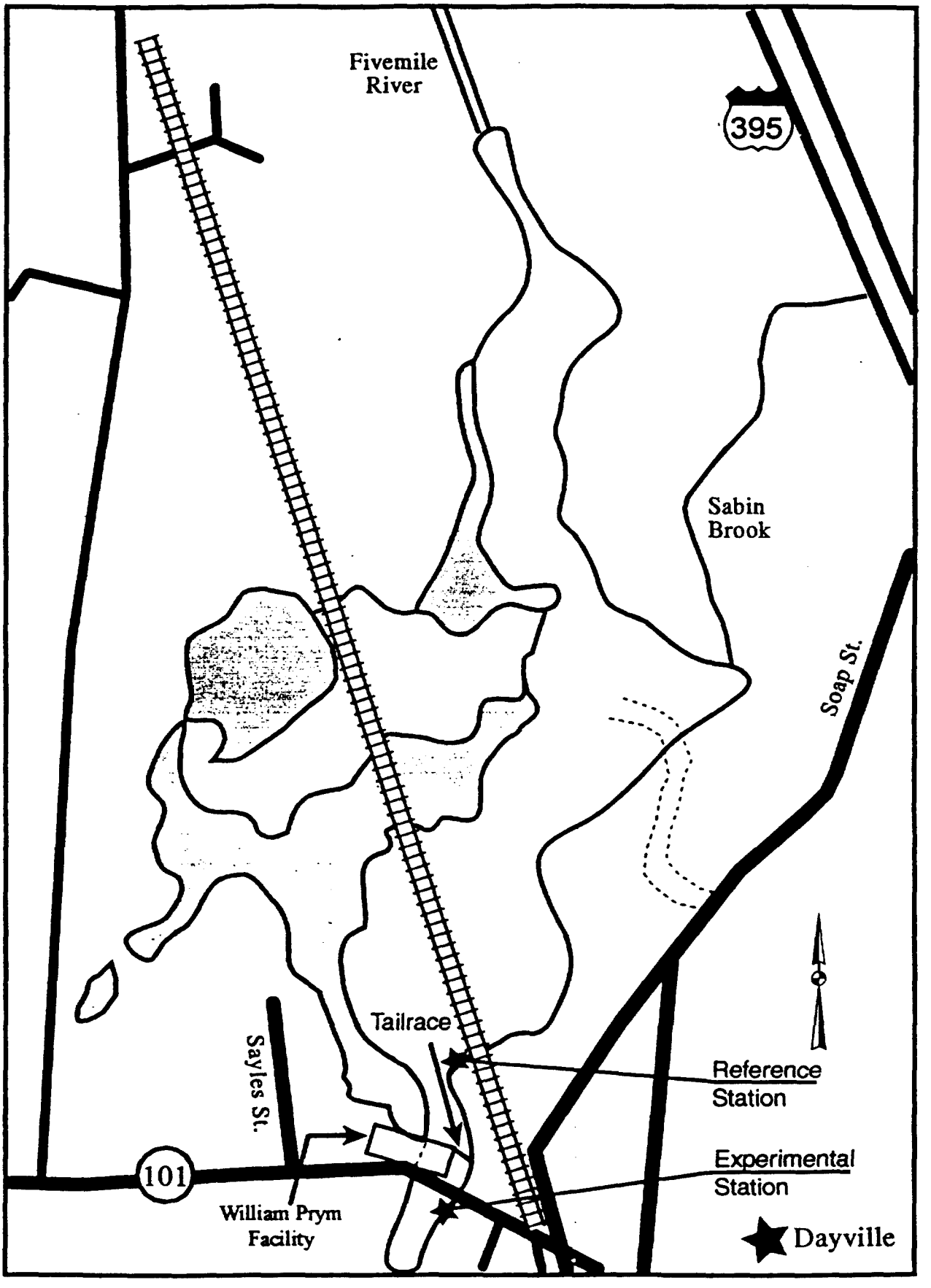

Figure 1. Location map of sampling sites for the former William Prym Inc. Facility, Dayville, Conneticut.

Each benthic and CPOM sample was placed in a container, labeled with date, station, collection time, and a unique sample identification number, then preserved with 70% ethanol.

