BEAR CREEK PROJECT – WASTE MANAGEMENT INVOLVEMENT

WITCO (CROMPTON)

IDENTIFICATION OF DISPOSAL UNITS

Lagoon # 1 and Lagoon #2 aka AOC 1 and AOC 2; identified as Δ 1 and Δ 2 on Figure 9.

[Drawing 136015-D12, Potential Areas of Concern, updated 2/19/99, located in Preliminary Remedial Investigation for Witco Corp. prepared by ESC January 27, 1999.]

TYPE OF MATERIAL DISPOSED/ TIME PERIOD

Settling basin for wastewater treatment system. Generated approx. 2000 tons of heavy organic material sludge per year, but included some light end petroleum hydrocarbons. Operated 1950's to 1985.

KNOWN GROUNDWATER RELEASES

There have been no documented or apparent releases to groundwater for this AOC since closure and commencement of monitoring for this unit.

GROUNDWATER MONITORING (PARAMETERS AND TIME OF MONITORING, STATUS OF WELLS

Wells 960, 952, 953, 954 are presently monitored on a quarterly basis and have been since closure. Wells 952, 953 and 954 are the downgradient wells for this AOC. Indicator parameters monitored are ph, specific conductance, TOC and TOX on a quarterly basis. Annual analyses for groundwater quality parameters include iron, manganese, sodium, chlorides, sulfates and phenolics for this AOC.

HOW WERE UNITS CLOSED/ POST-CLOSURE REQUIREMENTS

Closed in 1989 under consent order with DEP. Waste was excavated to bedrock. Four groundwater monitoring wells were installed as part of post-closure care program.

IDENTIFICATION OF DISPOSAL UNITS

Lagoon # 4; AOC #3, identified as Δ 3 on Figure 9.

TYPE OF MATERIAL DISPOSED/ TIME PERIOD

Unlined earthen basin used to store oily waxes and slightly viscous semisolids from unknown period until 1961. Lagoon contained 4,000 to 6,000 cubic yards of sludge.

KNOWN GROUNDWATER RELEASES

Documented release to groundwater has occurred at Well 904 with detection of Benzene at 690ug/l in December of 1998 with Act 2 MSC listed at 5ug/l. Additionally, Arsenic was detected at .133mg/l with an Act 2 MSC of .05mg/l. Lead was detected at .047mg/l with the Act 2 MSC at .005mg/l. Arsenic and lead appear to be somewhat consistent with background numbers.

GROUNDWATER MONITORING (PARAMETERS AND TIME OF MONITORING, STATUS OF WELLS

Wells 901, 902, 903, 904 are presently monitored on a quarterly basis and have been since closure. Wells 902, 903, 904 are the downgradient wells for this AOC. Indicator parameters monitored are pH, specific conductance, TOC, with iron, chlorides, and sulfates. Wells 17, 18 and 19 were recently installed for additional monitoring for AOC-8.

HOW WERE UNITS CLOSED/ POST-CLOSURE REQUIREMENTS

Solidified in 1980 with flyash in place and covered with synthetic cap in 1988 under consent order with DEP.

IDENTIFICATION OF DISPOSAL UNITS

Inactive Landfill (Location No. 1), AOC 4, identified as Δ 4 on Figure 9.

TYPE OF MATERIAL DISPOSED/ TIME PERIOD

Eight acres at top of watershed. Received a wide variety of plant wastes, including plant rubble, solid waste from production processes, and wastewater treatment sludge. Initiation of operation period unknown; concluded in 1985. Maybe some soils from AOC 16 in 1982. Specific process waste would include: coke fines, clarifier bottoms, calcinate filter cake, separator solids, hydrocarbon contaminated soil, oily sludges, bauxite, flyash and spent carbon filter media.

KNOWN GROUNDWATER RELEASES

It was noted in the Preliminary Remedial Investigation Report prepared by Environmental Strategies Corp. and dated January 27,1999, that a 1993 RFA Summary concluded that groundwater beneath this unit was impacted. However, review of analytical data in Waste Management files since closure indicates no documented or apparent releases to groundwater for this AOC.

GROUNDWATER MONITORING (PARAMETERS AND TIME OF MONITORING), STATUS OF WELLS

Wells OW-1, OW-2, OW-3, OW-4, OW-5, OW-6, W-1 and W-2 are presently monitored on a quarterly basis and have been since closure. Wells OW-2, OW-3, OW-4 and W-2 are the downgradient wells for this AOC. The indicator parameters monitored are pH, specific conductance, TOC and TOX.

HOW WERE UNITS CLOSED/ POST-CLOSURE REQUIREMENTS

Closed in 1991 under consent order with DEP by capping with a synthetic cap and revegetating the area.

IDENTIFICATION OF DISPOSAL UNITS

Temporary Landfill; AOC #5, identified as Δ 4 on Figure 9.

TYPE OF MATERIAL DISPOSED/ TIME PERIOD

Approximately 1.5 acre landfill created as a result of DEP order to cease using inactive landfill (AOC 4). Operated between 1985 and 1990. Used for disposal of barinate and calcinate filter cake, spent bauxite filter media, and API separator sludge until permit for residual was landfill was granted in 1990.

KNOWN GROUNDWATER RELEASES

Groundwater monitoring for the Temporary Landfill (AOC- 5) would be the same as the report for the Inactive Landfill (AOC- 4).

GROUNDWATER MONITORING (PARAMETERS AND TIME OF MONITORING), STATUS OF WELLS

No additional wells were added to monitor groundwater at the Temporary Landfill (AOC- 5). Two additional wells completed, MR-30 and MW-29, in October of 2001 for the Environmental Clean-up Program. There is no analytical data for the additional wells in the Waste Management files.

HOW WERE UNITS CLOSED/POST-CLOSURE REQUIREMENTS

Landfill consisted of a plastic liner placed over inactive landfill unit, stormwater diversion ditches, and leachate collection system. Closed in 1991 under consent order with DEP. All wastes moved to residual waste landfill.

IDENTIFICATION OF DISPOSAL UNITS

Fire training pit; AOC 7, identified as Δ 7 on Figure 9.

TYPE OF MATERIAL DISPOSED/ TIME PERIOD

Diked area, measuring approximately 20 feet in diameter, used for fire fighting training sessions. Slop oils and naphtha were used as ignition sources. Located in same area as AOC #6 (Inert Materials Storage Area). Period of operation unknown until closed in 1991.

KNOWN GROUNDWATER RELEASES

There are no documented or apparent releases to groundwater for this AOC. Monitoring for the Fire Training Pit (AOC- 7) would be the same as the report for the Inactive Landfill (AOC- 4).

GROUNDWATER MONITORING (PARAMETERS AND TIME OF MONITORING), STATUS OF WELLS

Wells MW-29, OW- 4 and OW- 6 could serve to monitor this small area. Well MW-29 is a new ECP well with no analytical information in the files. Wells OW-4 and OW-6 are monitored quarterly for indicator parameters and are utilized to monitor the Inactive Landfill (AOC-4).

HOW WERE UNITS CLOSED/ POST-CLOSURE REQUIREMENTS

The fire-training pit was closed by filling it in with soil and covered with a synthetic cap as part of the closure activities associated with AOC 4.

IDENTIFICATION OF DISPOSAL UNITS

Inert Materials Storage Area; AOC #6, identified as Δ 6 on Figure 9.

TYPE OF MATERIAL DISPOSED/TIME PERIOD

Area measured approximately 2 to 3 acres and was used to store scrap metal, fan tanks, retorts, pipes, drums, machinery and other materials. Materials were stored on the ground surface. Operation period is unknown until closed under consent order with DEP in 1991.

KNOWN GROUNDWATER RELEASES

There are no documented or apparent releases to groundwater for this AOC.

GROUNDWATER MONITORING (PARAMETERS AND TIME OF MONITORING), STATUS OF WELLS

Monitoring for this AOC would be the same as the report for Inactive Landfill (AOC-4).

HOW WERE UNITS CLOSED/POST-CLOSURE REQUIREMENTS

Materials were removed.

IDENTIFICATION OF DISPOSAL UNITS

Lagoon No. 3; AOC #8, identified as Δ 8 on Figure 9. **OVERSITE BY ECP**

TYPE OF MATERIAL DISPOSED/ TIME PERIOD

Lagoon measured 160 feet by 175 feet and was located north of Lagoon #4 (AOC #3). Used to store acidified oil sludge in the early 1930's; may have been connected to acidified oil sludge lagoon (AOC #15). Identification of wastes stored from the mid-1930's until 1968 is unknown. After 1968, the lagoon was used to store alum-lime sludge from the neutralization tank of the wastewater treatment system. The unit was dredged periodically and the material placed in the former landfill (AOC #9)

KNOWN ROUNDWATER RELEASES

(Same area and report for Lagoon # 4; AOC # 3)

Well 904 had detection for Benzene at 690 ug/l in December 1998 with Act 2 MSC of 5ug/l. Arsenic was detected at .133 mg/l with Act 2 MSC of .05 mg/l. Lead was detected at .047 mg/l with Act 2 MSC at .005mg/l. Arsenic and lead appear to be consistent with background numbers.

GROUNDWATER MONITORING (PARAMETERS AND TIME OF MONITORING), STATUS OF WELLS

Wells 901, 902, 903, 904 are presently monitored on a quarterly basis and have been since closure. The indicator parameters monitored are pH, specific conductance, TOC, with iron, chlorides and sulfates. Wells 17, 18, 19, were installed for additional monitoring to AOC #8. No analytical data is available for the new wells required by the ECP Program.

HOW WERE UNITS CLOSED/ POST-CLOSURE REQUIREMENTS

Closed in 1984-85 under DEP oversight; facility stabilized sludge in-place with cement kiln dust and excavated the mixture and placed it into the inactive landfill (AOC #4)

IDENTIFICATION OF DISPOSAL UNITS

Wemco Float Disposal Area: AOC #17, identified as O 17 on Figure 9.

TYPE OF MATERIAL DISPOSED/ TIME PERIOD

Three excavated trenches were used to dispose of Lagoon #1 and #2 bottom sediments, material from the bottom of two process wastewater plant equalization tanks (Tank Nos. 775 and 776), and Induced Air Flotation sludge (Wemco Float).

Material dredged from the bottom of Lagoons 1 and 2 primarily contained petroleum coke fines and barium sulfate. The coke fines were generated during the conversion of acid sludge to petroleum coke. The acid sludge originated from the sulfuric acid treatment of lubricating base oil to manufacture food grade white oil. A barinate process used to manufacture a lubricating oil additive generated barium sulfate. The material from tank nos. 775 and 776 contained sulfonated petroleum hydrocarbons including calcium, barium, and sodium petroleum sulfonate originating at several facility process sumps.

Wemco Float is a material consisting of polymerized organic material (neutral oil and grease) generated by a wastewater treatment process known as the Wemco Process. This process involved the addition of an amine based cationic polymer to wastewater that formed a surface layer that was recovered from the wastewater.

Most sludge was stabilized with soil and flyash. Disposal occurred from approximately 1978 to 1982 making the units eligible for closure under the applicable requirements of the PA Residual Waste Management Regulations. After 1982 the Wemco Float was burned in onsite boilers as fuel. Similar materials were placed into pits in areas 17A and 18 that were closed under the direction of the ECS. The difference being that there were records of waste being disposed prior to September 1980.

KNOWN GROUNDWATER RELEASES

Wells sampled in January 1999 for Preliminary Remedial Investigation submitted January 27, 1999. Benzene detected at 690 ug/l in well 904. Arsenic detected at 0.14 mg/l in OW-1 and 0.133 mg/l in 904. Lead detected at concentrations from 0.007 mg/l to 0.047 mg/l in OW-1, OW-3, MW-2, MW-4, and 904. Arsenic and lead concentrations are consistent with regional background (OW-1) upgradient monitoring well. No semi-volatile organics detected.

One sludge sample analyzed at same time. No VOCs or SVOCs were detected. RCRA metal results revealed arsenic at 3 mg/kg, barium at 11,700 mg/kg, chromium at 9.0 mg/kg, lead at 52.6 mg/kg, and mercury at 0.2 mg/kg.

Quarterly monitoring results for Jan.-March 2002 indicate no VOC's or SVOC's are detected. Three secondary constituents are detected above the Act 2 MSC's. These are aluminum (0.587mg/l at MW-8), iron (0.362. 3.1, and 3.93 mg/l at MW-6, MW-8, and MW-10), and manganese (0.181, 1.25, and 2.66 mg/l at MW-6, MW-8, and MW-10).

GROUNDWATER MONITORING (PARAMETERS AND TIME OF MONITORING), STATUS OF WELLS

Five monitoring wells around AOC 17 comprise the present water quality monitoring system. They are MW-6 (upgradient), MW-7, MW-8, MW-9, and MW-10. These were installed in October 1999. Monitoring is required quarterly for these wells for VOC's, SVOC's and total and dissolved Act 2 metals.

HOW WERE UNITS CLOSED/POST-CLOSURE REQUIREMENTS

A closure plan adhering to the Residual Waste Regs was received May 8, 2000 and approved August 7, 2000. The site was closed with a clay cap (geosynthetic clay liner) installed over six inches of stone that serves as a pressure release and collection zone. A drainage net and 2 foot layer of soil to support vegetation is placed on top. The closure is complete but not certified as of May 2002 because vegetative growth and erosion occurred in the fall of 2001 which needed to be corrected. The BWM will not certify the closure if ECP or HSCA wants to obtain further samples of the waxy/tarry material that is placed into the ditches.

Post-closure requirements include maintenance of the vegetative cover and quarterly monitoring as described earlier.

Table 1
DRAFT
Groundwater Sampling Results Summary
Crompton Corporation
Petrolia, Pennsylvania (a)

Sample Area:	Management Area 1			Management Area 2		
Sample I.D.:	MW-16A	MW-16B	OW-6	MW-12	MW-14	MW-32
Sample Date:	10/28/04	10/29/04	10/21/04	10/22/04	10/28/04	10/28/04
Parameter (µg/l)(a/)	b/	b/	b/	b/	b/	b/
BSA	3290 J	9200 J	304 J	12000 J	540 J	625 J
m-BDSA	650 J	90 U	21	13	23	2
p-PSA	232 J	36500 J	75 J	53 J	167 J	46
Resorcinol	1 U	90 U	1 U	1 U	1 U	1 U

Sample Area:	Management Area 3			Management Area 4		
Sample I.D.:	MW-2	MW-4	MW-20	MW-21	MW-22	MW-23
Sample Date:	10/22/04	10/26/04	10/22/04	10/26/04	10/26/04	10/26/04
Parameter (µg/l)	b/	b/	b/	b/	b/	b/
BSA	1 U	109 J	11 K	5 L	95	1
m-BDSA	7	66	13	7	35	5 L
p-PSA	66 J	71 J	8 L	15 J	22 J	8 J
Resorcinol	1 U	1 U	1 U	1 U	1 U	1 U

Sample Area:	Management Area 5			Management Area 6				
Sample I.D.:	MW-25	MW-26	MW-27	902	903	904R	MW-17	MW-18
Sample Date:	10/28/04	10/27/04	10/27/04	10/26/04	10/26/04	10/29/04	10/26/04	10/27/04
Parameter (µg/l)	b/	b/	b/	b/	b/	b/	b/	b/
BSA	1 UJ	66 J	50 J	680 J	80600 J	21800 J	1 U	1810 J
m-BDSA	1 U	5	13	294 J	751 J	834 J	2 3	48
p-PSA	1 U	5	5	38	57 J	2000 K	34 J	23
Resorcinol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Table 1 (continued)
DRAFT
Groundwater Sampling Results Summary
Crompton Corporation
Petrolia, Pennsylvania

Sample Area:	Management Area 7				Management Area 8		
Sample I.D.:	MW-6	MW-7	MW-9	MW-11	952	954	960
Sample Date:	10/28/04	10/28/04	10/28/04	10/28/04	10/27/04	10/27/04	10/27/04
Parameter (µg/l)	b/	b/	b/	b/	b/	b/	b/
BSA	5 J	24 J	1 UJ	6 J	10 J	30 J	12 K
m-BDSA	1200	7	1 U	2 J	60 J	55 J	50 J
p-PSA	5 J	27	2 2	3 L	500 J	1380 J	277 J
Resorcinol	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Sample Area:	Management Area 9					Production Wells		
Sample I.D.:	OW-1	OW-2	OW-6	MR-30	MW-29	14A	17	104
Sample Date:	10/21/04	10/21/04	10/21/04	10/21/04	10/22/04	11/01/04	11/01/04	11/01/04
Parameter (µg/l)	b/	b/	b/	b/	b/	b/	b/	b/
BSA	0 6	7 5 K	304 J	1 U	1 U	1 U	226 J	65 J
m-BDSA	0 8	3	21	1 U	1 U	33	62 J	25 L
p-PSA	4 3 K	6 8 K	75 J	18 L	1	5 K	20 K	8
Resorcinol	1 U	1 U	1 U	1 U	1 U	1 UL	1 UL	1 U

Sample Area:	Miscellaneous Wells						
Sample I.D.:	W-3	I-1	D-1	I-3	D-3	I-5	D-5
Sample Date:	10/28/04	10/29/04	11/02/04	11/04/04	11/04/04	10/25/04	11/03/04
Parameter (µg/l)	b/	b/	b/	b/	b/	b/	b/
BSA	2730 J	4	144	1	2	58	446 J
m-BDSA	960 J	13	156 J	22	13	550 J	465 J
p-PSA	32	3	3 J	40	193 J	101	47 J
Resorcinol	1 U	1 U	1 U	1 U	1 U	1 U	1 U

s/ I D = identification, µg/l = micrograms per liter, BSA = benzene sulfonic acid, m-BDSA = meta-benzene disulfonic acid.
p-PSA = para-phenol benzene sulfonic acid, "-" = indicates no criterion developed or constituent not analyzed
b/ Data Qualifiers
U = not detected at listed value
J = result is estimated
K = result is biased high
R = result is unusable.
L = result is biased low.

Darius Ostrauskas

05/26/2004 03:56 PM

To: mansell@state.pa.us
cc: Paul Gotthold/R3/USEPA/US@EPA, astainbroo@state.pa.us
Subject: Crompton

Hi Mark,

Just checking in regarding Crompton.

From EPA's standpoint, don't forget that, per EPA's letter of February 16, 2004 , to Crompton, EPA has agreed that where a report or communication regarding remediation of the facility under Act 2 is found by EPA to potentially be inconsistent with RCRA Corrective Action requirements, that EPA will notify Crompton and DEP within 60 days of receiving that report or communication.

The only potential report or communication of interest I believe we have received since agreeing to this procedure is a Project Plan from Crompton dated March 5, 2004. However, we understand this is a draft report and that PADEP is in the process of reviewing and commenting on this Plan. In this case, we do not plan on reviewing the Project Plan for the purpose of identifying any inconsistencies until PADEP comments have been addressed and PADEP is prepared to approve the Plan under Act 2.

Let me know if you have any thoughts on this and/or if you recommend we proceed differently.

Thanks,
Darius Ostrauskas
RCRA Corrective Action
Project Manager
215-814-3360

ENVIRONMENTAL STRATEGIES CONSULTING LLC
300 Corporate Center Drive, Suite 200 ▪ Moon Township, PA 15108 ▪ (412) 604-1040 ▪ Fax (412) 604-1055

PROJECT PLAN
CROMPTON CORPORATION
PETROLIA, PENNSYLVANIA

PREPARED

BY

ENVIRONMENTAL STRATEGIES CONSULTING LLC

MARCH 5, 2004

docs/Crompton Corp/139435/Project Plan/Project Plan.doc

Contents

		Page
1.0	**Introduction**	1
1.1	Site Description	2
1.2	Historical Petroleum and Natural Gas Production Activities	5
1.3	Historical Mining Activities	5
2.0	**Environmental Setting**	7
2.1	Site Physical Characteristics	7
2.2	Site Geology	7
2.3	Site Hydrogeology	10
2.4	Surface Water	12
2.5	Wetlands	12
2.6	Rare, Threatened, and Endangered Species	13
3.0	**Environmental Media Evaluation**	14
3.1	Soil	14
3.1.1	General Data Observations	15
3.1.2	Soil Characterization Findings	19
3.2	Groundwater	23
3.2.1	Preliminary Groundwater Investigation	24
3.2.2	Site Characterization Approach	25
3.2.3	Management Area Geology	27
3.2.4	General Data Observations	30
3.2.5	Groundwater Characterization Findings	31
3.3	Surface Water	33
3.4	Indoor Air	35
4.0	**Potential Receptors and Pathways of Exposure**	37
4.1	Soil	39
4.2	Groundwater	39
4.3	Surface Water	40
4.4	Vapor Intrusion	41
4.5	Ecology	42
5.0	**Site Characterization Summary**	43

Contents
(continued)

		Page
6.0	**Supplemental Site Characterization**	46
6.1	Purpose and Objectives	46
6.2	Scope of Work	47
6.2.1	Site Characterization and Sulfonic Acid-based COI Delineation Activities	47
6.2.2	Remediation Standards Development	49
6.2.3	Submittal of Act 2 Reports	49
6.3	Sampling and Analysis Plan	49
7.0	**Project Plan Schedule**	51
8.0	**References**	52

Contents
(continued)

List of Figures:

Figure 1 - Facility Location
Figure 2 - Site Layout Map
Figure 3 - Potential Area of Concern Location Map
Figure 4 - Oil and Gas Well Locations
Figure 5 - Coal Seam Outcrop Map
Figure 6 - Stratigraphic Column
Figure 7 - Cross Section Location Map
Figure 8 - Cross Section A-A'
Figure 9 - Cross Section B-B'
Figure 10 - Cross Section C-C'
Figure 11 - Potentiometric Surface Map – Unconsolidated and Freeport Formation – October 2003
Figure 12 - Potentiometric Surface Map – Kittanning and Clarion Formations – October 2003
Figure 13 - Potentiometric Surface Map – Intermediate Aquifer (Homewood) – October 2003
Figure 14 - Potentiometric Surface Map – Deep Aquifer (Connoquenessing and Burgoon Sandstones) – October 2003
Figure 15 - Wetlands Inventory Map
Figure 16 - AOC 8, 15, and Area 5, Test Pit or Soil Boring Locations Map
Figure 17 - AOC 9, 11, and 12, Test Pit or Soil Boring Locations Map
Figure 18 - AOC 10, 13, 14, 18, and 18A, Test Pit or Soil Boring Locations Map
Figure 19 - Area 15 and AOC 16, Test Pit of Soil Boring Locations Map
Figure 20 - AOC 17 and 17A, Test Pit or Soil Boring Locations Map
Figure 21 - Management Areas and Monitoring Well Locations
Figure 22 - Industrial, Public Supply, and Domestic Well Location Map
Figure 23 - Management Areas and Cross Section Location Map
Figure 24 - Management Area 1 Cross Sections
Figure 25 - Management Area 2 Cross Sections
Figure 26 - Management Areas 3 and 5 Cross Sections
Figure 27 - Management Areas 4 and 6 Cross Sections
Figure 28 - Management Area 7 Cross Sections
Figure 29 - LNAPL Investigation Area and LNAPL Thickness
Figure 30 - Surface Water Sampling Locations for November 29, 2000
Figure 31 - Conceptual Site Model
Figure 32 - Proposed Sampling Locations for Characterization of Sulfonic Acids and Resorcinol

COMPLETE THIS SECTION ON DELIVERY

Contents
(continued)

List of Tables:

Table 1 - Groundwater Elevations by Formation – March 2003
Table 2 - Groundwater Elevations by Formation – October 2003
Table 3 - Background Soil Sampling Results
Table 4 - Area of Concern 8 - Surface Soil Sampling Results Summary
Table 5 - Area of Concern 8 - Subsurface Soil Sampling Results Summary
Table 6 - Area of Concern 9 - Surface Soil Sampling Results Summary
Table 7 - Area of Concern 9 - Subsurface Soil Sampling Results Summary
Table 8 - Area of Concern 10 - Surface Soil Sampling Results Summary
Table 9 - Area of Concern 10 - Subsurface Soil Sampling Results Summary
Table 10 - Area of Concern 11 - Surface Soil Sampling Results Summary
Table 11 - Area of Concern 11 - Subsurface Soil Sampling Results Summary
Table 12 - Area of Concern 12 - Surface Soil Sampling Results Summary
Table 13 - Area of Concern 12 - Subsurface Soil Sampling Results Summary
Table 14 - Area of Concern 13 - Surface Soil Sampling Results Summary
Table 15 - Area of Concern 13 - Subsurface Soil Sampling Results Summary
Table 16 - Area of Concern 14 - Surface Soil Sampling Results Summary
Table 17 - Area of Concern 14 - Subsurface Soil Sampling Results Summary
Table 18 - Area of Concern 15/Area 5 - Surface Soil Sampling Results Summary
Table 19 - Area of Concern 15/Area 5 - Subsurface Soil Sampling Results Summary
Table 20 - Area of Concern 16 - Surface Soil Sampling Results Summary
Table 21 - Area of Concern 16 - Subsurface Soil Sampling Results Summary
Table 22 - Area of Concern 17 - Subsurface Soil Sampling Results Summary
Table 23 - Area of Concern 17A - Surface Soil Sampling Results Summary
Table 24 - Area of Concern 17A - Subsurface Soil Sampling Results Summary
Table 25 - Area of Concern 18 - Surface Soil Sampling Results Summary
Table 26 - Area of Concern 18 - Subsurface Soil Sampling Results Summary
Table 27 - Area 15 - Surface Soil Sampling Results Summary
Table 28 - Area 15 - Subsurface Soil Sampling Results Summary
Table 29 - Summary of SPLP Analytical Results
Table 30 - Results of Statistical Analysis
Table 31 - Soil Constituents with Detection Limits above Screening Criteria
Table 32 - Summary of Groundwater Analytical Results - Preliminary Remedial Investigation
Table 33 - Groundwater Monitoring System Rationale
Table 34 - Management Area 1 - Groundwater Results Summary
Table 35 - Management Area 2 - Groundwater Results Summary
Table 36 - Management Area 3 - Groundwater Results Summary
Table 37 - Management Area 4 - Groundwater Results Summary
Table 38 - Management Area 5 - Groundwater Results Summary
Table 39 - Light Non-aqueous Phase Liquid Results Summary
Table 40 - Management Area 6 - Groundwater Results Summary

Contents
(continued)

List of Tables (continued):

Table 41 - Management Area 7 - Groundwater Results Summary
Table 42 - Management Area 8 - Groundwater Results Summary
Table 43 - Management Area 9 - Groundwater Results Summary
Table 44 - Summary of Benzene Results
Table 45 - Summary of Surface Water Analytical Results
Table 46 - Sulfonic Acids and Resorcinol Sample Preservation and Handling Requirements
Table 47 - Sulfonic Acids and Resorcinol Sampling Plan

List of Appendices:

Appendix A - Agency Letters
Appendix B - Boring Logs, Well Construction Diagrams, and Test Pit Logs
Appendix C - Example SVOC Chromatogram
Appendix D - Example Mass Spectral Scan of Tentatively Identified Compounds
Appendix E - Environmental Indicator Determination - Current Human Exposure Under Control

1.0 Introduction

This Project Plan has been prepared for the Crompton Corporation facility in Petrolia, Pennsylvania (Site), in accordance with the Consent Order and Agreement (COA) between the Commonwealth of Pennsylvania, Department of Environmental Protection (PADEP), and Crompton, which became effective on January 6, 2004. As required in Paragraph 7 of the COA, this Project Plan includes: 1) a summary of the work completed to date; 2) a scope of work to fully characterize the release or threatened release of regulated substances at the Site; and 3) a proposed schedule for submission of documents required pursuant to the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2) and 25 PA Code Chapter 250.

The Project Plan includes a summary of the remedial investigation activities completed from 1998 to the present. Previous remedial investigation activities were summarized in the following documents submitted to PADEP or provided in an Appendix to this document:

- Preliminary Remedial Investigation for Witco Corporation, Petrolia, Pennsylvania (ESC, 1999)
- Preliminary Conceptual Site Model and Proposed Groundwater Investigation Plan for Crompton Corporation, Petrolia, Pennsylvania (ESC, 2001)
- RCRA Corrective Action Environmental Indicator (EI) RCRIS Code CA725, Current Human Exposure Under Control (EPA, 2003; Appendix E)

The remedial investigation activities conducted to date have been completed in accordance with the Act 2 regulations, applicable Act 2 technical guidelines, and in accordance with the following documents previously provided to PADEP and United States Environmental Protection Agency (EPA) for review and comment:

- Remedial Investigation Work Plan for CK Witco Corporation, Petrolia, Pennsylvania (ESC, 2000a)
- Remedial Investigation Data Quality Objectives For CK Witco Corporation, Petrolia, Pennsylvania (ESC, 2000b)
- Proposed Groundwater Investigation Plan (ESC, 2001)

The purpose of the Project Plan is to summarize Crompton's current understanding of the Site based on data collected to date on regulated substances present at the Site. In addition, this Plan identifies activities necessary to further evaluate and address a release or threatened release of regulated substances at the Site.

Section 6 of the Project Plan sets forth Crompton's approach and schedule for gathering additional data to complete the site characterization, conducting an exposure pathway analysis and possible risk assessment (human health and ecological), and submitting documents required pursuant to Act 2. The Project Plan is based on the mutual understanding between PADEP and Crompton that the implementation of the Operable Unit 2 Public Water Supply Remedial Response discussed in the COA will eliminate the drinking water exposure pathway, thus, groundwater remediation will not be necessary to address this exposure pathway both onsite and offsite.

Crompton's efforts with respect to the work completed to date and proposed activities set forth in Section 6 of the Project Plan are intended to satisfy the COA, Act 2, and any obligations that it might have for corrective action under the Resource Conservation and Recovery Act (RCRA). The EPA has advised Crompton that it can satisfy RCRA Corrective Action obligations for investigation and remediation at the facility under the requirements of Act 2. The EPA has provided Crompton with a letter, dated February 19, 2004, that documents this understanding with Crompton (EPA, 2004). A copy of this letter is provided in Appendix A. This Project Plan has been prepared to facilitate a coordinated approach to accomplish that result in an efficient and timely manner.

1.1 Site Description

Crompton owns and operates a refined oil products manufacturing facility located on approximately 175 acres along Route 268 in Petrolia, Butler County, Pennsylvania (Figure 1). The facility has been in operation for more than 100 years. The operational area of the facility occupies approximately one-third of the property and the balance of the facility is undeveloped. As shown on Figure 1, the majority of the facility operations are situated within the northeast corner of the property.

The facility is located within an area that is primarily rural in nature, characterized by small towns and residential areas that are widely spaced. Two other industrial properties are

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located within the vicinity of the Site. Indspec is immediately adjacent to the northeast corner of the facility, and Penreco is located to the south of the facility, across a small strip of undeveloped land. Indspec produces Resorcinol and Penreco produces products similar to Crompton. Undeveloped land and land used for strip mining surrounds the majority of the facility to the south, southwest, and west. There are four residential buildings located on the Crompton property immediately south of a reservoir and outside the former and current operational areas. The area immediately east of the site has few houses and is primarily undeveloped. The Borough of Petrolia is located to the northeast of the facility (Figure 1).

The facility's primary products include white oils, petrolatums, and microcrystalline waxes. Many of the world's larger personal care products, cosmetic, pharmaceutical, and telecommunications companies rely on oil-based products produced at the Site.

The primary standard industrial code for the facility is 2999. Current manufacturing processes conducted on site include hydrogenation of oils, waxes, and petrolatums; barium sulfonate conversion; material blending; warehousing; and distribution. Major operations areas of the facility are shown on Figure 2.

The primary raw materials used by Crompton include natural oil, natural gas, barium compounds, petrolatum feedstock, wax feedstock, sodium sulfonate, and methanol. The majority of raw materials used at the facility are stored in aboveground tanks.

The facility currently is regulated as a large quantity generator of hazardous waste and operates under EPA identification number PAD004388500. Hazardous wastes generated at the facility include barinate filter cake and laboratory waste. The facility also maintains a RCRA permit-by-rule (PBR) exemption for its wastewater treatment system.

Historically, 18 solid waste management units or Areas of Concern (AOCs) were identified at the Site during a RCRA Facility Assessment conducted in 1987 (Figure 3). Eight of these AOCs were formally closed under the direction and with the approval of PADEP (AOCs, 1, 2, 3, 4, 5, 6, 7, and 8). Six of these units were closed under Consent Orders, one unit (AOC 3) was closed in accordance with PADEP-approved closure plans, and one unit (AOC 8) was closed with PADEP oversight. Because these units were closed in compliance with PADEP requirements, PADEP and EPA have agreed that no further characterization or corrective action of these eight areas is necessary. A summary of this position is provided in an Environmental Strategies August 31, 1999, letter to PADEP (ESC, 1999a). A copy of this letter is provided in

Appendix A. This approach formed the basis for the Remedial Investigation (RI) Work Plan (Environmental Strategies, 2000) that was reviewed and commented upon by PADEP and EPA.

The RI work plan identified 11 remaining AOCs and two former operational areas that required additional assessment in order to obtain a release of liability under Act 2 and to satisfy corrective action requirements under RCRA. The AOCs and operational areas identified are the following:

- AOC 8 – former Lagoon No. 3 - closed by waste stabilization and removal in 1984/85 under PADEP oversight
- AOC 9 – former land fill area - closed by the facility by removing free liquids and backfilling with soil and ash
- AOC 10 – spray irrigation field - practice discontinued in 1970; the hillside was allowed to revegetate naturally
- AOC 11 – Impoundment No. 5 - closed by the facility in 1974 by backfilling with soil
- AOC 12 – former lagoon area - closed by the facility in 1969 by removal of liquids and backfilling with soil and ash
- AOC 13 – former landfill area - closed by the facility in the early 1970s by backfilling with material excavated from the construction of the Hydrogenation Plant
- AOC 14 – former landfill area - closed by the facility at the same time and in the same manner as AOC 13
- AOC 15 – acidified oil sludge lagoon - closed by the facility in 1934 when the acid plant was constructed above the lagoon
- AOC 16 – waste area - located under the present sulfonate plant (constructed in 1941)
- AOC 17 (and AOC 17A) – Wemco float disposal area - AOC 17 closed as a residual waste landfill in 2000 with PADEP acceptance of the Closure Certification Report on August 28, 2003
- AOC 18 (and AOC 18A) – Lagoon Nos. 1 and 2 sludge disposal area - no longer in operation
- Area 5 – former Acid Plant location

- Area 15 – former Acidified Oil storage

It should be noted that (1) AOC 8 and two former operational areas (Area 5 and 15) are not subject to RCRA corrective action requirements because they are not considered Solid Waste Management Units; and (2) AOC 17 was closed under the current Pennsylvania residual waste regulations. After two years of quarterly monitoring, Crompton received a release from PADEP for post closure groundwater monitoring requirements at AOC 17 on June 26, 2003. A copy of this letter is provided in Appendix A.

1.2 Historical Petroleum and Natural Gas Production Activities

Environmental Strategies visited the Pennsylvania Department of Conservation and Natural Resources (PADCNR), PA-Geologic Survey on March 13, 2001, and reviewed both the Parker and Chicora Quadrangles for Butler County to determine the number of oil and gas wells located on the Site and in the immediate vicinity. Eight wells are located in the immediate vicinity of the Site (Figure 4). According to the most recent oil and gas well survey, only two wells are located on the facility property (019-01967 and 019-01968). According to the well registration form, both wells are oil wells, registered to Dennis N. Brown/Arthur D. Leighton. Environmental Strategies contacted the well owners and ascertained that the wells are currently operational. Crompton does not participate in the maintenance or operation of the wells and has not conducted oil or natural gas production operations at the facility.

1.3 Historical Mining Activities

Research into historical mining activities at the Crompton facility was conducted by Environmental Strategies, including: a meeting with Bill Winters of the PADEP District Mining Operations office; a telephone conversation with Terry Eliker, safety inspector, Knox Pennsylvania Mining Operations; and a telephone conversation with Dan Threlfall of Chemviron (who previously researched mining activities at the facility). Based on information provided by PADEP, three active mines were noted in the area, Rosebud Mine No. 1, Rosebud Mine No. 2, and Bear Run. The Rosebud Mine western boundary is approximately 20,000 feet east of the facility. The lower Kittaning Coal is mined here. There is active mining at both the No. 1 and No. 2 mines. The permit was recently renewed in 1999 and is valid for approximately five years.

No detailed information was available from PADEP regarding the Bear Run mine. Mr. Winter stated that he believes that the south branch of Bear Creek provides enough of a hydrogeologic divide to prohibit the flow of acid mine drainage near the Crompton facility groundwater regime. Also, based on a rough geologic cross section from the facility to the Rosebud mining area, the stratigraphy is incised by the local stream valley.