A search for state and federally listed rare, threatened, and endangered species, primarily dwarf wedge mussel (*Alasmidonta heterodon*) and brook floater mussel (*A. varicosa*), was conducted by wading in the water and observing the substrate with a viewtube to look for mussels and other animals of interest. Areas of preferred habitat at both stations as well as an area immediately downstream of the tailrace were searched. The search area at the reference station extended from the railroad bridge to a point 100 ft downstream. The search area for the experimental station began at the Route 101 bridge and extended downstream 100 ft. The search below the tailrace began at the confluence of the tailrace and Fivemile River and extended downstream 100 ft.

2.2 LABORATORY ANALYSIS

In the laboratory, the contents of each benthic sample was individually placed in a white enamel pan (12 X 18 inches) with 50 consecutively numbered grids. The material in the pan was covered with water and gently swirled to spread it evenly over the entire bottom. Homogeneous distribution of the sample was maintained during the sorting and identification process.

After the sample was in the pan, grids were randomly selected and organisms were systematically removed (sorted using a 1.75X magnifier) from each grid until a 100 organism subsample ($\pm$ 20 organisms) was removed. Once sorting was started in a grid, all organisms were removed from that grid; each grid was only sorted once. Organisms were identified to the family taxonomic level during the sorting process and recorded.

Normally, RBP procedures require that one subsample of at least 100 organisms is analyzed from each kick sample. However for this study,three 100-organism subsamples from each station were processed and analyzed to provide an additional measure of subsampling variability. Biological metrics were calculated from mean values of the three replicate subsamples at each station. Seven grids were sorted for each subsample, and a total of 21 out of the 50 grid squares were examined for each sample.

CPOM samples were processed by first removing leaves and other large detrital material, then all organisms were removed from the sample and recorded as shredders or non-shredders.

Organisms removed from both benthic and CPOM samples were put into glass vials labeled with pertinent sample information, preserved with 70% ethanol, and archived.

2.3 HABITAT DATA ANALYSIS

Primary, secondary and tertiary habitat parameters were observed following EPA's RBP methodology, and used to describe the macrohabitat conditions found at each station. These RBP habitat

parameters were intended (by the EPA) to describe riverine conditions such as those found in Fivemile River. The RBP habitat parameters were used to describe each sampling station and the associated river habitat (reach) from about 50 feet upstream to 50 feet downstream. These data were recorded to document differences in habitat quality which may affect the benthic community compostion.

The primary habitat features are intended to characterize microhabitat conditions at each station that may have the greatest direct influence on the benthic community structure. The primary characteristics evaluated by the RBP method include bottom substrate composition and available cover, substrate embeddedness, and variations in habitat as a result of depth and velocity changes. The secondary habitat characteristics evaluate channel morphology, bottom scouring and deposition, and stream sinuosity as characterized by the ratio of pool/riffle and run/bend ratio found at each station. The tertiary habitat parameters evaluate bank stability, riparian vegetation, and streamside cover (shading).

Each RBP habitat parameter was evaluated in the field at the time of sampling by completing a Habitat Assessment Field Data Sheet for each sampling station. A score was assigned for each parameter based on its similarity to "ideal" stream macrohabitat conditions for benthic macroinvertebrate communities. Each primary habitat parameter received a score of 0 to 20, secondary habitat parameters were scored from 0 to 15, and tertiary scores ranged from 0 to 10, with the highest values assigned to the best conditions. The primary, secondary and tertiary scores were summed to evaluate the habitat at each station. The maximum possible score was 135, and stations receiving a score of 100-135 were considered to have excellent macrohabitat conditions, scores of 64-99 were good conditions, scores of 36-63 were fair conditions, and macrohabitat scores less than 36 were considered poor conditions by the RBP method.

2.4 BENTHIC DATA ANALYSIS

Benthic data analysis for RBP II uses eight biological metrics (parameters) to assess the data. These metrics integrate population community and functional feeding group characteristics to produce a single evaluation of biotic integrity. Biological metric values for each station were calculated using mean data from three replicate subsamples. The eight metrics used this evaluation are listed below.

Taxa Richness. Taxonomic richness (taxa richness) is the number of different types (taxa) of benthic macroinvertebrates present in a sample, and is a measure of the diversity of different types of invertebrates in the community. For example, if two different types of mayflies, one type of caddisfly, and five different types of midges were found in a sample, the taxa richness of the sample would be 8.