Environmental Strategies contacted Mr. Threlfall regarding void spaces that were found during subsurface sampling activities at the facility. Mr. Threlfall indicated that during Chemviron's investigation at the site, voids also were encountered in the "New Landfill" area at an approximate elevation of 1,400 feet above mean sea level (MSL). He stated that a coal seam exists between 1,250 and 1,300 feet MSL with a south-southwest dip. Some 3 to 4-foot voids due to roof collapse are present in addition to some smaller voids. Deep mining did occur in the area around the turn of the century, but no maps exist of the exact mining locations. This mining was in the "root zone" with very little overburden.

Chemviron obtained information from WPA mine maps that showed no deep mining occurred beneath the Crompton facility. Small workings were shown 0.5 mile to the north and southwest. Additionally, a map of mines in the Parker Quadrangle did not show any mines beneath the site. Mr. Threlfall reviewed files and maps at PADEP (then the Pennsylvania Department of Environmental Resources). No record of mining was found and it was noted by PADEP that voids could be the result of small "county pits" which are small localized mining operations.

Terry Eliker of PADEP was contacted by Environmental Strategies regarding surface mining in the area of the Crompton facility. Ms. Eliker stated that no bonded mining activities were located around the facility within a one-mile radius. She indicated that there has been some mining in the area in the past, but these mines are no longer bonded.

To determine the potential locations of "county pits", Environmental Strategies reviewed the Coal Resources of Butler County (Dodge, 1985). In the report, the Lower and Middle Kittanning Coal and the Lower and Upper Freeport Coal are shown to outcrop across the facility. Environmental Strategies assumed that coal outcrops would be the most likely locations for "county pits". Figure 5 illustrates the approximate locations of the coal outcrop lines (coal outcrop elevations), as well as the voids encountered during subsurface investigations of the facility.

2.0 Environmental Setting

This section describes the Site's physical characteristics, geology, and hydrogeology based on previous investigations and data collected during this investigation.

2.1 Site Physical Characteristics

The Site is located in Fairview Township and is adjacent to the Borough of Petrolia to the northeast; Karns City is located to the south (Figure 1). Elevation of the ground surface ranges from approximately 1,170 to 1,450 feet above mean sea level (MSL). The South Branch of Bear Creek flows from the south to the north along the eastern portion of the Site. The main portion of the facility is located west of the creek.

The majority of the production facilities are located on the lower portion of the Site, with the exception of the Hydrogenation Plant, which is located along the western valley slope. Aboveground tanks are located along the western valley slope and the creek.

Surface water runoff from Site processing and tank farm areas are captured by either storm sewers and oil/water separator systems or process sewers and sumps which direct process and storm water to the wastewater treatment plant. Treated wastewater is discharged to the creek in accordance with National Pollutant Discharge Elimination System (NPDES) Permit number PA 0002666.

2.2 Site Geology

The Site is located in the Pittsburgh Low Plateau Section of the Appalachian Plateau Province. Bedrock in this section is characterized by a very gentle, southwest dip, overprinted by gentle, northeast trending folds. The typical geomorphology of the section consists of broad, rolling interfluves separated by narrow, steep-walled, incised valleys (Briggs, 1999). The regional surface water drainage patterns are primarily dendritic.

The Site is covered with unconsolidated material (fill and alluvial/colluvial soils), underlain by sedimentary rocks of Pennsylvanian Age. Figure 6 provides a generalized stratigraphic column of the area. The strata dip gently southward toward the Pittsburgh-Huntington Basin. Superimposed on the gentle southerly bedrock dip, is the Petrolia Dome; the Site is located on the southern flank of this anticline.

The Glenshaw formation of the Conemaugh Group outcrops in the south-central portion of the Site. The Glenshaw is a clastic marine unit consisting of shale and claystone beneath the Site. The Allegheny Group, which underlies the Conemaugh Group, includes the Freeport, Kittanning and Clarion Formations. The Freeport, beneath the Site is comprised of freshwater sandstone, siltstone, shale/claystone, and coal. Two commercial grade coal seams (the Upper and Lower Freeport Coal) have been strip and deep mined along the western perimeter of the Site as reported by Dodge (Dodge, 1985) and observed during implementation of the closure plan for the inactive landfill (NUS, 1985). The Upper Kittanning Coal (1270 feet MSL) divides the Freeport from the Kittanning, and also represents a change to a marine facies. The Kittanning Formation is comprised predominantly of sandstone and shale. The South Branch of Bear Creek incises the Kittanning in the eastern portion of the Site. The Clarion Formation consists of the Kittanning and Clarion Sandstones and shale.

Beneath the Allegheny Group is the Pottsville. Previous data collected from deep cores indicate that the Pottsville sequence, which can range from 50 to 250 feet in thickness, is nearly complete beneath the facility (approximately 200 feet thick). The Pottsville includes the Homewood, Mercer, and Connoquenessing Formations. The Homewood is comprised of sandstone, shale, and a coal bed at approximately 955 feet MSL. Additionally, well-developed horizontal and vertical fractures were observed in cores collected. The Mercer consists of shales and sandstone; the Mercer Limestone was not observed. The Connoquenessing is comprised of sandstone interbedded with thin organic or silt layers. The basal surface of the Connoquenessing represents a disconformity between Pennsylvanian and Mississippian Age rocks.

The first Mississipian Age rocks encountered beneath the Site is the Burgoon Sandstone (796 to 721 feet MSL). The Burgoon Sandstone likely represents a fluvial facies. It consists of medium to coarse–grained white sandstone. Beneath the Burgoon is the Patton Shale (620 feet MSL) of the Huntley Mountain Formation. The Patton Shale is a greenish gray shaley sandstone.

Based on boring log data prepared by others during previous investigations and by Environmental Strategies during investigation activities, the depth to bedrock across the Site ranges from 10 feet to 54 feet below ground surface (bgs). The bedrock is overlain by alluvium or colluvium (clay, silt and sand) and fill material (soil and rock fragments, coke fines, and a variety of demolition debris). The bedrock surface generally mimics the surface topography

sloping toward the eroded bedrock stream valleys. Several local exceptions exist within areas where coke fines or demolition debris have been deposited or where cut and fill activities have occurred during facility construction and operation.

Three generalized geologic cross sections were developed to depict the Site geology. The cross section locations are shown on Figure 7. Cross section A-A' traverses the Site in a west to east direction (Figure 8). The cross section shows a varying thickness of fill and unconsolidated deposits (sand, silt, and clay) overlying the freshwater and marine units (shale, claystone, siltstone, sandstone and coal) of the Conemaugh and Allegheny Groups. The topography slopes east toward the South Branch of Bear Creek. The cross section shows great diversity in bedrock lithology, characteristic of the Conemaugh, and Allegheny Groups. The dominant subsurface anthropogenic feature is the presence of an area where coke fines were historically placed. This area measures approximately 960 feet long and is as thick as 55 feet. Additionally, a void at a depth corresponding to the Middle Kittanning Coal was encounter during the advancement of boring D-6. No known mining of the Middle Kittannning Coal occurred in the vicinity of the Site. (Dodge, 1985)

Cross section B-B' (Figure 9) traverses the Site from south to north, east of the closed landfill (AOC 4) and temporary landfill (AOC 5). The cross section shows varying thickness of fill, coke fines, and unconsolidated deposits overlying an eroded bedrock surface. The bedrock consists of a clastic sequence consisting of the shales, claystones, siltstones, sandstones and coals of the Glenshaw, Freeport and Kittanning Formations. Evidence of deep mining includes the presence of a 4-foot to 6-foot void at an elevation of approximately 1,340 feet MSL , which corresponds to the Upper Freeport Coal. The northern limits of the coke material described in cross section A-A' can also be seen in borings OW-3 and EB-1.

Cross section C-C' (Figure 10) traverses the Site from south to north along the incised stream valley. The cross section shows varying thickness of fill material and unconsolidated deposits overlying sandstone, shale, coal and limestone of the Kittanning and Clarion Formations. The ground and bedrock surface elevations slope towards to the South Branch of Bear Creek.

2.3 Site Hydrogeology

The groundwater regime beneath the Site is generally characterized by water-bearing zones present within unconsolidated material (soil, fill, and/or waste material), and within shallow, intermediate, and deep bedrock formations. Groundwater flow in these zones is controlled by the local topography, vertical infiltration, geologic structure, or mining activities. Groundwater elevations within the unconsolidated zone, shallow, intermediate, and deep bedrock aquifer systems are shown in the general Site cross sections (Figures 8, 9, and 10). The groundwater elevations were measured following borehole or monitoring well completion and, therefore, may not represent current groundwater conditions. Groundwater elevations calculated from water level measurement collected in March and October 2003 (Tables 1 and 2) provide accurate measurements from existing onsite wells. The October 2003 measurements (Table 2) were used to prepare the potentiometric maps discussed below.

Groundwater present within unconsolidated material exists in localized perched and shallow unconfined aquifer conditions throughout the Site. These aquifers are formed by rainfall percolating through unconsolidated material or groundwater discharge from shallow bedrock formations (i.e., Freeport, Kittanning and [upper] Clarion Formations) along hillsides at the facility. Groundwater within this zone flows beneath the Site discharging to local creeks on the property or to the ground surface via seeps. The groundwater flow direction in this zone is controlled by local topography and the permeability of aquifer materials.

Based on groundwater investigations at the facility, three relatively shallow bedrock formations (i.e., Freeport, Kittanning, and [upper] Clarion Formations) have been identified to represent the first continuous water-bearing zone depending on the elevation of each area of concern. The potentiometric surface maps for the shallow aquifer zones have been divided into the unconsolidated material and Freeport Formation, and the Kittanning and Clarion (Kittanning Sandstone) Formations (Figures 11 and 12). Because of the topographic relief at the Site, these aquifers may exist beneath certain AOCs, but not others. The groundwater investigation strategy developed for this Site has taken this into account.

In general, groundwater flow in the shallow bedrock aquifers occurs along the bedrock interface and within bedding planes, fractures, or joints. This water-bearing zone is recharged by surface water infiltration and/or local losing streams. The groundwater flow direction in this zone is controlled by local topography and structure. Groundwater present within the shallow

bedrock zones is of primary interest because it is the first continuous aquifer present beneath the Site. Groundwater quality in this zone is known to be affected by acid mine drainage resulting from coal strip and deep mining activities in the area, including former offsite, upgradient activities.

The unconsolidated material, and Freeport Formation represent the uppermost waterbearing zone across the majority of the Site. The unconsolidated material and bedrock formations that comprise this zone exist from the ground surface to approximately 1270 feet above MSL. Figure 11 illustrates the potentiometric surface within this waterbearing zone. Based on the available data, the direction of groundwater flow is expected to be towards the South Branch of Bear Creek. Groundwater elevations ranged from approximately 1170 to 1334 feet above MSL. Groundwater within this aquifer is found under unconfined and semi-confined conditions.

The Kittanning and [upper] Clarion (Upper Kittanning Coal, Upper Worthington Sandstone, Middle Kittanning Coal, Lower Worthington Sandstone, Lower Kittanning Coal and Kittanning Sandstone) aquifer underlies the unconsolidated and Freeport aquifer. The bedrock formations that comprise this zone exist from approximately 1270 to 1110 feet above MSL. Figure 12 illustrates the potentiometric surface within this waterbearing zone. Based on the available data, the direction of groundwater flow is toward the South Branch of Bear Creek and south. Groundwater elevations ranged from approximately 1173 to 1230 feet above MSL. This waterbearing zone is under semi-confined to confined conditions. Groundwater within deep bedrock formations exists within "intermediate" and "deep" aquifer waterbearing zones. The intermediate zone is comprised of the Vanport Limestone, Clarion Coals and Sandstone, Brookville Coal, and the Homewood Sandstone ([lower] Clarion and Pottsville Formations). The deep zone consists of the Connoquenessing (Pottsville Formation) and Burgoon Sandstones. Based on the results of a previous Intermediate and Deep Aquifer Study (Chemviron, 1987), the top of the intermediate zone exists at an elevation of 1050 to 1075 feet above MSL and the top of the deep zone ranges from 871 to 855 feet above MSL. Figures 13 and 14 illustrate the potentiometric surface within these waterbearing zones. The direction of groundwater flow in the intermediate and deep zones is to the northeast and northwest, respectively. Groundwater elevations ranged from approximately 1172 to 1178 feet above MSL in the intermediate zone and 1170 to 1177 feet above MSL in the deep zone. Groundwater in these zones is under

confined conditions. The Chemviron study reported that vertical fractures do not provide a means of significant hydraulic communication between the two zones. The study also concluded that groundwater quality in these two zones was not affected by onsite surface activities or water quality in the shallow bedrock aquifers.

2.4 Surface Water

The Site is located within the Bear Creek watershed, a tributary to the Allegheny River. The South Branch of Bear Creek flows north roughly paralleling Route 268 through Karns City, Petrolia, and Bruin Borough before discharging into the Allegheny River one half mile south of Parker City, Armstrong County. The main stem of Bear Creek flows north to northeast across the northern portion of Fairview Township meeting the South Branch at Bruin.

The South Branch of Bear Creek is classified for the following designated uses: warm water fish, aquatic life, water supply, and recreation. The main stem and unnamed tributaries of Bear Creek are classified for cold water fish, aquatic life, water supply, and recreation. An unnamed tributary to the South Branch of Bear Creek [Segment 6970 in the State Water Plan 17C, 305(d) List of Streams and Rivers 2000] is listed as impaired from stream mile 0.85 to the confluence with the South Branch of Bear Creek due to acid mine drainage contributing metals. This tributary enters the South Branch of Bear Creek at stream mile 5.1 near Karns City, upstream of the facility location at stream mile 3.52. In 1998, in addition to segment 6970 as listed above, the main stem of the South Branch of Bear Creek (stream code 5356 at stream mile 5.62) was listed due to acid mine drainage (metals) and industrial point source (priority organics) from stream mile 5.48 to the confluence with Bear Creek.

2.5 Wetlands

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory map (USFWS, 1973) indicated several wetlands on and adjacent to the Site (Figure 15). The onsite pond wetland is classified as palustrine, open water/unknown bottom, and intermittently exposed/permanent (POWZ). The South Branch of Bear Creek is classified as a riverine, upper perennial, open water/unknown bottom, and intermittently exposed/permanent (R3OWZ) wetland within the channel. Upstream of the Site, palustrine, forested, broad-leaved deciduous,

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temporarily flooded (PFO1A) wetlands occur along South Branch of Bear Creek. There were no wetlands identified in the AOCs by the USFWS.

2.6 Rare, Threatened, and Endangered Species

Letters requesting information on rare, threatened, or endangered species on and adjacent to the Site were submitted to Pennsylvania Department of Conservation and Natural Resources and the U.S. Fish and Wildlife Service. The results of this request indicated that there were no rare, threatened, or endangered species on or adjacent to the Site. Letters from these agencies are provided in Appendix A.

3.0 Environmental Media Evaluation

Characterization of the AOCs and former operational areas has been conducted in accordance with the RI Work Plan (ESC, 2000a). Field investigations, including soil, groundwater, and surface water sampling, have been conducted in phases beginning in May 2000 through October 2003. The data collected as of the date of this Project Plan are presented and discussed in this section. Boring logs, well construction diagrams, and test pit logs are provided in Appendix B.

3.1 Soil

Soil characterization activities were completed from May 2000 to April 2003. The surface and subsurface soil samples were collected from soil borings and test pits in AOCs 8 through 18A and operational Areas 5 and 15. The samples were analyzed for volatile organic compounds (VOCs) using EPA SW-846 Method 8260, semivolatile organic compounds (SVOCs) using EPA SW-846 Method 8270, and the Act 2 metals using EPA SW-846 6000/7000 series methods. Select soil and waste samples also were analyzed using the Synthetic Precipitation Leaching Procedure (SPLP), Method 1312, solely to evaluate the potential for constituents present within the soil and waste to migrate to groundwater. (Crompton understands that Act 2 remediation standards do not apply to wastes.)

A summary of the soil analytical data for each AOC and former operational area is presented in Tables 3 through 29. The tables are separated into surface (0 to 2 feet bgs) and subsurface (greater than 2 feet bgs) sample results and present only those constituents with concentrations above the laboratory reported detection limits. The soil sample locations are shown on Figures 16 through 20.

To facilitate the evaluation of metals identified in soil samples collected from the Site, 12 background soil samples were collected from areas of the Site where no operations are known to have occurred. The background samples were analyzed for arsenic, lead, and thallium using the same EPA methods as the soil samples described previously. A summary of the analytical data for the background samples is presented in Table 3.

The soil data were compared to screening criteria to evaluate the need for either additional soil characterization or to guide the development of the groundwater investigation strategy for the facility. The screening criteria included:

- Act 2 Statewide Health Standards – medium-specific concentrations (MSCs) for evaluation of the soil to groundwater pathway, non-residential exposures; Act 2 direct contact pathway criteria were also used if the concentration was lower than the soil to groundwater criteria
- EPA Region 3 Risk-Based Concentrations (RBCs) – for direct contact with soil, industrial exposures

3.1.1 General Data Observations

Some concentrations of arsenic were observed to be above the RBC value of 2.0 milligrams per kilogram (mg/kg) for industrial exposures. One sample from AOC 16 had an arsenic concentration above the Act 2 MSC of 53 mg/kg for evaluation of the direct contact pathway in surface soil. However, none of the arsenic concentrations from any of the AOCs were above the Act 2 MSC of 150 mg/kg for evaluation of the soil to groundwater pathway.

As described previously, to evaluate the arsenic in soil at the facility, Environmental Strategies collected background soil samples in November 2000. A summary of the background soil sample data is provided in Table 3. The background arsenic concentrations were compared to the arsenic concentrations from each AOC, for both surface and subsurface soil, using a statistical analysis for unpaired data. To perform the analysis, a statistical software program was used; the program is available from the following web address: www.statibot.com/english/. The procedure used is described below and was used in accordance with Section 4.0 Part B - Attainment Demonstration with Statistical Methods from the Act 2 Technical Guidance Manual (PADEP, 2002).

- The data were sorted according to categories, either as being from background or from an AOC.
- The distribution of each data set was evaluated using a D'Agostini test. The results of this evaluation are presented in Table 30.

- The means of the arsenic data from each AOC were compared to the mean of the background data using either a Mann-Whitney U test (also known as the Wilcoxon Rank Sum test) for a non-normal distribution or a Double t test for a normal distribution. The results of this comparison and the associated P values are presented in Table 30.

For AOC 11 (surface soil only), AOC 13, and AOC 14, an insufficient number of samples were collected to allow for statistical evaluation of the arsenic data. In these areas, no arsenic concentrations were found to exceed the Act 2 MSCs for non-residential direct contact (surface – 53 mg/kg; subsurface – 190,000 mg/kg) or for the soil to groundwater pathway (150 mg/kg).

As shown in Table 30, the arsenic concentrations in the subsurface soil samples from AOC 9, AOC 11, and Area 15 were not similar to the background concentrations. For all other AOCs that were evaluated, the arsenic concentrations were similar to background in both surface and subsurface soil. Within AOC 9, AOC 11, and Area 15, the arsenic concentrations in the subsurface soil do not exceed the Act 2 MSCs for non-residential direct contact with subsurface soil (190,000 mg/kg) or for the soil to groundwater pathway (150 mg/kg).

A review of the arsenic concentrations for AOC 16 shows that one surface soil sample (16-SB-2; 110 mg/kg) exceeded the Act 2 MSC direct contact criterion of 53 mg/kg. Four additional surface soil samples were collected around this sample location to delineate the extent of elevated arsenic. The results of all four samples were below the direct contact criterion.

A review of the arsenic concentrations for background and each AOC shows that either the concentrations within the AOCs are similar to background, or the concentrations do not exceed the relevant Act 2 MSCs, with the exception of AOC 16 surface soil sample 16-SB-2. The concentration in surface soil at this location is localized. As a result, no further delineation of the arsenic concentrations in soil at the facility is proposed.

A review of the analytical data for each AOC shows a high level of consistency with respect to the specific constituents where the laboratory-reported practical quantitation limit (PQL) exceeds the screening criteria. A list of these constituents is provided in Table 31. During the preparation and review of the RI Work Plan and Data Quality Objectives documents,

the following six constituents were identified as having the potential for the PQLs to exceed the relevant screening criteria:

Volatile Organics:

- vinyl chloride
- chloromethane
- 1,2-dibromo-3-chloropropane

Semivolatile Organics:

- n-nitrosodi-n-propylamine
- benzo(a)pyrene
- dibenz(a,h)anthracene

In a letter, dated May 16, 2000, Environmental Strategies stated in response to comments from the EPA on the proposed Data Quality Objectives, that the laboratory would be requested to report the results for these six constituents to the PQLs. Further, the laboratory would be requested to qualify any detected compound with a concentration greater than the method detection limit (MDL) and less than the PQL as "J", indicating that the reported concentration is an estimated value. These constituents were not considered to be of interest based on the history of the facility and, in fact, few, if any, results were reported above the MDLs, i.e., few J values were reported by the laboratory.

The remaining constituents with PQLs consistently reported above the screening criteria include 1,2-dibromoethane, bis(2-chloroethyl)ether, hexachlorobenzene, arsenic, and thallium (note, arsenic was discussed previously). For these other constituents, the laboratory was requested to provide MDLs for each constituent based on the relevant instrument calibration data. Concentrations of these constituents that are detected above the MDLs, but below the PQLs originally reported by the laboratory, will be reported and qualified as "J" values. Given the history of the facility, these constituents are not expected to be of interest.

It should be noted that for a limited number of samples in several of the AOCs, elevated detection limits were reported for some SVOCs in addition to those already discussed in this section. For these samples, the laboratory dilution factors ranged from five to 1,000-fold, which raised the reporting limits for undetected compounds accordingly. This is evidence of the sample matrix interfering with the analysis. Environmental Strategies contacted the laboratory to discuss this issue, and laboratory representatives indicated that the sample extracts were black. Generally, sample extracts are clear for soil that contains low amounts of organic matter and amber if there is a high amount of organic matter. Black extracts usually indicate the presence of

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interfering organic materials that are extracted from the soil during sample preparation. In many cases the interfering materials were found to be petroleum hydrocarbons. Fourteen of the samples exhibiting high detection limits also exhibited high concentrations of petroleum hydrocarbons reported as diesel range organics (DRO).

Examination of the SVOC chromatograms for several of these samples show the presence of a large petroleum hydrocarbon envelope in the retention time range of 13 to 21 minutes, which is indicative of diesel range organics. An example of this is presented in Appendix C. A library search mass spectral scan of the top ten tentatively identified compound (TICs) on the most significant peaks in the chromatogram also confirmed the presence of aliphatic hydrocarbons indicative of petroleum compounds in the diesel range, including heptadecane, octadecane, nonadecane, and eicosane. For illustrative purposes, mass spectra of the top ten TICs for one sample are provided as Appendix D. The TICs would have shown the presence of target SVOCs if in fact they were present in these samples.

Environmental Strategies has approached the laboratory about the use of sample cleanup techniques to resolve the matrix interference issue. The classic method of gel permeation chromatography (GPC) that is recommended in the EPA Contract Laboratory Program Statement of Work (CLP SOW) would not be appropriate in this case. GPC separates petroleum hydrocarbon molecules from target SVOCs based on molecular size. The molecular size of the DRO compounds is very similar to the target SVOCs; therefore, the DRO compounds would be virtually indistinguishable from the target SVOCs. Other techniques including Florisil® column cleanup could be appropriate because Florisil® has been used to fractionate aliphatic hydrocarbons from polycyclic aromatic hydrocarbons in crude oil. This would involve a significant amount of costly and time consuming laboratory research and may not be successful in removing the matrix interference.

A review of the analytical data for samples in each AOC where the detection limits are not elevated, shows that very few constituents of interest were identified in the soil. Given the industrial nature of the facility, the probability that a risk-based closure alternative will be selected for this site, and the groundwater quality results (Section 3.2), additional soil sampling does not appear to be warranted in these areas to address elevated detection limit issues.

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3.1.2 Soil Characterization Findings

The results of the RI soil sampling activities are discussed in this section. The data are summarized in Tables 4 through 29, and the soil sample locations are shown on Figures 16 through 20. No constituents of interest were detected in the soil samples collected from AOC 8 (Tables 4 and 5), AOC 10 (Tables 8 and 9), AOC 12 (Tables 12 and 13), AOC 17 (Table 22), AOC 17A (Tables 23 and 24), and AOCs 18 and 18A (Tables 25 and 26). The constituents of interest detected in the remaining AOCs or operational areas are discussed below.

AOC 9

- No constituents of interest were identified in the surface soil samples from this area (Table 6).
- Benzene was detected in sample 9-SB-3 (4 to 6 feet bgs, sample of waste material) at 620 micrograms per kilogram (µg/kg), which is above the Act 2 MSC (Table 7). A waste material sample collected from the same depth at this location was analyzed for benzene using the SPLP method; benzene was not detected in this sample (Table 29). In addition, benzene was not detected in a deeper soil sample collected from 16 to 19 feet bgs (Table 7).

AOC 11

- No constituents of interest were identified in the surface soil samples from this area (Table 10).
- Benzene was detected in three samples (Table 11) at concentrations above the Act 2 MSC as follows: 11-SB-1 at 1,600 µg/kg (8 to 10 feet bgs), 11-SB-2 at 990 µg/kg (13 to 15 feet bgs, sample of waste material), and 11-SB-7 at 2,100 µg/kg (13 to 15 feet bgs, sample of waste material). Two samples were collected from the same depths at each location (soil at 11-SB-1 and waste at 11-SB-7); both samples were analyzed for benzene using the SPLP method. Benzene was not detected in either sample (Table 29). In addition, a deeper soil sample (16 to 18 feet bgs) collected from 11-SB-1 did not contain benzene above the Act 2 MSC. No deeper soil samples were collected from borings 11-SB-2 or 11-SB-7.

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- 1,2,4-Trimethylbenzene and 1,3,5-trimethylbenzene were detected above their Act 2 soil to groundwater MSCs at concentrations of 38,000 µg/kg and 20,000 ug/kg, respectively, in a sample of waste material collected from 11-SB-7 at a depth of 13 to 15 feet bgs (Table 11). The SPLP data for a soil sample collected from the same depth at this location showed that 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene were not detected above respective method detection limits (Table 29).

AOC 13

- No constituents of interest were detected in the surface soil samples collected from this area (Table 14).
- Carbon tetrachloride was detected at a concentration of 2,800 µg/kg, above the Act 2 MSC, in a sample of waste material from 13-SB-1 (19 to 20 feet bgs, Table 15). In a sample collected from the same depth at this location, carbon tetrachloride was not detected by the SPLP analysis (Table 29).

AOC 14

- No constituents of interest were detected in the surface soil samples collected from this area (Table 16).
- Carbon tetrachloride was detected in a sample of waste material from 14-SB-2 (10 to 12 feet bgs) at a concentration of 1,900 µg/kg, above the Act 2 MSC (Table 17). The waste materials placed in AOC 14 are the same as those placed in AOC 13; therefore, the SPLP results for carbon tetrachloride (not detected) from sample 13-SB-2 (Table 29), as described previously, would be representative of this area as well. In addition, groundwater samples collected from this AOC (Section 3.2) did not indicate the presence of carbon tetrachloride.

AOC 15/Area 5

- Benzene was detected in a surface soil sample (0 to 2 feet bgs) from 15-SB-1 at a concentration of 2,100 µg/kg, which is above the Act 2 soil to groundwater MSC; however, below the Act 2 direct contact MSC (Table 18). A corresponding soil

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sample was analyzed for benzene using the SPLP method; benzene was not detected in this sample above the laboratory-reported detection limit (an estimated concentration of 0.18 micrograms per liter, or µg/l, was reported; Table 29). Naphthalene was detected in the same SPLP analysis above the Act 2 MSC; however, below the Act 2 surface soil direct contact and the Act 2 soil to groundwater MSC criterion. Naphthalene was also not detected in groundwater above the Act 2 MSC as discussed in Section 3.2.

Benzene also was detected above the Act 2 MSC at a concentration of 990 µg/kg (above the Act 2 MSC) at 15-SB-2 (2 to 4 feet bgs; Table 19); benzene was not detected in a sample from the same depth at this location that was analyzed using the SPLP method (Table 29).

- Tetrachloroethene (PCE) was detected in two soil samples (Tables 18 and 19), above the Act 2 MSC, as follows: 15-SB-9 at 950 µg/kg (0 to 2 feet bgs) and 15-SB-2 at 1,200 µg/kg (2 to 4 feet bgs). In a sample collected from 2 to 4 feet bgs at 15-SB-2 that was analyzed using the SPLP method, PCE was not detected above the Act 2 MSC (Table 29).
- Lead was detected above the Act 2 MSC at a concentration of 790 milligrams per kilogram (mg/kg) in a soil sample from 15-SB-6 at a depth of 2 to 4 feet bgs (Table 19). The SPLP result for lead from a soil sample collected at the same depth (Table 29) also exceeded the Act 2 MSC (for groundwater in a used aquifer); however, the concentration of total lead in the soil sample from 6 to 8 feet bgs at this location was below the Act 2 MSC (Table 19). In accordance with the Statewide Health Standards, a buffer zone of 10 feet can be applied to this sample indicating that the lead concentration identified at 2 to 4 feet bgs would not be considered to exceed the Statewide Health Standard. The application of the 10-foot buffer zone is based on observations made during the advancement of boring 15-SB-6 (November 2000), which was extended to 20 feet bgs. Groundwater was not encountered throughout the total depth of this boring.

SENDER: COMPLETE THIS SECTION COMPLETE THIS SECTION ON DELIVERY

AOC 16

- Arsenic was detected above the Act 2 direct contact MSC in surface soil sample 16-SB-2 at a concentration of 110 mg/kg (Table 20). Four additional surface soil samples (16-SB-2A through 16-SB-2D) were collected to delineate the extent of elevated lead concentrations in surface soil. All four samples revealed arsenic concentrations below the Act 2 MSC.
- Nickel was detected above the Act 2 MSC at a concentration of 800 mg/kg in 16-SB-4 at a depth of 6 to 8 feet bgs. A soil sample was collected from the same depth at this location and analyzed for metals using the SPLP method; nickel was not detected in this sample (Table 29).

Area 15

- Benzo(a)pyrene was detected above the RBC value at a concentration of 780 ug/kg for industrial exposures in one surface soil sample (A15-SB-6). However, the sample result was below the Act 2 direct contact and soil to groundwater MSCs of 11,000 and 46,000 ug/kg, respectively (Table 27).
- Lead was detected in a surface soil sample from this area (A15-SB-6) above the Act 2 direct contact and soil to groundwater MSC at a concentration of 2,700 mg/kg (Table 27). Four surface soil samples (A15-SB-11 through A15-SB-14) were collected to delineate the extent of elevated lead concentrations in surface soil. All four samples revealed lead concentrations below the Act 2 MSC. In addition, a corresponding sample from the same location was analyzed for lead using the SPLP method; lead was not detected in this sample (Table 29).
- Mercury was detected in one surface and one subsurface soil sample from this area (A15-SB-6) at concentrations of 31 mg/kg (0 to 2 feet bgs; Table 27) and 18 mg/kg (2 to 4 feet bgs; Table 28). Both sample results are below the Act 2 direct contact MSCs; however, above the Act 2 soil to groundwater MSC. A subsurface soil sample from the same depth and location was analyzed for mercury using the SPLP method; mercury was not detected in this sample (Table 29). Pentachlorophenol was detected in the same SPLP analysis above the Act 2 MSC; however, below the Act 2 surface soil direct contact and the Act 2 soil to

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groundwater MSC criterion. Pentachlorophenol was also not detected in groundwater from this area of the site above the Act 2 MSC, as discussed in Section 3.2.

As described in the previous sections, very few constituents of interest were detected in the soil above the Act 2 MSCs. In most cases, where the MSCs were exceeded, the constituents were not detected in the sample results reported for SPLP analyses of corresponding soil samples. A few exceptions to this include arsenic in AOC 16 and lead in Area 15 within one surface soil sample at each AOC. Four subsequent delineation samples collected at each location revealed concentrations below Act 2 direct contact MSCs. Another exception includes lead in one subsurface sample at AOC 15. A subsequent SPLP result from the same location also exceeded the Act 2 MSC; however, as described previously, an Act 2 buffer zone of 10 feet was applied and the lead concentration was determined to not exceed the Act 2 Statewide Health Standard.

The data collected as a result of the SPLP analyses generally show that the constituents detected in the various AOCs and former operational areas tend to be bound to the soil or waste matrices. The constituent concentrations detected in the SPLP extracts were well below the relevant Act 2 standards used for comparison, with the exception of the sample for lead from AOC 15 (where the buffer zone is known to apply). This indicates that the constituents are not mobile within the environment, which is further reflected in the results of the groundwater investigation.

3.2 Groundwater

Groundwater characterization activities were conducted at the facility in two general phases: 1) preliminary remedial investigation and 2) Act 2 site groundwater characterization activities. The preliminary investigation activities were conducted to determine whether an imminent hazard existed based on sample results from existing monitoring wells associated with former waste handling and disposal activities; no imminent hazard was detected. The second phase was conducted in accordance with the Proposed Groundwater Investigation Plan provided to PADEP in Section 6 of the Preliminary Conceptual Site Model and Proposed Groundwater Investigation Plan (ESC, 2001). The Plan was modified based on PADEP comments received over the course of several meetings and conversations with Crompton and Environmental

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Strategies. The following sections discuss the results of both phases of groundwater investigation at the facility.

3.2.1 Preliminary Groundwater Investigation

Limited groundwater sampling was conducted in conjunction with preliminary remedial investigation activities at the facility (ESC, 1999) and subsequent preliminary sampling activities. Groundwater sampling focused on the confirmation of previous groundwater results for monitoring wells existing at the facility completed in shallow and deep aquifers. The groundwater data from these sampling events are presented in Table 32; the monitoring well locations are shown on Figure 21. These data were compared to the Act 2 Statewide Health MSCs for groundwater in a used aquifer.

Benzene, arsenic, and lead are the only constituents that were identified in groundwater at concentrations above the corresponding MSCs. The benzene concentrations in monitoring wells 903 (measured in November 2000) and 904 (measured in December 1998 and November 2000) appear to be associated with AOC 3. Similarly, the concentrations of lead and arsenic in monitoring well 904 (measured in December 1998) also appear to be associated with AOC 3. Concentrations of lead that exceed the MSC in the remaining wells and arsenic in well 904 measured in December 1998, may be naturally occurring, based on a comparison of the lead concentrations (ranging from 0.007 to 0.009 mg/l) to the concentration of lead and arsenic in upgradient monitoring well OW-1 (0.009 mg/l and 0.14 mg/l).

Potable water is available to the facility (currently, bottled water is used at the facility for drinking purposes). Non-potable water is supplied from onsite production wells completed in a deep aquifer (Figure 22). Currently, the surrounding community non-potable water supply is provided by a municipal water system managed by the Petrolia Water Authority or private wells. The source of supply for the water authority is comprised of three deep aquifer groundwater wells, which are located 0.25 mile north of the facility (Figure 22). The community is currently being provided a temporary potable water supply in the form of bottled water due to PADEP concerns with local groundwater quality. Plans have recently been finalized to provide a permanent potable public water supply to all water users in the surrounding areas.

Environmental Strategies prepared an inventory of industrial/commercial, public supply, and domestic wells within a 2-mile radius of the Site through a search of the Pennsylvania

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Groundwater Information System well inventory records and other available sources. The results of the search are provided on Figure 22. The Pennsylvania Groundwater Well Inventory System includes construction, location, improvement, and hydrogeologic data for Pennsylvania water wells. The data were gathered from databases of the Pennsylvania Topographic and Geologic survey, the U.S. Geological Survey, the PADEP, and the Pennsylvania Department of Agriculture.

3.2.2 Site Characterization Approach

The groundwater quality at the Site was investigated by establishing groundwater monitoring systems around the Management Areas (MAs), as described below and shown on Figure 21. This groundwater site characterization approach was discussed with, and approved by PADEP and EPA. The monitoring systems consist of new and existing monitoring wells, as summarized in Table 33. The MAs were established based on geographic location, local hydrogeology, and the constituents of interest present within one or a group of AOCs. The monitoring well locations around each MA were selected to facilitate the collection of groundwater samples representative of upgradient and downgradient water quality within the uppermost aquifer in each area. Monitoring systems located in upland portions of the Site are primarily completed in a water-bearing zone present within the bedrock formations. Monitoring wells located in low-lying areas are primarily completed in shallow unconsolidated deposits. The following MAs, and the AOCs that comprise each MA, are shown on Figure 21:

- MA 1 – AOC 9, AOC 11, and AOC 12
- MA 2 – AOC 18, AOC 18A, AOC 13, and AOC 14
- MA 3 – Area 15
- MA 4 – Area 5 and AOC 15
- MA 5 – AOC 16
- MA 6 – AOC 8 (and AOC 3, see discussion below)
- MA 7 – AOC 17 and AOC 17A

In addition, some of the AOCs previously closed with PADEP approval were included in the identification of MAs at the site since Act 2 liability protection for groundwater in these areas

is being sought. Accordingly, MA 7 (AOC 17), MA 8 (AOC 1 and AOC 2), and MA 9 (AOC 4, AOC 5, AOC 6, and AOC 7) were included and MA 6 was expanded to include AOC 3.