Family Biotic Index. The Family Biotic Index (FBI) is a ranking based on literature-reported values of the relative sensitivity of a family to organic pollution stress caused primarily by the

presence of oxygen-demanding substances in the water. This index was developed by Hilsenhoff (1988) to summarize the tolerances of benthic macroinvertebrates at the family taxonomic level and is based on the original species- level index (Hilsenhoff 1982). Each family is assigned a value ranging from sensitive (0) to tolerant (10), the individual tolerance values are weighted by the proportion of that taxon among the total number of organisms with tolerance values in that sample, and the weighted values are summed within the sample to calculate the FBI. Samples from degraded sites will have mostly tolerant taxa and a FBI closer to 10. Pristine sites will have mostly intolerant taxa and a FBI closer to 0. Tolerance values assigned to macroinvertebrate taxa in this study were based on those used by the Connecticut Department of Environmental Protection.

Scraper/Filterer Ratio. Scrapers are benthic macroinvertebrates that feed on algae and bacteria growing on the substrate (periphyton). Filtering collectors feed on fine particulate material that is suspended in the water. The predominance of either functional feeding group reflects an abundance of their food source, and the two feeding groups are usually compared as a ratio. The more this ratio differs from a value of 1.0, the greater the imbalance in the proportion of these two food sources. A low ratio indicates either a relatively high abundance of particulate food or a low abundance of periphyton. A high ratio indicates either a high abundance of periphyton or a low abundance of particulate material. A high ratio may also indicate the presence of toxicants adsorbed to fine organic particulate material that has become available as food for filtering collectors.

Ratio of Sensitive Taxa to Tolerant Midges (EPT/C). Non-biting midges in the insect family Chironomidae are generally abundant in the benthic macroinvertebrate community and tolerant of environmental stress. The ratio of abundance of the sensitive EPT taxa to the abundance of the tolerant Chironomidae (EPT/C ratio) is a measure of community balance. Good biotic conditions are reflected in a relatively even distribution among all four groups and a relatively high ratio. Macroinvertebrate communities experiencing environmental stress may exhibit a low EPT/C ratio due to a disproportionate high number of the tolerant midges. Chironomids tend to become increasingly dominant along a gradient of increasing organic enrichment or heavy metals concentration (Ferrington 1987).

Percent Dominant Taxon. The percent contribution of the most abundant taxon to the total number of organisms found in a sample is a measure of balance in the benthic community. If the dominant taxon accounts for a large percentage of the individuals present, it is an indication of a stress because the community is dominated by one taxon whereas unstressed communities typically exhibit a more evenly balanced abundance among several taxa.

Sensitive (EPT) Taxa. Three groups of benthic insects are considered particularly sensitive to pollution, and the number of distinct taxa among them generally increases with increasing water quality. These groups (orders) are mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera) and are collectively referred to as the EPT taxa.

Community Loss Index. The community loss index measures the loss of benthic taxa in samples from a test station compared to those found at the reference station. It is calculated as the number of taxa found at the reference station minus the number of taxa common at the two stations, divided by the number of taxa present at the test station. For example, if the reference station had three mayfly taxa, five midge taxa, and one stonefly taxon, while the test station had two of the same mayfly taxa, four of the same midge taxa, no stoneflies, and one caddisfly taxon, the community loss index for the test station would be (9 - 6)/7 = 0.43. The value of this index can range from 0 to infinity, and increases as the test station becomes increasingly dissimilar to the reference station.

Proportion of Shredders in the CPOM Sample. The abundance of shredders relative to other Functional Feeding Groups allows an evaluation of potential impairment as indicated by the CPOM-based shredder community. Shredders are sensitive to riparian zone impacts and are particularly good indicators of toxic effects when the toxicants involved are readily adsorbed to the CPOM and either affect the microbial communities colonizing the CPOM or the shredders directly.

After biological metric values are calculated for each station (reference or experimental), the data are compared between the two stations (Figure 2). The metric values from the experimental station are compared to the reference station and each experimental station metric is assigned a score based on its percent comparability with the reference station. Metric scores for the experimental station are totaled and compared to the total metric score from the reference station. For this comparison, it is assumed that the reference station receives optimal scores (6) for each metric except for percent composition of the dominant taxon. The percent comparison between the total scores provides a final evaluation of biological condition.