AOC 10 was not included within the MAs and no groundwater monitoring was conducted in this area. As stated previously, AOC 10 was used as a spray irrigation field for supernatant wastewater from lime and alum neutralization of raw wastewater. In the late 1960s, wastewater was sprayed at the top of the hill and was allowed to biodegrade as it moved down the hillside. Soil sampling conducted during RI activities (see Section 3.0) showed that no constituents of interest were detected in this area. Therefore, no additional investigation of this area was proposed.

Following installation and development of several newly completed wells, one round of groundwater samples was collected in January 2002 from the new and existing wells within each MA. Groundwater elevation measurements were also collected to verify the direction of groundwater flow and the design of each monitoring well system. Groundwater monitoring well installation and sampling procedures were conducted in accordance with the procedures provided in the Remedial Investigation Work Plan prepared by Environmental Strategies and dated March 31, 2000. Following review of the January 2002 sampling results and groundwater elevation data, additional wells were installed to fill existing data gaps in groundwater quality and flow direction. After well installation, two additional groundwater sampling events were conducted in April 2003 and October 2003. The January 2002 sampling event was conducted in accordance with conventional well purging and sampling procedures. The April 2003 and October 2003 sampling events were conducted using low flow sampling procedures to minimize the potential effect of elevated metals concentrations caused by suspended solids in groundwater samples (EPA, 2002).

The groundwater samples were analyzed for VOCs using EPA SW-846 Method 8260, SVOCs using EPA SW-846 Method 8270, and the Act 2 metals using EPA SW-846 6000/7000 series methods. All April 2003 and selected October 2003 samples were also analyzed for total dissolved solids (TDS) to determine the appropriate Act 2 MSC to use during evaluation of the sample results. A summary of the groundwater analytical results for each MA is presented in Tables 34 through 42. The groundwater sample locations are shown on Figure 21.

The groundwater sampling results were compared to screening criteria to evaluate the need for additional groundwater characterization and develop a remedial strategy for the facility, as appropriate. The screening criteria included:

- Act 2 Statewide Health Standards – MSCs for evaluation of used aquifers, less than 2,500 mg/l TDS, non-residential exposures; Act 2 greater than 2,500 TDS screening criteria were used for sample results from wells where TDS results exceeded this concentration.
- EPA Region 3 RBCs – for tap water (April 2003); if an Act 2 standard does not exist for a specific constituent

3.2.3 Management Area Geology

A discussion of the geology for MA 1 through MA 7 is presented in the following sections, based on the information obtained during RI soil characterization and delineation activities (Section 3.0). The cross section locations for each of these MAs are shown on Figure 23. Cross section descriptions for MA 8 and MA 9 are not presented in this Project Plan because the AOCs incorporated into these areas were closed before the current RI activities were conducted.

Management Area 1 (AOCs 9, 11 and 12)

Cross section 9A-9A' (Figure 24) transverses the center of AOC 9, which is located in the eastern portion of MA 1, from a northwest to southeast direction. During subsurface investigations, native fill (sand, silt, and clay) and coke fines were encountered. In AOC 9, an approximately 20-foot thick coke fine layer is capped by the native fill and is underlain by clay.

Cross section 9/12-9/12' (Figure 24) transverses the southern portions of AOCs 9 and 12 (southern portion of MA 1) from southwest to northeast. Black silty waste, approximately 15 feet thick, grades into coke fines near the southern boundary of AOC 9. The waste material and coke fines are capped with native fill (sand, silt, and clay) and are underlain by silty clay. Bedrock, as determined from boring W-2, consists of a sequence of claystone, sandstone, and shale.

Cross section 11/12A-11/12A' (Figure 24) transverses the center of AOC 11 (northwestern portion of MA 1) from northwest to southeast and the western edge of AOC 12

from north to south. Black silty waste and coke fines are capped with a native fill (sand, silt, and clay) layer of variable thickness. Native soil was encountered at depth in borings 11-SB1 and 11-SB3. Generally, black silty waste was found in AOC 11 and in the southern portion of AOC 12. Coke fines were encountered in boring 11-SB3. Environmental Strategies was unable to determine the full depth of the waste material due to the drilling capability of the Geoprobe® unit.

Management Area 2 (AOCs 13, 14 and 18A)

Cross section 18A-18A' (Figure 25) transverses AOC 18, which is located in the southeastern portion of MA 2, from northwest to southeast. The topography in this area of the facility slopes steeply towards the southeast. Fill, coke fines, black silty waste, native soil, shale, and sandstone were encountered during the subsurface investigation. Coke fines and waste material were found in the western portion of AOC 18 and thinned from approximately 5 feet at test pit 18-TP5 to 1 foot at boring 18-SB15. A 4-foot thick layer of coke fines and waste was encountered down slope at approximately 2 feet bgs. The waste material was capped by fill and underlain by clay or shale. Bedrock encountered during the installation of monitoring well MW-1 consisted of sandstone and shale.

Cross section 13/14A-13/14A' (Figure 25) transverses AOCs 13 and 14, which are in the northwestern portion of MA 2, from north to south. Black silty waste was encountered in all borings with the exception of 13-SB3. The waste ranged in thickness from approximately 40 feet to 12 feet. The waste is capped with a gravel, sand, silt and clay fill material and underlain by sandstone at boring 14-SB1 and clay/silty clay at borings 14-SB2 and 13-SB2. Saturated conditions were encountered at approximately 18 feet below ground surface in boring 13-SB2.

Management Areas 3 and 5 (Operational Area 15)

Cross section A15A-A15A' (Figure 26) transverses MA 3 from northwest to southeast. Clayey waste material, approximately 3 feet thick, capped by fill was encountered between borings A15-SB4 and A15-SB6. Native soil and weathered sandstone were found in borings A15-SB2, A15-SB8, and A15-SB9.

Cross section 16A-16A' traverses MA 5 from north to south. Fill material, consisting predominantly of silt and clay, with minor amounts of sand and gravel, was encountered between borings 16-SB7 and 16-SB1. Sandy gravel was encountered in 16-SB8.

Cross section A15/16A-A15/16A' (Figure 26) transverses MAs 3 and 5 from east to west. The topography changes rapidly from boring A15-SB8 (approximately 1,250 feet MSL) to 16-SB3 (approximately 1180 feet MSL) and rises to approximately 1,205 feet MSL at well MW-I3. Native soil (silt and clay), sandstone, coal, and shale were encountered in the borings within this area. Fill consisting of silt, sand, gravel, and brick was encountered in MA 5. Saturated conditions were encountered at borings 16-SB3 at approximately 8 feet bgs.

Management Areas 4 and 6 (AOC 3, 8, and 15)

Cross-section 8/15A-8/15A' (Figure 27) transverses MAs 4 and 6 from north to south. A discontinuous layer of variable thickness consisting of black silty waste was encountered in four borings. The waste material is capped with fill consisting of rock, brick and silt and is underlain by native soils consisting of clay, silt and sand. Shale and sandstone were encountered at approximately 20 and 25 feet bgs, respectively.

Management Area 7 (AOCs 17 and 17A)

Cross-section 17A-17A' (Figure 28) transverses MA 7 from northwest to southeast. A black silty waste layer capped with fill was encountered in both AOCs. Shale was encountered at depth in all of the borings with the exception of 17-SB3.

Cross section 17B-17B' (Figure 28) transverses AOC 17A from southwest to northeast. Black silty waste capped with fill and underlain by shale and sandstone, was encountered in borings 17A-TP3, 17A-SB4 and 17A-SB7. Native soils and bedrock were encountered in well MW-6 and 17A-SB9.

Cross section 17C-17C' (Figure 28) transverses the central portion of AOC 17. The topography changes rapidly between borings 17-SB3 and MW-10 (approximately 50 feet). A black silty waste layer, of variable thickness, was encountered in borings 17-SB3 and 17-TP6, underlain by silt and shale. Native soils (sand, silt and clay) and shale, sandstone, and coal were encountered in the other borings.

3.2.4 General Data Observations

Several metals were detected above their respective Act 2 MSC; however, the number of metals observed above the screening criteria was generally fewer at each MA in the April and October 2003 results than the January 2002 results. This difference is primarily due to the low flow sampling procedures used during April and October 2003, which reduced the amount of suspended solids in the dissolved metals samples. In addition, Environmental Strategies requested TDS analysis for each groundwater sample during the April 2003 sampling event to determine if the Act 2 used aquifer TDS greater than 2,500 mg/l criteria could be applied. Groundwater samples from six wells (MW-4, MW-16B, MW-21, OW-5, 903, and 904) contained TDS concentrations that exceeded 2,500 mg/l. The presence of metals is largely naturally occurring; however, in some cases, fill and waste material that remains in place may account for the reported concentrations.

Benzene was the only VOC detected above an Act 2 MSC. Groundwater samples from six wells (MW-16B, MW-12, MW-27, OW-6, 903, and 904) contained benzene concentrations above the Act 2 MSC based on the results from one or more sampling events. The sampling method used did not have a consistent effect on the benzene concentrations in an individual well when comparing the results of samples collected following conventional well purging techniques with those collected using low flow purging and sampling procedures. This difference in concentration is likely due to the position of the low flow sampling pump in relation to the aquifer zone containing the highest concentration of benzene. Table 43 provides a comparison of analytical results from samples collected using both sampling methods for each of these wells during the October 2003 sampling event. No facility related SVOCs were consistently detected in groundwater samples from the MAs.

It should be noted that for a limited number of groundwater samples at several MAs, elevated detection limits were reported for VOCs, SVOCs, and metals. These samples were diluted by the laboratory before analysis, which raised the reporting limits accordingly. This is evidence of the sample matrix interfering with the analysis. As with the soil results, Environmental Strategies discussed this issue with the laboratory representatives. The laboratory representatives explained that some of the samples were amber or black in color. Darker samples usually indicate the presence of suspended or dissolved solid (metals or organic material), which interfere with laboratory analysis and reporting limits. In many cases the

interfering materials were found to be metals or petroleum hydrocarbons. Several of samples exhibited elevated TDS concentrations.

3.2.5 Groundwater Characterization Findings

The results of the RI groundwater sampling activities are discussed in this section. The data are summarized in Tables 34 through 44, and the groundwater sample locations are shown on Figure 21. No constituents of interest were detected in the groundwater samples collected from MA 4 (Table 37), MA 7 (Table 41), and MA 8 (Table 42). Several naturally occurring metals were the only constituents of interest detected at MA 3 (Table 36); however, a summary of the results during three site characterization sampling events at this MA along with the remaining MAs are discussed below.

MA 1

- Benzene was detected above the MSC at monitoring wells MW-16B and OW-6 during the first and last sampling events at concentrations ranging from 5.8 ug/l to 100 ug/l (Table 36). Samples collected from a deeper MA well, MW-16A, did not indicate the presence of benzene.
- 4-Nitrophenol was detected above the MSC in MW-16B at 2,000 ug/l in January 2002, but was not detected in the two subsequent sampling events.
- Metals detected above MSCs during all three sampling events include aluminum, iron, manganese, and nickel. Other metals that exceeded MSCs during at least one sampling event include beryllium and lead.

MA 2

- Benzene was detected above the MSC at monitoring well MW-12 (90 ug/l) during the first sampling event and at low estimated concentrations during subsequent sampling events (Table 35).
- Metals detected above MSCs during all three sampling events include aluminum, iron, and manganese. Other metals that exceeded MSCs during at least one sampling event include beryllium and lead.

MA 3

- Benzene was not detected above the MSC during the three sampling events (Table 36).
- Metals detected above MSCs during all three sampling events include aluminum, beryllium, iron, and manganese. Other metals that exceeded MSCs during at least one sampling event include nickel and lead.

MA 5

- Benzene was detected above the MSC at monitoring well MW-27 (780 ug/l and 5.3 ug/l) during the first and last sampling event, respectively (Table 38).
- Metals detected above MSCs during all three sampling events include iron and manganese. Other metals that exceeded MSCs during at least one sampling event include aluminum, beryllium, lead, and nickel.
- Light non-aqueous phase liquid (LNAPL) is present in well MW-28 at a thickness of approximately 1.5 feet. VOC and SVOC analysis did not detect constituents of interest (Table 39). Fingerprint and distillation analysis indicate the LNAPL resembles a mixture of two or more Crompton neutral oil feedstocks used in plant production. The oil feedstock generally consists of a natural lubricating base oil used to manufacture food or medical grade white mineral oils. The LNAPL has been delineated by subsequent investigation activities. Wells L-1 through L-5 were installed to delineate the extent of the LNAPL. The LNAPL appears to be limited to an area within a 50-foot radius of MW-28 and east of the South Branch of Bear Creek. Table 2 provides a summary of the LNAPL thickness in MW-28 and the LNAPL delineation wells. The well locations and LNAPL thickness measurements are shown on Figure 29.

MA 6

- Benzene was detected above the MSC at well 904 during all three sampling events at concentrations ranging from 1,000 ug/l to 2,600 ug/l (Table 40).

- Metals detected above MSCs during all three sampling events include aluminum, iron, manganese, and nickel. Other metals that exceeded MSCs during at least one sampling event include beryllium, lead, and nickel.

MA 9

- Benzene was detected above the MSC at well OW-6 during the first and last sampling events at concentrations of 100 ug/l and 26 ug/l, respectively (Table 43).
- Metals detected above MSCs during all three sampling events include aluminum, arsenic, beryllium, iron, manganese, and nickel. Other metals that exceeded MSCs during at least one sampling event include lead and thallium.

Management Area Summary

As described in the previous sections, very few constituents of interest were detected in groundwater samples above the Act 2 MSCs. Benzene was the only VOC detected above the MSC. The MAs with benzene detected above the MSC included MAs 1 or 9 (detected in OW-6; shared by both MAs), 2, 5, and 6. The horizontal and vertical extent of benzene concentrations above the MSC have been delineated and appear to be limited to specific MAs and AOCs, which may serve as the source area of the benzene.

Metals that exceed MSCs were detected in six of the nine MAs consisting of MAs 1, 2, 3, 5, 6, and 9. Metals that exceeded MSCs during each sampling event in these MAs included aluminum, iron, manganese, and nickel. Other metals that commonly exceeded MSCs were beryllium (MAs 3 and 9), lead (MAs 3, 5, and 6) and arsenic (MA 9). The presence of these metals is largely naturally occurring; however, in some cases, waste material that remains in place may account for the reported groundwater concentrations.

The LNAPL present at MA 5 has been characterized and delineated. VOC and SVOC analysis did not detect COIs. The LNAPL appears to resemble a Crompton neutral oil feedstock used in plant products.

3.3 Surface Water

Groundwater from the Site may discharge to the surface water of the South Branch of Bear Creek. The potential organic constituent of interest relative to surface water is benzene that was identified in groundwater associated with MA 5 and MA 6. The highest benzene

concentration was detected at MA 6, which includes AOC 3 and AOC 8 that are located immediately adjacent to the South Branch of Bear Creek. In addition, metals including aluminum, beryllium, iron, lead, manganese, and nickel were constituents of interest in several MAs where groundwater from the site may discharge to the South Branch of Bear Creek.

Environmental Strategies collected three surface water samples from the South Branch of Bear Creek in November 2000 for analysis of BTEX compounds. The detection limit for the compounds was 5 µg/l and no constituent was detected (Figure 29 and Table 45). However, Act 2 guidance mandates that the effects on surface water from diffuse flow of groundwater be evaluated under low flow conditions. To determine the potential effects, the PADEP has prepared a spreadsheet, SWLOAD5b (Domenico, 1987) to estimate the average groundwater concentration, plume flow, and mass loading of a constituent to surface water from diffuse groundwater discharges for determining surface water compliance with Act 2. Based on an edge criterion concept (a constituent-specific criterion based on the MSCs), and the likelihood that the plume will discharge into a surface body at a concentration greater than the edge criterion, the discharge may be further evaluated using PENTOXSD (PADEP, 2003), a surface water-mixing model. If no portion of the plume is entering the surface water at the time the maximum average concentration exceeds the edge criterion, no further demonstration of surface water attainment is needed.

The SWLOAD5b model was conducted for benzene at MA 6. The results of the model indicated that further evaluation using the PENTOXSD model was required. The input parameters for PENTOXSD were obtained from the current NPDES permit for the facility (e.g., stream flow, elevations, drainage areas, reach characteristics). The results of the PENTOXSD model indicated that the loading of benzene to the South Branch of Bear Creek was within acceptable limits, using the most stringent governing criterion, the human health cancer risk level for benzene. The modeling results are provided in Appendix E.

The SWLOAD5b model was also conducted for nickel. The other metals, aluminum, beryllium, iron, and manganese, do not have applicable human health criteria. Nickel was modeled using the concentrations found in MA 6 because this represented the highest concentration found, and information on groundwater flow was available for MA 6. The results of the model indicated that further evaluation using the PENTOXSD model was required. The results of the PENTOXSD model indicated that the loading of nickel to the South Branch of Bear

Creek was within acceptable limits, using the most stringent governing criterion, the threshold human health level for nickel.

The presence of the other metals, aluminum, beryllium, iron, and manganese, appear to be due to the regional geology and the regional, historical mining activities and unrelated to facility operations. A study by the US Geological Survey (USGS, 1996) noted that metals and trace elements were naturally present in the rocks and soils in the region, and that widespread detection of these metals indicates natural sources not associated with a specific land use. Maximum values of aluminum (5,500 mg/l), iron (60,000 mg/l), and manganese (5,100 mg/l) exceeded the EPA guidelines. In addition, two trace metals, arsenic and beryllium, were detected at sites associated with mining activities. The study concluded by comparing constituents to those collected from 1925 to 1965 by the USGS in Pennsylvania. Generally, the water quality in this region was not significantly different from water quality in similar shale and sandstone aquifers located throughout Pennsylvania. Iron concentrations showed the greatest variability, due to high natural concentrations in the rock, and the presence of mining activities.