3.0 RESULTS

3.1 HABITAT DATA

Habitat quality at the reference station was considered excellent, and was predominately run and pool habitat. The substrate was composed primarily of large gravel that was not embedded. Stream width at the reference station was estimated at 20 ft, depth was 0.5 ft in the run and 2.5 ft in the upstream pool (under the railroad bridge). Current velocity was 0.6 feet per second (fps) in the run and 0.3 fps in the pool. Water temperature was 9.5°C, pH was 7.4, conductivity was 82 micromhos/cm^2.

Habitat score at the reference station was 115 (Table 1). This station received excellent scores for the primary habitat parameters and two of the three secondary habitat parameters; tertiary habitat parameters ranked fair to good.

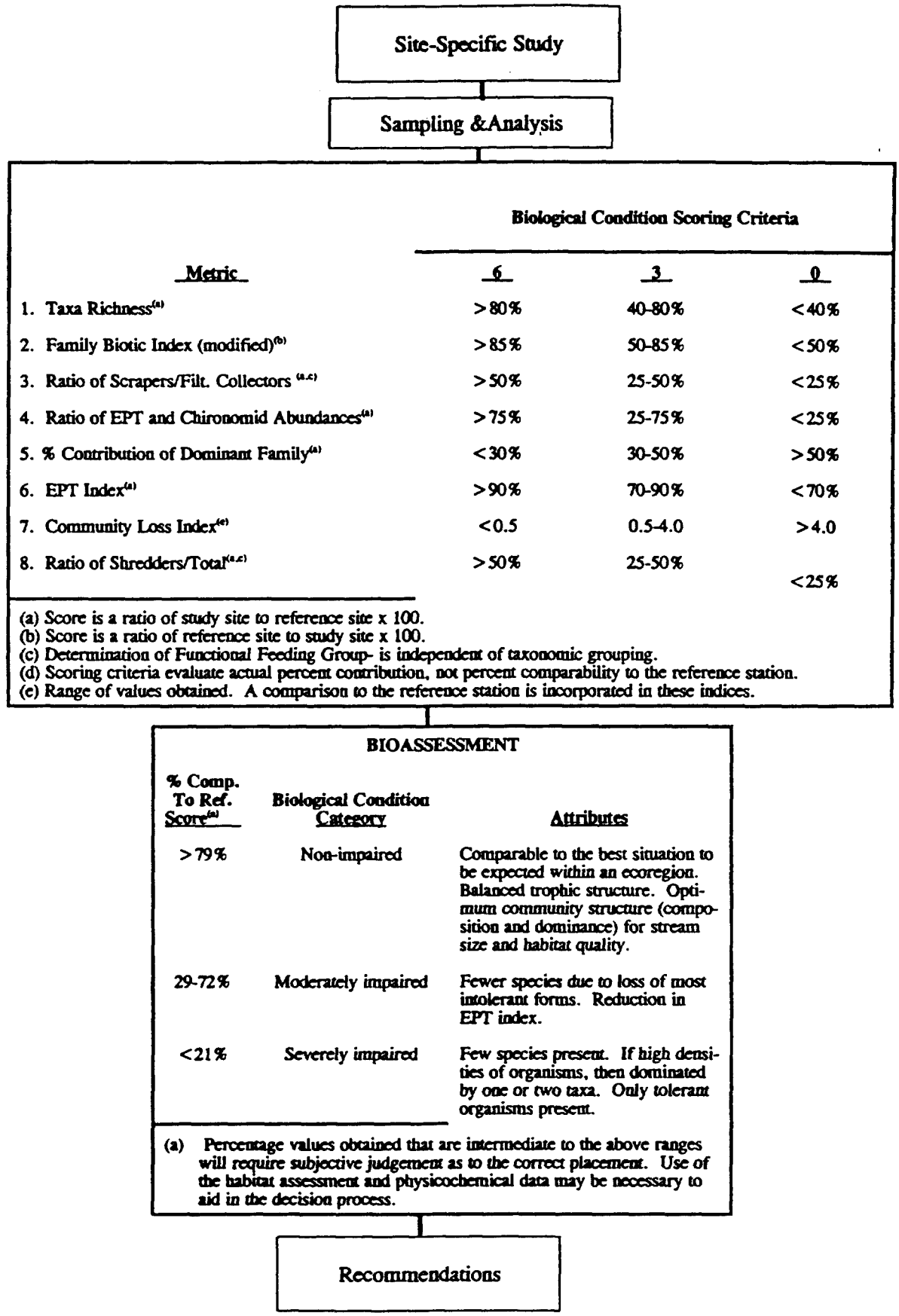

Figure 2. Flowchart of bioassessment approach advocated for Rapid Bioassessment Protocol II. (Plafkin et al. 1989)

TABLE 1. FIVE MILE RIVER RBP HABITAT SCORES.