3.4 Indoor Air

The PADEP has developed Statewide Health Standards for vapor intrusion into buildings from groundwater and soil. The Statewide Health Standards decision matrix for groundwater was used to evaluate the groundwater sampling results. Benzene was the only VOC detected above the groundwater MSC (0.005 mg/l) for a used aquifer (a Statewide Health Standards decision matrix point). The non-residential groundwater MSC for benzene for volatilization to indoor air is 5.9 mg/l. The highest reported concentration of benzene was 2.7 mg/l at MA 6, well below the applicable proposed MSC. For the soil to indoor air pathway, there were no constituents that exceeded the MSC for a used aquifer that also were determined to be mobile in the soil (see discussion above).

It is also noted that for evaluation of the groundwater to indoor air pathway, the Statewide Health Standards states that Occupational Safety and Health (OSHA) derived screening criteria may be used as an alternate to the default EPA-derived screening criteria when OSHA regulations are fully implemented and documented in a workplace building. The corresponding USEPA-PA default nonresidential PEL MSCs are listed as not a concern (NOC), indicating the constituent is not a concern as the screening value is above the constituent water

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solubility. With respect to wells OW-6, MW-27, 903, and 904R, there are no administrative offices, day care facilities, or other non-production related facilities that are in the vicinity or downgradient of these wells. It is noted that the EPA Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance), dated November 2002, subscribes to this same occupational setting situation. The guidance states that OSHA and EPA have agreed that OSHA generally will take the lead role in addressing occupational exposures, applying the same criteria of implementation and documentation of OSHA regulations.

4.0 Potential Receptors and Pathways of Exposure

Exposure assessment is an analysis that qualitatively evaluates the general exposure scenarios that would apply to the Site. The objective of the exposure assessment was to estimate the type and magnitude of potential human and ecological exposure to the constituents identified in the various media. For exposure to occur, the following components of the exposure pathway must exist:

- a source and mechanism of constituent release to the environment
- an environmental transport medium
- a point of potential exposure to identified constituents
- an exposure route at the exposure point

The pathway analysis completed for this Site is summarized in the Conceptual Site Model (CSM) presented in Figure 31 for potential human and ecological receptors, based on the known land use of the Site and surrounding area. The figure notes that pathways are considered to be potentially complete, incomplete, or insignificant based on the four components identified above. In this CSM, the foreseeable land use is based on the continued industrial operation of the facility, the presence of two adjacent similar industrial facilities and the rural characteristics of the general area in which the facility is located.

The EPA has issued a RCRA Environmental Indicator (EI) RCRIS Code CA725 document that confirms current human exposure is under control at the Crompton facility (Appendix E). The primary sources of data and information regarding contaminant levels at the facility as identified in this EI CA725 are a Preliminary Conceptual Site Model and Proposed Groundwater Investigation Work Plan (ESC, 2001), the January 2002 Groundwater Sampling Results submitted to PADEP and EPA on May 21, 2002, and a draft EI CA725 prepared by Crompton, dated September 24, 2003. The information presented in the EI CA725 was incorporated into the current CSM, as applicable.

The following are the current and future land use assumptions that were used in the development of the CSM:

- The facility is operated by Crompton 24 hours per day, seven days per week.

- The property has been in continuous use for industrial purposes during the past 100 years.
- The Site is bordered to the north and south by large industrial properties (Indspec to the north and Penreco to the south), and to the southwest and west by strip mines and undeveloped property. A small residential area is located along the northwest property boundary. Predominantly undeveloped property is located to the east.
- Perimeter fencing restricts access to facility operational areas; Site access is also restricted by 24-hour security. In addition, there are 24-hour security patrols, surveillance cameras, and motion detectors. An extensive facility health and safety program, including a training requirement before admittance to the operational areas, also serves to restrict Site access to facility employees and authorized visitors.
- The current land use is not anticipated to change in the near future.
- Crompton uses bottled water for potable purposes at the facility. Non-contact cooling water and water for the onsite fire-protection reservoir is obtained from two production wells located on the facility property. Water for sanitary purposes and process operations is obtained from two offsite wells located approximately two miles east of the Site; these wells are owned and operated by Crompton.
- Public drinking water (bottled water) is currently available to residents of Petrolia and in the immediate vicinity. In addition, a Public Water Supply Feasibility Study for the Bear Creek Area Chemical Sites (which includes the location of Crompton Petrolia facility) was completed by PADEP in 2002 to evaluate a reliable permanent source of potable water to the area. Plans are underway to provide the permanent supply in 2004.

The current and future potential human and ecological receptors for the Site and nearby areas include:

- onsite workers – employees of Crompton during both routine operation of the facility and during construction or maintenance activities

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- trespassers – individuals who illegally gain access to the operational areas of Crompton's property
- offsite residents – residents located downgradient of the facility
- regional and local biota – terrestrial and aquatic receptors that thrive or forage onsite or inhabit the South Branch of Bear Creek

A discussion of the potential exposure scenarios that were evaluated for this facility, based on the data obtained to date, is presented in the following sections.

4.1 Soil

As described in Section 3.1, to date no constituents of interest were identified in the soil samples collected at the facility as part of the RI activities. In addition, site access to former or current operational areas is highly restricted, as indicated previously. As a result, there are no complete pathways of exposure for soil and consideration of potential human receptors is not proposed.

4.2 Groundwater

Groundwater containing benzene at concentrations above relevant screening criteria was the only constituent of interest identified to date at the facility. The following paragraphs discuss the potential groundwater pathways of exposure considered for the facility.

Direct contact with groundwater used as a potable resource by human receptors, including ingestion and dermal contact is incomplete. Bottled water is used by the facility for drinking, and public drinking water is available to the surrounding community. A Public Water Supply Feasibility Study for the Bear Creek Area Chemical Sites (which includes the location of Crompton Petrolia facility) was completed by PADEP in September 2002. The objective of the feasibility study was to select the best alternative for providing a reliable permanent source of potable water to the Crompton facility, residents, and other users within the proposed service area (northeastern Butler County and northwestern Armstrong County), where water sampling and testing has revealed evidence of groundwater contamination associated with former offsite waste disposal areas. In response to these conditions, PADEP is providing bottled water to residents whose water sources have shown evidence of contamination. Based on factors such as

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operation and maintenance costs, the extension and upgrading of the East Brady Municipal Water System was the selected supply option. Implementation of this option, scheduled for 2004, will provide a permanent potable water supply and eliminate the groundwater drinking water exposure pathway onsite and offsite. As a result, direct contact with groundwater during used as a potable resource is not considered to be a likely pathway of exposure.

Indirect contact with groundwater via inhalation or ingestion by construction or utility workers during subsurface excavation may result in a complete exposure pathway if excavation occurs within the areas where benzene was detected above the MSC (MAs 5 and 6). However, following health and safety precautions normally followed at the Site, during construction activities, would protect construction workers from potential exposures. The MA 5 and MA 6 areas, where the highest benzene levels were detected, are not considered to be areas where construction work is likely. However, human exposure to benzene could occur during soil disturbance work, including excavation, grading, and trenching associated with utility projects. The mitigation of any short-term exposure risks to utility worker resulting from potentially affected soils or groundwater will be accomplished by the implementation of a Hazard Communication Plan (HCP) for the receptor population. Included in this HCP will be approval via a permit process for all excavation activities by the facility safety personnel. The procedures in the HCP will require that air samples be tested using portable measuring instruments for benzene and other constituents such as carbon dioxide, oxygen, and constituents that may be ignitable or flammable. In addition, based on the results of the monitoring program, site-specific and activity-specific personal protective equipment will be used, as well as adequate ventilation systems.

Indirect contact by human receptors including inhalation of volatile emissions is the last potential groundwater exposure pathway considered. However, as previously discussed, because public water is available to the facility and surrounding community, this is not considered to be a likely pathway of exposure.

4.3 Surface Water

Recreational access to the South Branch of Bear Creek is restricted on the Crompton property by a chain-link security fence. In addition, there are 24-hour security patrols, surveillance cameras, and motion detectors. A Crompton employee and member of the local

community was interviewed regarding his observations of the South Branch of Bear Creek and knowledge of surface water use in the region. The employee indicated that downstream of the facility, the South Branch of Bear Creek is adjacent to approximately 1,000 feet of the Borough of Petrolia property, and then approximately 1,000 feet of an industrial property. Further downstream to the confluence of Bear Creek, the South Branch of Bear Creek is adjacent to fairly rugged and inaccessible terrain. Reportedly, there is no recreational fishing in the South Branch of Bear Creek. The lack of recreational use is associated with historical impacts from mining and industrial operations throughout the watershed. The substrate of the South Branch of Bear Creek is noticeably stained red in some portions due to acid mine impacts. Therefore, the quality of the stream is not conducive to recreational use. The nearest downstream surface water withdrawal point is in East Brady, approximately 13 miles downstream from Crompton on the Allegheny River. Based on this information, current use of the South Branch of Bear Creek downstream of the facility appears to be minimal and human exposure at this time to any surface water and sediment potentially impacted the facility is likely to be insignificant.

To date, no constituents of interest were identified in the surface water samples collected from the facility. In addition, the results of the modeling of the effects on surface water from diffuse flow of groundwater under low flow conditions (using SWLOAD5b and PENTOXSD) showed that the loading of benzene and nickel to the South Branch of Bear Creek was within acceptable limits, using the most stringent governing criterion for these two constituents. Based on this information, the human health and ecological pathway from surface water is considered to be incomplete. Therefore, there are no complete pathways of exposure for this medium and no further work is proposed.

4.4 Vapor Intrusion

The Statewide Health Standards for vapor intrusion into buildings from groundwater and soil were applied to these media, and there were no constituents that exceeded the applicable Statewide Health Standards. In addition, the Statewide Health Standards indicate that OSHA derived screening criteria are applicable when OSHA regulations are fully implemented and documented in a workplace building.

There are four residential buildings on the Crompton property. However, the buildings, located immediately south of the reservoir, are located outside the former and current operational

areas of the facility. In addition, the buildings are downgradient of MW-29, which did not have constituent concentrations above the MSCs. Reportedly, there are no vegetable gardens or other plantings used to produce edible food, either in the vicinity of the four residential buildings, or on other portion of the plant property. There are no day care facilities on the site.

Based on the evaluation of soil and groundwater using these two methods, there are no complete pathways of indoor air exposure for these two media and no further work is proposed.

4.5 Ecology

Ecological receptors may include terrestrial species that come in contact with soil constituents detected in exposed areas onsite, and aquatic species that come in contact with the South Branch of Bear Creek. The historically industrial nature of the operational area and extensive surface cover by buildings and gravel may have resulted in a reduction of viable ecological habitat and receptors. As noted previously in Section 4.3 (Surface Water), the substrate of the South Branch of Bear Creek is noticeably stained red in some portions due to acid mine impacts.

The potential ecological receptors and pathways of exposure will be addressed during implementation of the Project Plan using the ecological screening procedures presented in the Act 2 Technical Guidance Manual (PADEP, 2002) and pursuant to Corrective Action requirements under the RCRA. There are no Act 2 Statewide Health Standard MSCs for evaluation of the soil, surface water, and sediment pathways for ecological receptors. Rather, the appropriate screening procedure used is based on the selected Statewide Health Standard or Site-Specific Standard for human receptors per regulated substance, each medium of concern, or by distinct area of contamination. It is noted that both of these screening procedures reference the applicable EPA ecological risk assessment guidance documents, and, therefore, the selected screening procedures will be in accordance with applicable requirements under the RCRA.

5.0 Site Characterization Summary

The site characterization activities conducted to date at the Crompton Petrolia facility have been conducted in accordance with work plans and data quality objectives listed in Section 1. With regard to the constituents of interest evaluated to date, characterization activities indicate that soil, groundwater, surface water, and indoor air do not warrant further evaluation to meet the objectives of the Act 2 RI Work Plan and the COA. The specific information and objectives used to reach this conclusion are summarized below.

The soil characterization activities to date show that the constituents identified in the soil within the AOCs do not exceed the Act 2 Statewide Health Standard MSCs for Nonresidential Use. Two minor exceptions include arsenic in AOC 16 and lead in Area 15 in one surface soil sample at each AOC. Four subsequent delineation samples collected at each location revealed concentrations below Act 2 direct contact MSCs. As a result, no further evaluation of soil is proposed for the constituents of interest investigated to meet the objectives of the Act 2 RI Work Plan and the COA, which include the following:

- verify the presence or absence of constituents of interest released to soil within AOCs at the facility
- provide sufficient data to develop a CSM of the facility to identify potential contaminant migration pathways and to apply appropriate remediation standards specific to each AOC within the facility
- provide data to assist with an evaluation of applicable remediation technologies and alternatives consistent with Act 2 and RCRA corrective action requirements

The groundwater characterization activities to date show the presence of benzene above the Act 2 MSCs at MAs 1 or 9, 2, 5 and 6. Metals that exceed MSCs were detected in MAs 1, 2, 3, 5, 6, and 9. The presence of several of the metals is largely naturally occurring or representative of regional groundwater quality; however, in some cases, waste material that remains in place may account for the detected metals concentrations. The facility-related groundwater affects represent localized conditions, resulting from historical plant operations; based on a review of the existing data, there is no evidence to indicate site-wide groundwater contamination. As a result, no further evaluation of groundwater for the constituents of interest

investigated to date is proposed to meet the objectives of the Act 2 RI Work Plan, Proposed Groundwater Investigation Plan, and the COA, which include the following:

- characterize the potential effects of historical waste management and plant operations on the Site groundwater quality
- characterize the potential effects of regional groundwater impacts on Site groundwater

Surface water as a recreational use area for the South Branch of Bear Creek is limited due to Site restrictions, and the impacts from acid mine drainage. Through modeling and sampling, the surface water at the Site (South Branch of Bear Creek) has been demonstrated to contain no constituents of interest that would result in unacceptable exposure to receptors. As a result, no further evaluation of the surface water for the constituents of interest investigated to date is proposed to meet the objectives of the Act 2 RI Work Plan and the COA, which include the following:

- characterize the potential effects of historical waste management and plant operations on the surface water quality
- characterize the potential effects of regional groundwater impacts on surface water

Based on the application of Statewide Health Standards for vapor intrusion into buildings, OSHA regulations for workplace buildings, and absence of non-workplace buildings within the former and current occupational areas, there is no complete exposure pathway for the indoor air scenario. As a result, no further evaluation of indoor air is proposed to meet (indirectly via vapor intrusion) the objectives of the Act 2 RI Work Plan and the COA, which include the following:

- verify the presence or absence of constituents of interest released to the soil within AOCs at the Site
- characterize the potential effects of historical waste management and plant operations on the groundwater quality

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The ecological receptors inhabiting the operational areas may come in contact with constituents of interest in the soil and surface waters at the facility. However, the historical industrial nature of the facility and the region (historical mining activities, for example) limits the occurrence of viable ecological habitats and receptors. The potential risk to ecological receptors via complete pathways of exposure will be addressed in the Project Plan at the completion of the remedial investigation activities discussed in Section 6 below.

6.0 Supplemental Site Characterization

This section presents Crompton's proposed scope of work for completion of remaining site characterization, and human health and ecological risk analysis activities. This scope of work has been prepared in accordance with Paragraph 7 of the COA. In addition, the work proposed in this section will be completed in accordance with the Remedial Investigation Work Plan (ESC, 2000a), Remedial Investigation Data Quality Objectives (ESC, 2000b), applicable Act 2 regulations, and the Act 2 Technical Manual (PADEP, 2002).

This section documents the procedures and methodologies that will be used to complete the remaining site characterization and exposure pathway analysis scope of work, the sampling and analysis plan, and quality assurance and control procedures.

6.1 Purpose and Objectives

The purpose of this Project Plan is to define the scope of work and investigative procedures necessary to attain the following objectives:

- verify the presence or absence of meta-benzene disulfonic acid (m-BDSA), para-phenol sulfonic acid (p-PSA), benzene sulfonic acid (BSA), and resorcinol released or threatened release to soils within AOCs at the facility; these compounds will be referred to as the "sulfonic acid-based constituents of interest" or "sulfonic acid-based COIs."
- characterize the potential effects of the sulfonic acid-based constituents of interest on the facility groundwater and surface water quality
- characterize the potential effects of regional groundwater impacts related to the sulfonic acid-based COIs on facility groundwater and surface water quality
- provide sufficient data to further refine the site characterization to identify potential contaminant migration and exposure pathways, and to apply appropriate remediation standards specific to each affected media at the facility
- provide data to assist with an evaluation of applicable remediation technologies and alternatives consistent with Act 2

6.2 Scope of Work

This section describes the scope of work necessary to achieve the above objectives. The scope includes three major tasks consisting of the characterization and delineation of soil, groundwater, surface water, and waste material potentially affected by the sulfonic acid-based COIs; the development of remedial standards (human health and ecological) for all site constituents of interest; and the submittal of Act 2 reports.

6.2.1 Site Characterization and Sulfonic Acid-based COI Delineation Activities

This section describes the activities proposed to characterize waste materials, soil, groundwater, and surface water for the sulfonic acid-based COIs. In addition, this section describes Crompton's proposed activities to delineate, if necessary, the extent of potential releases to soil, groundwater, and surface water from each AOC.

Waste Material and Soil

The waste material and soil at AOCs 8 through 16, AOC 18, and former operations areas Area 5 and 15 will be sampled to evaluate the possible presence of the sulfonic acid-based COIs. The characterization activities will include collecting waste and soil samples from borings completed in each AOC. Samples will be collected continuously from the ground surface to the termination depth at each boring for field observation, lithologic characterization, and field screening using a photoionization detector (PID). The proposed boring locations are shown on Figure 32. Additional characterization and delineation activities may be completed if samples collected indicate the presence of sulfonic acid-based COIs above the applicable Act 2 remediation standards using an industrial land use scenario.

Groundwater Characterization

Groundwater samples will be collected to evaluate, to the extent practicable, the nature and extent of the sulfonic acid-based COIs potentially in groundwater at each MA. The existing Site MA monitoring well network will be utilized to conduct this evaluation. The groundwater sampling program will provide data to assist in evaluating the horizontal and vertical extent of the potential sulfonic acid-based COI.

Onsite production wells used for plant process water and selected deep aquifer monitoring wells will also be sampled to assess the potential effects of historical plant operations and regional influences on facility groundwater quality. The proposed groundwater sampling locations are shown on Figure 32.