STATION RANGE	PRIMARY* SUBSTRATE (0-20)	EMBEDDEDNESS (0-20)	AVAILABLE HABITAT (0-20)	CHANNEL ALTERATION (0-15)	SECONDARY** SCOOPING/ DEPOSITION (0-15)	POOL/ RIFFLE (0-15)	BANK STABILITY (0-10)	TERTIARY*** VEGETATIVE STABILITY (0-10)	COVER (0-10)	HABITAT SCORE
UPSTREAM	20	18	16	15	14	11	8	8	5	115
DOWNSTREAM	16	13	14	13	14	11	10	8	5	104
							Percent comparison (DS/US)			90 Comparable

* PRIMARY SCORES excellent=16-20, good=11-15, fair=6-10, poor=0-5
** SECONDARY SCORES excellent=12-15, good=8-11, fair=4-7, poor=0-3
*** TERTIARY SCORES excellent=9-10, good=6-8, fair=3-5, poor=0-2

Habitat quality at the experimental station was also considered excellent, and was exclusively run habitat. The substrate was composed of 10% cobble, 50% gravel, and 40% sand; the cobble and gravel were 25-50% embedded. Stream width was estimated at 35 ft, depth was 1.5 ft, and current velocity was 1.4 fps. Water temperature was 9.5°C, pH was 7.4, and conductivity was 75 micromhos/cm^2.

Habitat score at the experimental station was 104 and had a percent comparability with the reference station of 90%, indicating that the two habitats were comparable (Plafkin et al. 1989) and should support similar benthic communities. This station received good to excellent scores for primary and secondary habitat parameters and fair to excellent scores for tertiary habitat parameter scores.

3.2 BENTHIC DATA

The Fivemile River reference station benthic community was comprised of organisms typical of the aquatic habitat located there. This station had a mean of 21 taxa including 13 EPT taxa (Table 2). The dominant taxon found at the reference station was the mayfly Ephemerellidae, a pollution sensitive organism found in clean-swept cobble and large gravel habitats with moderate current velocity. Low values were found for the biotic index value and percent shredders from the CPOM sample. High values were found for EPT/Chironomidae ratio and for percent domination by a single taxon.

The experimental station also had a benthic community that was typical of the type of habitat found there. This station had a mean of 20 taxa including 10 EPT taxa. The dominant taxon at this station was the midge Chironomidae, a moderately pollution-tolerant organism found in substrates consisting of fine-grained material such as sand, mud, and silt. Values for taxa richness, scraper/filterer ratio, EPT/Chironomidae ratio, and percent contribution of the dominant taxon were lower than at the reference station. Conversely, values for biotic index and percent shredders from the CPOM sample were higher than at the reference station.

Benthic data comparisons between the reference station and the experimental station indicated that Fivemile River was considered by the RBP method to fall between non-impaired and moderately impaired conditions at the experimental station (Table 3). The experimental station received optimal metric comparison scores (6) for taxa richness, scraper/ filterer ratio, percent contribution by the dominant taxon, community loss index, and percent shredders in the CPOM sample. EPT richness received a moderate score (3). Biotic index and EPT/Chironomidae abundance ratio received low scores (0).

TABLE 2. REPLICATE AND MEAN NUMBER OF BENTHIC MACROINVERTEBRATES FOUND IN KICK SAMPLES COLLECTED FROM TWO STATIONS ON FIVEMILE RIVER.
DATA COLLECTED ON 7 NOVEMBER 1997.

TAXON	FUNCTIONAL GROUP	FBI	REFERENCE STATION REP A	REP B	REP C	MEAN	EXPERIMENTAL STATION REP A	REP B	REP C	MEAN
OLIGOCHAETA (worms)	CG	8					9	2	3	4.67
MOLLUSCA										
Planorbidae (snails)	SC	6	1	0	0	0.33				
Sphaeriidae (clams)	CF	8	0	0	1	0.33	20	16	13	16.33
ARACNIDA (mites)	PR	4					1	0	0	0.33
AMPHIPODA (scuds)										
Gammaridae	CG	6	0	1	0	0.33				
Talitridae	CG	8					0	1	0	0.33
INSECTA										
EPHEMEROPTERA (mayflies)										
Baetidae	CG	4	1	0	0	0.33	1	0	1	0.67
Ephemerellidae	CG	1	40	47	43	43.33	5	7	4	5.33
Heptageniidae	CG	4	7	6	3	5.33	11	4	3	6.00
Siphlonuridae	CG	7	0	1	1	0.67	3	0	1	1.33
PLECOPTERA (stoneflies)										
Perlidae	PR	1	2	2	1	1.67	0	1	0	0.33
Taeniopterygidae	SH	2	6	7	7	6.67	0	9	7	5.33
ODONATA (dragonflies)										
Aeshnidae	PR	3	1	0	0	0.33	1	0	0	0.33
Coenagrionidae	PR	9	2	2	2	2.00	9	5	5	6.33
Gomphidae	PR	1					2	0	0	0.67
COLEOPTERA (beetles)										
Elmidae	SC	4	14	9	6	9.67	9	12	17	12.67
Psephenidae	SC	4					1	1	1	1.00
TRICHOPTERA (caddisflies)										
Brachycentridae	SH	1	1	2	3	2.00	3	2	7	4.00
Hydropsychidae	CF	4	18	14	8	13.33	11	11	5	9.00
Hydroptilidae	CG	4	0	0	1	0.33				
Rhyacophilidae	SH	4	0	1	0	0.33				
Philopotamidae	CF	3	2	4	0	2.00	1	1	2	1.33
Phryganeidae	SH	6	0	0	1	0.33				
Polycentropodidae	CF	6	2	2	1	1.67	0	2	0	0.67
DIPTERA (true flies)										
Chironomidae	CG	6	1	7	5	4.33	20	28	26	24.67
Tipulidae	SH	3	0	0	1	0.33				
TOTAL			96	105	84	95.67	107	102	95	101.33

	MEAN	MEAN
Taxa Richness =	21	20
Family Biotic Index =	2.64	5.27
Scraper/Filterer Ratio =	0.58	0.52
EPT/Chironomidae Ratio =	16.00	1.38
% Dominant Taxon =	45.30	24.34
EPT Richness =	13	10
Community Loss Index =		0.35
% Shredders (from CPOM) =	0.36	0.55

Functional Feeding Group Classification:

	N	% Comp.	N	% Comp.
Collector/Gatherers (CG)	55	57.14	43	42.57
Collector/Filterers (CF)	17	18.12	27	26.73
Predators (PR)	4	4.18	8	7.92
Scrapers (SC)	10	10.45	14	13.86
Shredders (SH)	10	10.10	9	8.91
	96	100	101	100

TABLE 3. COMPARISON OF BENTHIC METRIC DATA FROM SITES ON FIVEMILE RIVER DURING NOVEMBER 1997.

	REFERENCE STATION	EXPERIMENTAL STATION	PERCENT COMPARISON	REF. METRIC SCORE	EXP. METRIC SCORE
TAXA RICHNESS	21.00	20.00	95.24	6	6
BIOTIC INDEX	2.64	5.27	50.09	6	0
SCRAPER/FILTERER	0.58	0.52	89.66	6	6
EPT/CHIRONOMIDAE	18.08	1.38	7.63	6	0
% DOMINANT TAXON	40.82	24.34	—	3	6
EPT RICHNESS	13.00	10.00	76.92	6	3
COMMUNITY LOSS INDEX	---	0.25		6	6
% SHREDDERS FROM CPOM	0.36	0.55	100.00	6	6
				45	33
			% SCORE COMPARISON=		73.33
			BIOASSESSMENT=	NON-IMPAIRED/ MODERATELY	IMPAIRED

3.3 RARE, THREATENED, AND ENDANGERED SPECIES SEARCH

No mussels or other rare, threatened, or endangered species were found in the substrate or along the shore of Fivemile River during this survey. In addition, prior to conducting the field study, Normandeau was in contact with the Connecticut Natural Diversity Data Base and the town of Killingly to obtain information on known habitats or locations of rare, threatened, or endangered species in the vicinity of the study area. Both sources stated that no records of rare, threatened, or endangered species were known from the study area.