Surface Water Characterization

Sulfonic acid-based COIs possibly present in groundwater onsite have the potential to discharge into a surface water body (including onsite seeps, drainage ditches, and the South Branch of Bear Creek). In addition, the regional effects of the sulfonic acid COIs have the potential to effect surface water at the Petrolia facility. A sampling program will be implemented to determine, to the extent practicable, the concentrations and possible source(s) of those sulfonic acid-based COIs in surface water. Figure 32 shows the proposed surface water sampling locations.

6.2.2 Remediation Standards Development

As discussed in Section 2.3 of the Remedial Investigation Work Plan (ESC, 2000), an Act 2 Release from Liability for an AOC or MA will be pursued using one or a combination of the Act 2 remediation standards including Background, Statewide Health, and Site-Specific (pathway elimination or risk-based standard). Selection of either one or a combination of these standards will be based on the specific regulated substance, the environmental medium of concern, and the extent of COIs at each AOC or MA. To determine the applicable remediation standard or standards for each AOC or MA, the remedial investigation findings, exposure pathway analysis, and, if warranted, risk assessment will be utilized. A description of each of these investigation components is provided in the following sections of the Remedial Investigation Work Plan:

- 2.3.1 - Conceptual Site Model
- 2.3.2 - Exposure Pathway Analysis
- 2.3.3 through 2.3.5 - Background, Statewide Health, of Site-Specific Standard development
- 2.3.6 - Ecological Evaluation

The development of remediation standards including the human health and ecological risk assessment process will be completed in accordance with the regulations and technical guidelines listed in the Remedial Investigation Work Plan (Section 2.3 - Remediation Standards). New or revised regulations and technical guidelines that have superseded existing procedures, such as the revised Act 2 regulations (25 Pa. Code, Chapter 250, [November, 2001]), and technical guidance (Act 2 Technical Guidance Manual, [June, 2002]) will be used. In addition, the vapor intrusion to indoor air pathway will be evaluated using the PADEP guidance on Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard (PADEP, 2004).

6.2.3 Submittal of Act 2 Reports

At the conclusion of remedial investigation activities, Environmental Strategies will prepare a combined Remedial Investigation and Risk Assessment Report, Cleanup Plan, and Final Report in accordance with the procedures set forth in the Act 2 Technical Manual (Section II. C. 7. - Reporting Requirements for the Site-Specific Standard).

A risk assessment will only be performed if a complete exposure pathway exists for humans or ecological receptors under current or planned future land use scenarios and if background or Statewide Health Standards are exceeded. In addition, if no complete exposure pathway exists or if the risk assessment indicates that the site is within the human health and ecological protection criteria, a Cleanup Plan would not be required and a Remedial Investigation/Final Report would be prepared. The RI/Final Report would include the findings of the remedial investigation and exposure analysis.

6.3 Sampling and Analysis Plan

The field procedures to be used during implementation of field activities associated with this Project Plan will be conducted in accordance with Section 3.0 (Sampling and Analysis Plan) of the Remedial Investigation Work Plan (ESC, 2000). In addition, Table 46 summarizes the sulfonic acid and resorcinol sampling, extraction and analytical methodologies, holding times, and sample container and preservation requirements to be used for waste, soil, groundwater, and surface water site characterization activities. A summary of the sulfonic acid and resorcinol

sampling and analysis program is provided in Table 47. Figure 32 shows the proposed sample locations.

7.0 Project Plan Schedule

Crompton is prepared to initiate implementation of the Project Plan after comments are received from PADEP and the revised Project Plan is approved by PADEP. Crompton and Environmental Strategies understand that the remedial investigation and site characterization completed to date are not being reviewed by PADEP for approval as part of its approval of the Project Plan. In accordance with the COA, the approved Project Plan will be referred to as the "Final Project Plan". Crompton will continue with implementation of the Final Project Plan until the above-referenced investigation and risk assessment activities are completed. As data are collected for each AOC and MA, they will be reviewed to determine if additional activities need to be completed in accordance with Act 2 and the COA. The Project Plan will be implemented following the schedule provided below.

- Project Plan submitted by March 8, 2004 to PADEP
- Collect samples for analysis of sulfonic acid-based COIs in soil, groundwater, surface water, and waste material
  - Initiate investigation within 30 days from Project Plan approval by PADEP
  - Complete sampling within 120 days from Project Plan approval by PADEP
- Meet with PADEP to discuss data within 60 days of receipt of final analytical results from the laboratory
- Remedial Investigation and Risk Assessment Report submitted within 90 days after PADEP's acknowledgement of data adequacy
- Cleanup Plan submitted within 150 days after PADEP approval of the Remedial Investigation and Risk Assessment Report
- Final Report submission schedule to be provided in the Cleanup Plan

As discussed in Section 6.2.3 a risk assessment would only be completed if the human health exposure pathway analysis or ecological assessment indicate the presence of a complete exposure pathway and the background or statewide health standards are exceeded. The above schedule assumes that the proposed scope of work will provide data sufficient to complete the remedial investigation activities associated with the Petrolia facility. If additional investigation is warranted or PADEP requests a change in the proposed scope of work, this schedule is subject to change, pending approval of PADEP.

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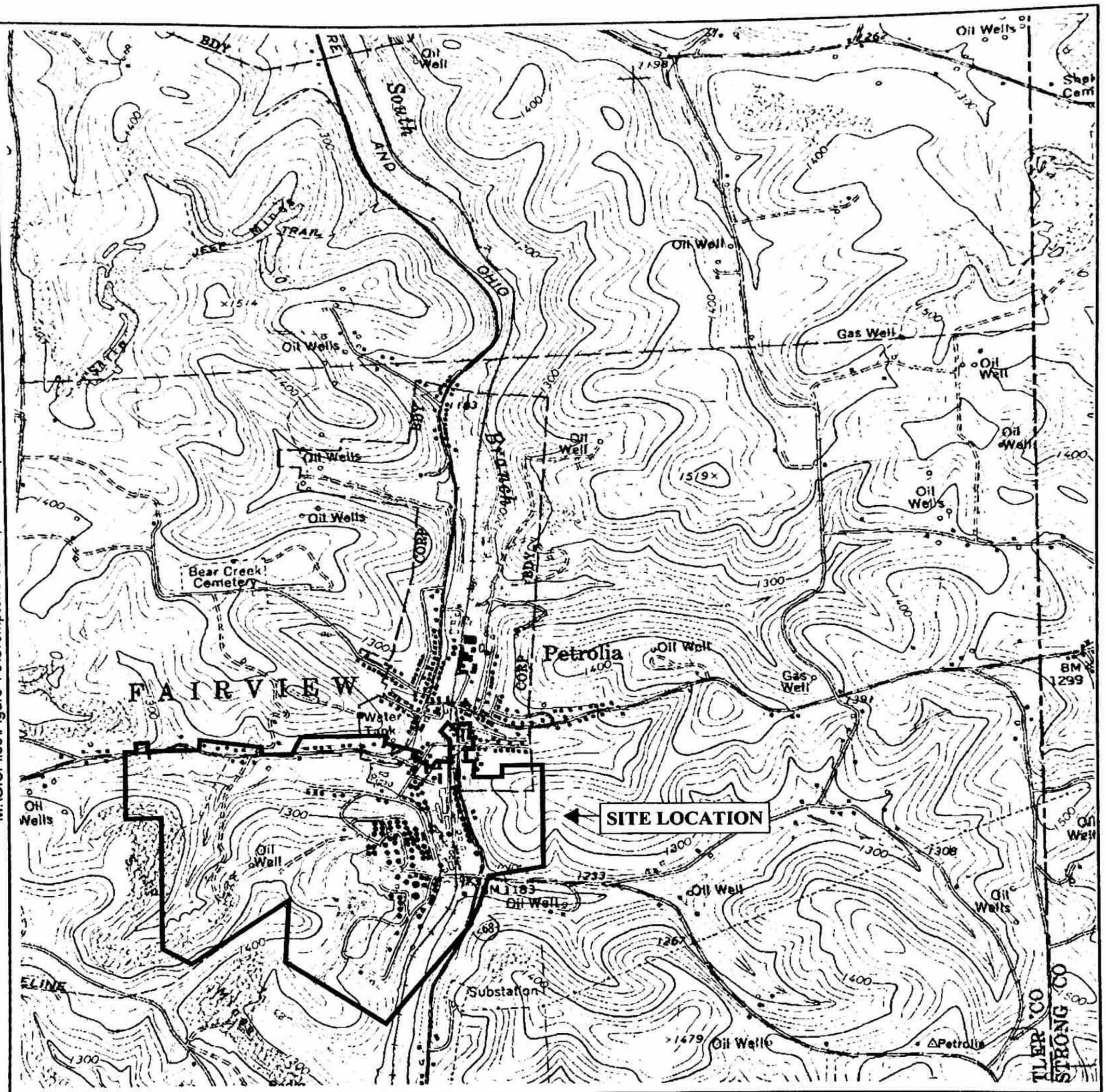

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PHOTOREVISED 1979. SCALE 1:24000

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Quadrangle Location

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Scale in Feet

ENVIRONMENTAL STRATEGIES CONSULTING LLC
300 CORPORATE CENTER DRIVE, SUITE 200
MOON TOWNSHIP, PENNSYLVANIA 15108
412-604-1040

Figure 1
Site Location
Crompton Corporation
Petrolia, Pennsylvania

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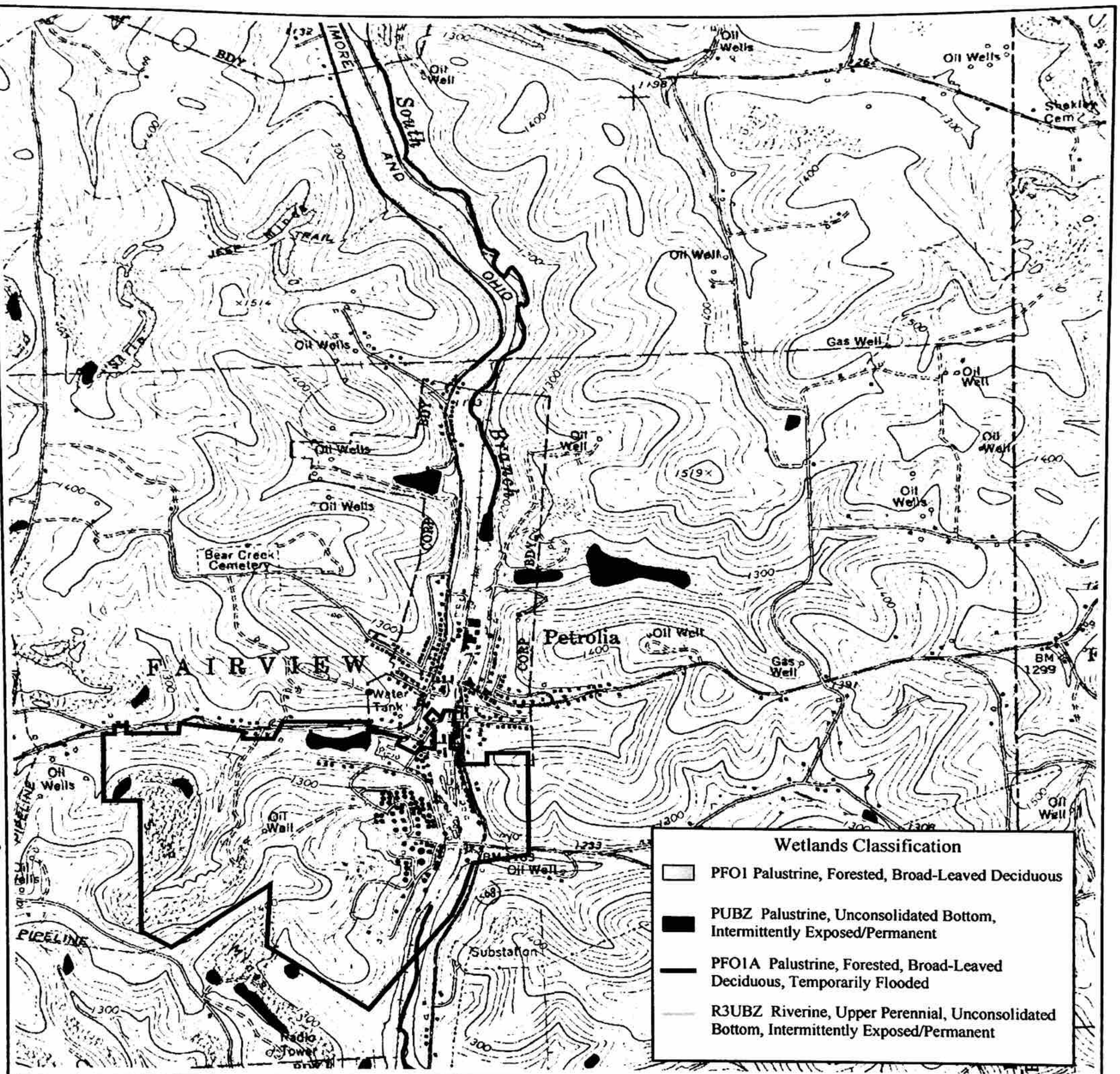

REFERENCE:
US FISH AND WILDLIFE SERVICE
NATIONAL WETLANDS INVENTORY DATA
PARKER, PENNSYLVANIA,
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Quadrangle Location

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Scale in Feet

ENVIRONMENTAL STRATEGIES CONSULTING LLC
300 CORPORATE CENTER DRIVE, SUITE 200
MOON TOWNSHIP, PENNSYLVANIA 15108
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Figure 15
Wetlands Inventory Map
Crompton Corporation
Petrolia, Pennsylvania

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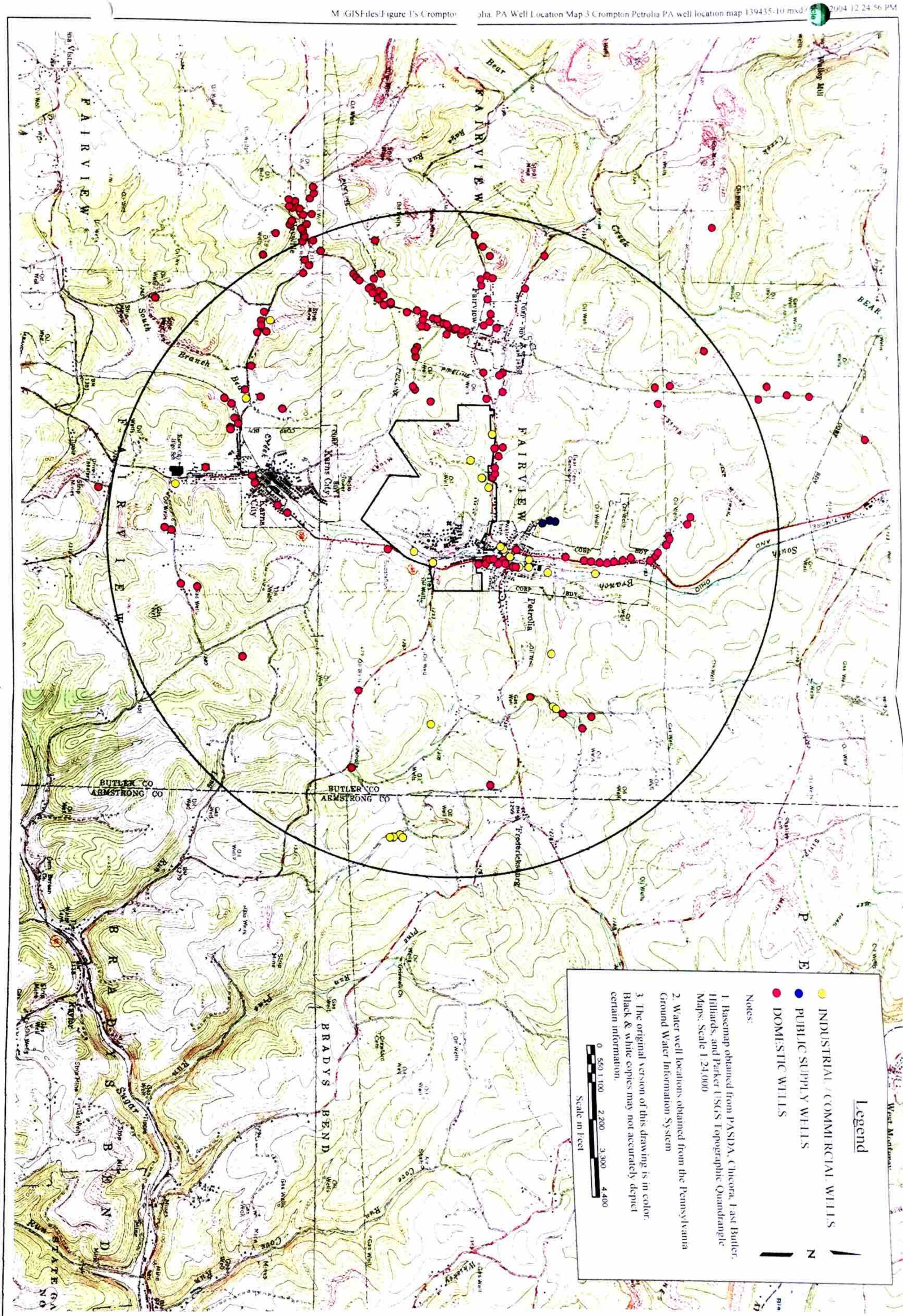

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300 CORPORATE CENTER DRIVE, SUITE 200
MOON TOWNSHIP, PENNSYLVANIA 15108 412-604-1040

Figure 22

Industrial, Public Supply, and Domestic Well Location Map

PETROLIA
PETROLIA, PENNSYLVANIA
PREPARED FOR
CROMPTON CORPORATION
GREENWICH, CONNECTICUT

Drawn By
Checked
Approved
DGW Name

ENVIRONMENTAL STRATEGIES CORPORATION
300 Corporate Center Drive, Suite 200 • Moon Township, PA 15108 • (412) 604-1040 • Fax (412) 604-1055

October 24, 2003

Mr. Mark Ansell
Environmental Cleanup Program
Pennsylvania Department of Environmental Protection
230 Chestnut Street
Meadville, PA 16335-3481

Darius Ostrauskas
United States Environmental Protection Agency, Region III (3WC22)
1650 Arch Street
Philadelphia, PA 19103-2029

Re: Summary of January 2002 and April 2003 Groundwater Sampling Results
Crompton - Petrolia, Pennsylvania

Dear Mark and Darius:

Per our discussion on October 8, 2003, below is a summary of the January 2002 and April 2003 groundwater sampling results by groundwater management area (MA 1 through MA 9). These results are also summarized in the enclosed tables (Table 1 through Table 9). We have also provided groundwater potentiometric surface maps prepared from groundwater level measurements taken during March 2003 and a monitoring well location map.