4.0 DISCUSSION

The percent comparability between the experimental station and reference stations was 73.3 percent (Table 3). The RBP biological condition category for experimental stations with a percent comparability of 73 percent falls between the upper and lower limits of moderate impairment and non-impairment respectively (Figure 2), though 73 percent comparability is just slightly above the moderately impaired category. In situations when the biological condition category is not clearly defined, best professional judgement of the investigator is required to determine whether impairment is indicated. The abundance of midges and fingernail clams at the experimental station compared to the reference station may be due to degraded water quality and/or substrate conditions, or differences in substrate composition. Several pollution intolerant organisms were collected at the downstream station. These organisms would not be expected from an area with degraded water quality or substrate conditions. Also, taxa richness and the percentage of shredders in the CPOM sample were higher at the experimental station than at the reference station. Degraded environmental conditions usually reduce these values relative to the reference station.

A low value for EPT/Chironomidae ratio and a high biotic index value resulted in low percent comparability with the reference station, and therefore low biological condition scores for those metrics. The low value for EPT/Chironomidae ratio is due to the presence of more Chironomidae (midges) at the experimental station compared to the reference station. A mean of only 4 individuals of this family of mostly tolerant organisms was found in the subsample from the reference station, however midges were among the dominant taxa at the experimental station (24.7%). The higher biotic index value at the experimental station (indicating a community of pollution tolerant organisms) was primarily due to the abundance of two taxa, midges and Sphaeriidae (fingernail clams), having high biotic index values. The biotic index values for these two families are 6 and 8 respectively and represented 41 of the 101 individuals found at the experimental station. Ephemerellidae, the dominant family at the reference station also represented 43 of the 96 individuals, yet it has a biotic index value of 1, indicating it is a pollution sensitive group. Therefore, midges and fingernail clams at the experimental station were the pollution tolerant organisms contributing most of the increased biotic index value at the experimental station.

Habitat characteristics at both stations were considered comparable based on the RBP II habitat evaluation, however, subtle habitat differences between the stations may exist. The RBP habitat assessment procedures state that if two sites have habitat percent comparability greater than 90 percent, then those two sites are comparable and should support similar benthic communities. The percent comparability between the reference station and the experimental station in Fivemile River had a percent comparability of 90, the lower end of the comparable habitat range. If the experimental station had received a score two points less (i.e., a score of 102 instead of 104) the percent comparability would have been 89 percent, too low to be considered comparable. Every effort was made to find two sampling stations with similar habitat conditions, and the two locations chosen for the sampling stations were as similar as possible within the confines of the study area.

The reference station had a substrate that was almost exclusively clean- swept large gravel (0.75-1.5 in), whereas the experimental station had a substrate that contained interstitial sand between cobble and gravel. Primary habitat characteristics, which include substrate composition, embeddedness, and variety of habitat types are the most important factors affecting benthic community composition. Habitats with coarse, clean- swept cobble and large gravel substrates are often dominated by Ephemeroptera (mayflies) and Trichopera (caddisflies), whereas habitats with fine grained substrates (sand, mud, silt) are usually dominated by midges, Oligochaeta (worms), and sometimes fingernail clams. Organisms that are found in sandy habitats also typically have moderate to high biotic index values, even if the habitat is pristine. This is because habitats with fine grained sediments usually have low dissolved oxygen levels, so organisms living in these habitats must be able to survive in a wide range of dissolved oxygen concentrations. The presence of organisms with high biotic index (pollution tolerant) values does not necessarily indicate impaired conditions, however the presence of these organisms at the exclusion of organisms with low biotic index (pollution intolerant) values does indicate impairment. The benthic community at the experimental station had both pollution tolerant and pollution intolerant organisms.

The RBP analysis of benthic data collected from Fivemile River did not clearly show whether the experimental station was impaired. The data tend to indicate that some impairment has occurred; however, the difference in the biological community between the two stations may be due to degraded substrate or water quality conditions, or other conditions at the time of sampling. The low percent comparability of biological conditions between the two stations indicates that there probably was some impairment at the experimental station. However, benthic macroinvertebrate communities of flowing waters typically peak in abundance and diversity during the late summer (August-September); therefore, the observed differences between reference and experimental stations that were seen in this study may also have been influenced by sampling only part of the community that remained present during the ice-free period considered to be late in the growing season for stream benthic macroinvertebrates.

5.0 LITERATURE CITED

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