Groundwater results in bold text with shaded boxes denote a constituent detection that exceeds a Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2) Medium Specific Concentration (MSC) or United States Environmental Protection Agency (USEPA) Risk-based Concentration (RBC), if a MSC does not exist. These criteria were used to characterize groundwater quality and evaluate the groundwater results, but do not necessarily represent the remediation standards pursued by Crompton Corporation. In some instances, laboratory method detection limits exceed these criteria, which is denoted by bold text results.

In summary, the majority of constituents detected above MSCs or RBCs are metals; however, the number and variety of metals that exceeded MSCs is generally less than the January 2002 sampling event in a given monitoring well. This is primarily due to the low flow sampling procedures used during the April 2003 sampling event and the presence of total dissolved solid (TDS) concentrations of greater than 2,500 mg/l in five wells, which permits the use of higher Act 2 MSCs. The presence of the metals we believe is largely due to background conditions. Environmental Strategies implemented low flow sampling activities using standard operating procedures generally consistent with the USEPA guidance Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers (EPA 542-S-02-001, May 2002).

Benzene was detected at one management area (MA 6) above the Act 2 MSC during the April 2003 sampling event. The benzene concentration in a groundwater sample collected from the replacement well for well 904 (904R) had a benzene concentration of 1,600 ug/l compared to a concentration of 1,000 ug/l from original well 904 collected in January 2002. The Act 2 MSC for benzene at this well is 500 ug/l due to a TDS concentration greater than 2,500 mg/l. Other management areas (MAs 1/9, 2, 5) with wells containing benzene concentrations above MSCs in January 2002, were below the MSC in April 2003.

No semivolatile organic compounds were detected above laboratory method detection limits.

Management Area 1

Benzene
April 2003 - Detected below MSC at OW-6 (2 ug/l) and MW-16B (<0.11 ug/l). Sampling of deeper well (MW-16A) did not indicate the presence of benzene.

January 2002 - Benzene above MSC in wells OW-6 (100 ug/l) and MW-16B (5.8J ug/l)

Metals
April 2003 - Aluminum, beryllium, iron, manganese, nickel detected above MSCs

January 2002 - Aluminum, beryllium, boron, iron, lead, manganese, nickel, chromium, vanadium, zinc above MSCs

Other Observations
4-Nitrophenol previously detected above MSC in well MW-16B was not detected in the April 2003 sampling results

TDS in wells MW-16B and OW-5 above 2,500 mg/l

Management Area 2

Benzene
April 2003 - Not detected above MSC in well MW-12 (0.35J ug/l)

January 2002 - Benzene detected above MSC in well MW-12 (90 ug/l)

Metals
April 2003 - Aluminum, iron, lead, manganese, and nickel detected above MSC

January 2002 - Aluminum, iron, lead, and manganese detected above MSC

Other Observations
New monitoring wells MW- 31, MW-32, and MW-33 and existing wells W-3 added to the sampling program did not reveal constituents of concern

Management Area 3

Benzene
April 2003 - Not detected above reporting limit

January 2002 - Not detected above reporting limit

Metals
April 2003 - Aluminum, beryllium, iron, manganese, nickel detected above MSC
January 2002 - Aluminum, beryllium, iron, lead, and manganese detected above MSC

Other Observations
TDS in well MW-4 above 2,500 mg/L

Management Area 4

Benzene
April 2003 - Not detected above MSC

January 2002 - Not detected above MSC

Metals
April 2003 - Aluminum, iron, manganese detected above MSC

January 2002 - Iron, lead, and manganese detected above MSC

Other Observations
TDS in well MW-21 above 2,500 mg/l

Management Area 5

Benzene
April 2003 - Not detected above MSC; MW-27 (2.6 ug/l)

January 2002 - Benzene above MSC in well MW-27 (780 ug/l)

Metals
April 2003 - Iron, and manganese detected above MSC

January 2002 - Aluminum, beryllium, iron, lead, manganese, and nickel detected above MSC

Other Observations
LNAPL present in well MW-28 (1.58 feet thick); January 2002 VOC and SVOC analysis did not indicate constituents of concern above laboratory reporting limits

Management Area 6

Benzene
April 2003 - Above MSC in well 903 (67 ug/l); 904 replacement well (1,600 ug/l)

January 2002 - Above MSC in wells 903 (160 ug/l) and 904 (1000 ug/l) duplicate (950 ug/l)

Metals
April 2003 - Aluminum, beryllium, iron, manganese, nickel detected above MSC

January 2002 - Aluminum, beryllium, chromium, cobalt, iron, lead, manganese, nickel, zinc detected above MSC

Other Observations
TDS in wells 903 and 904 above 2,500 mg/l

Management Area 7

Benzene
April 2003 - Not detected above MSC

January 2002 - Not detected above MSC

Metals
April 2003 - Iron and manganese detected above MSC

January 2002 - Aluminum, beryllium, chromium, iron, lead, manganese, and nickel detected above MSC

Other Observations
None to report

Management Area 8

Benzene
April 2003 - Not detected above MSC

January 2002 - Not detected above MSC

Metals
April 2003 - Iron and manganese detected above MSC

January 2002 - Aluminum, iron, and manganese detected above MSC

Other Observations
None to report

Management Area 9

Benzene
April 2003 - Not detected above MSC; OW-6 (2 ug/l)

January 2002 - Benzene above MSC in well OW-6 (100 ug/l)

Metals
April 2003 - Aluminum, arsenic, beryllium, iron, lead, manganese, nickel, and thallium detected above MSC

January 2002 - Aluminum, arsenic, beryllium, boron, iron, lead, manganese, and nickel detected above MSC

Other Observations
None to report

If you have any questions or comments concerning this letter, please do not hesitate to contact me at (412) 604-1040 or Raman Iyer at (203) 573-2353. We look forward to the continued cooperation with both the PADEP and USEPA through the completion of this project.

Sincerely yours,

Jeffrey A. Hassen

Jeffrey A. Hassen, P.G.
Senior Project Director

JAH:ckr

Enclosures

cc: Mr. Raman Iyer, Crompton Corporation
Mr. Dick Fleeger, Crompton Corporation
Mr. John Simon, Environmental Strategies

Docs/crompton corp/139435/GW Summary 1003.doc

Table 1 - DRAFT

Groundwater Sampling Results Summary
Management Area 1
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-15B		MW-16A	MW-16B		OW-3
		Sample Date:	01/09/02	04/08/03	04/11/03	01/09/02	04/03/03 (b)	04/02/03
Volatile Organic Compounds (µg/l)	ACT 2 MSC (c)	RBC (d)						
1,1,1,2-Tetrachloroethane	70	0.41	0.25 U (e)	0.13 U	0.13 U	2.5 U	0.13 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.125 U	0.16 U	0.16 U	1.25 U	0.16 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.25 U	0.12 U	0.12 U	2.5 U	0.12 U	0.12 U
1,1-Dichloroethene	7	353	0.5 U	0.21 U	0.21 U	5 U	0.21 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.125 U	0.16 U	0.16 U	1.25 U	0.16 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.75 U	0.18 U	0.18 U	7.5 U	0.18 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.2 U	0.16 U	0.16 U	2 U	0.16 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.25 U	0.11 U	0.11 U	18	0.11 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (f)	0.047	1 U	0.82 U	0.82 U	10 U	0.82 U	0.82 U
1,2-Dibromoethane	0.2 (f)	0.00075	0.25 U	0.19 U	0.19 U	2.5 U	0.19 U	0.19 U
1,2-Dichloroethane	5	0.12	0.25 U	0.092 U	0.092 U	2.5 U	0.092 U	0.092 U
1,2-Dichloropropane	5	0.16	0.125 U	0.11 U	0.11 U	1.25 U	0.11 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.25 U	0.11 U	0.2 J	32	0.11 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.125 U	0.1 U	0.1 U	1.25 U	0.1 U	0.1 U
2-Butanone	5,800	1,906	2.5 U	1.2 U	1.2 U	270 L	1.2 U	1.2 U
2-Hexanone	-	1,460	2.5 U	1.2 U	1.2 U	33 J	1.2 U	1.2 U
4-Methyl-2-pentanone	410	2,000	2.5 U	1 U	1 U	25 U	1 U	1 U
Acetone	10,000	610	2.5 UR	68 J	3.5 B	3,200 L	2.5 U	2.5 U
Benzene	5	0.34	0.125 U	0.11 U	0.11 U	5.2 J	0.11 U	0.11 U
Bromodichloromethane	100	0.17	0.25 U	0.12 U	0.12 U	2.5 U	0.12 U	0.12 U
Bromoform	100	8.5	0.54 U	0.18 U	0.18 U	5.4 U	0.18 U	0.18 U
Bromomethane	10	8.5	0.5 U	0.37 UJ	0.37 UJ	5 U	0.37 UJ	0.37 U
Carbon disulfide	4,100	1,043	0.5 U	0.16 U	0.16 U	5 U	0.16 U	0.16 U
Carbon tetrachloride	5	0.16	0.25 U	0.2 U	0.2 U	2.5 U	0.2 U	0.2 U
Chlorobenzene	100	106	0.125 U	0.11 U	0.11 U	1.25 U	0.11 U	0.11 U
Chloroethane	900	3.6	0.5 U	0.18 U	0.18 U	5 U	0.18 U	0.18 U
Chloroform	100	0.15	0.125 U	0.14 U	0.14 U	1.25 U	0.14 U	0.14 U
Chloromethane	3	190	0.25 U	0.075 U	0.075 U	2.5 U	0.075 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.25 U	0.18 U	0.18 U	2.5 U	0.18 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.25 U	0.095 U	0.095 U	2.5 U	0.095 U	0.095 U
Ethylbenzene	700	1,340	0.25 U	0.11 U	0.11 U	2.5 U	0.11 U	0.11 U
Hexachlorobutadiene	1	0.86	0.25 U	-	-	2.5 U	-	-
Isopropylbenzene	2,300	658	0.25 U	0.17 U	0.17 U	2.5 U	0.17 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	0.5 U	0.33 U	0.33 U	6.6 J	0.33 U	0.33 U
Methylene chloride	5	4.1	0.25 U	0.16 U	0.16 U	2.5 U	2.2 B	0.16 U
Naphthalene	100	6.5	0.2 U	-	-	2 U	-	-
n-Butylbenzene	4,100	243	0.25 U	0.21 U	0.21 U	3.4 J	0.21 U	0.21 U
n-Propylbenzene	4,100	243	0.125 U	0.15 U	0.15 U	1.25 U	0.15 U	0.15 U
o-Xylene	10,000	212.6 (h)	0.25 U	0.14 U	0.14 U	2.5 U	0.14 U	0.14 U
p-Isopropyltoluene	-	-	0.25 U	0.14 U	0.14 U	2.5 U	0.14 U	0.14 U
sec-Butylbenzene	4,100	243	0.25 U	0.18 U	0.18 U	2.5 U	0.18 U	0.18 U
Styrene	100	1,624	0.125 U	0.11 U	0.11 U	1.25 U	0.11 U	0.11 U
tert-Butylbenzene	4,100	243	0.25 U	0.14 U	0.14 U	2.5 U	0.14 U	0.14 U
Tetrachloroethene	5	0.1	0.25 U	0.24 U	0.24 U	2.5 U	0.24 U	0.24 U
Toluene	1,000	747	0.25 U	0.23 J	0.14 U	3.5 J	0.14 U	0.14 U
Trichloroethene	5	0.026	0.25 U	0.095 U	0.095 U	2.5 U	0.095 U	0.095 U
Vinyl chloride	2	0.015	0.25 U	0.17 U	0.17 U	2.5 U	0.17 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 1 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 1
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.	MW-18B		MW-16A	MW-16B		OW-1
		Sample Date	01/09/02	04/08/03	04/11/03	01/09/02	04/03/2003(b)	04/02/03
Semivolatile Organic Compounds (ug/l)	**ACT 2 MSC (c)**	**RBC (d)**						
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-	-	-	-
2,4,6-Trichlorophenol	31	6.1	1.91 U	1.4 U	1.5 UJ	3.44 UL	14 U	1.4 U
2,4-Dichlorophenol	20	109.5	2.09 U	1.3 U	1.3 U	3.76 UL	12 U	1.3 U
2,4-Dinitrophenol	50 (f)	73	10 U	1.5 UJ	1.6 U	18 UL	15 U	1.5 U
2,4-Dinitrotoluene	10 (f)	73	1.58 U	1.2 U	1.3 U	2.84 UL	12 U	1.2 U
2-Chlorophenol	40	30.4	1.87 U	1.3 U	1.3 U	3.36 UL	13 U	1.3 U
2-Methylnaphthalene	2,000	-	2.29 U	1.5 U	1.5 U	4.12 UL	15 U	1.5 U
2-Nitroaniline	5.8	-	1.73 U	1 U	1 U	3.12 UL	10 U	1 U
3,3'-Dichlorobenzidine	20 (f)	-	4.81 U	3.7 U	3.8 U	8.66 UL	37 U	3.7 U
3-Nitroaniline	5.8	3.35	1.72 U	2.6 U	2.6 U	3.1 UL	26 U	2.6 U
4,6-Dinitro-2-methylphenol	-	3.65	2.48 U	1.3 U	1.3 U	4.46 UL	13 U	1.3 U
4-Chloro-3-methylphenol	-	-	1.97 U	1.2 U	1.3 U	3.54 UL	12 U	1.2 U
4-Nitroaniline	5.8	3.35	2.01 U	1.1 U	1.1 U	3.62 UL	11 U	1.1 U
4-Nitrophenol	60	292	1.82 U	1.7 U	1.7 U	**2,000**	17 U	1.7 U
Acenaphthene	3,800	365	2.1 U	1.5 U	1.5 U	3.78 UL	15 U	1.5 U
Benzo(a)anthracene	10 (f)	0.092	1.99 U	0.88 U	0.9 U	3.58 UL	8.7 U	0.88 U
Benzo(a)pyrene	0.2	0.0092	1.98 U	2.4 U	2.4 U	3.56 UL	23 U	2.4 U
Benzo(b)fluoranthene	10 (f)	0.092	2.43 U	0.81 U	0.83 U	4.38 UL	8 U	0.81 U
Benzo(g,h,i)perylene	10 (f)	-	3.51 U	0.94 U	0.97 U	6.32 UL	9.3 U	0.94 U
Benzo(k)fluoranthene	10 (f)	0.92	2.5 U	1 U	1.1 U	4.5 UL	10 U	1 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.77 U	1.4 U	1.4 U	3.18 UL	13 U	1.4 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.74 U	0.85 U	0.88 U	4.94 UL	8.5 U	2.4 J
Carbazole	130	3.35	0.492 U	3 U	3.1 U	0.886 UL	30 U	3 U
Chrysene	10 (f)	9.2	2.79 U	0.9 U	0.92 U	5.02 UL	9.8 J	0.9 U
Dibenzo(a,h)anthracene	10 (f)	0.0092	3.92 U	0.98 U	1 U	7.06 UL	9.7 U	0.98 U
Dibenzofuran	10 (f)	12.2	2.07 U	1.4 U	1.5 U	3.72 UL	14 U	1.4 U
Di-n-butyl phthalate	10,000	3,650	5.56 U	1 U	1.1 U	10 UL	10 U	1 U
Di-n-octyl phthalate	2,000	730	2.27 U	0.89 U	0.92 U	16 L	8.9 U	0.89 U
Fluorene	1,900	243	2.01 U	1.5 U	1.5 U	3.62 UL	14 U	1.5 U
Hexachlorobenzene	1	0.042	2.96 U	1.2 U	1.2 U	5.32 UL	12 U	1.2 U
Hexachlorobutadiene	1	0.86	2.61 U	1.4 U	1.4 U	4.7 UL	14 U	1.4 U
Hexachlorocyclopentadiene	50	219	2.9 U	5.9 U	6.1 U	5.22 UL	59 U	5.9 U
Hexachloroethane	1	4.8	2.21 U	1.3 U	1.3 U	3.98 UL	13 U	1.3 U
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	2.3 U	0.94 U	0.97 U	4.14 UL	9.3 U	0.94 U
Isophorone	100	70.5	1.99 U	1.3 U	1.4 U	3.58 UL	13 U	1.3 U
Naphthalene	100	6.5	3.1 U	1.4 U	1.5 U	5.58 UL	14 U	1.4 U
Nitrobenzene	51	3.5	1.79 U	1.4 U	1.4 U	3.22 UL	14 U	1.4 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.71 U	1.4 U	1.5 U	3.08 UL	14 U	1.4 U
N-Nitrosodiphenylamine	530	14	4.74 U	3.9 U	4.1 U	8.54 UL	39 U	3.9 U
Pentachlorophenol	1	0.56	1.89 U	0.77 U	0.79 U	3.4 UL	7.6 U	0.77 U
Phenanthrene	1,100	-	1.96 U	1 U	1 U	3.52 UL	10 U	1 U
Phenol	4,000	10,950	0.811 U	1.9 U	1.9 U	1.46 UL	19 U	1.9 U
Pyrene	130	182.5	3.12 U	0.88 U	0.91 U	5.62 UL	8.8 U	0.88 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 1 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 1
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-15B		MW-16A	MW-16B		OW-3
		Sample Date:	01/09/02	04/08/03	04/11/03	01/09/02	04/03/2003 (b)	04/02/03
Metals (mg/l)	ACT 2 MSC (c)	RBC (d)						
Aluminum, Dissolved	0.2	37	0.07 L	0.0422 B	0.0513 B	5,470 L	-	0.0156 U
Aluminum, Total	-	-	2.42 L	12.1 K	1.93 K	15,000 L	23,200	0.0648 B
Antimony, Dissolved	0.03 (f)	0.015	0.0019	0.00017 B	0.00012 U	0.0125 U	-	0.00023 B
Antimony, Total	-	-	0.0005 U	0.00026 B	0.00012 UL	0.0125 U	0.0077 B	0.00012 B
Arsenic, Dissolved	0.05	0.000045	0.002 UL	0.0024 U	0.0025 J	0.2 UL	-	0.0024 B
Arsenic, Total	-	-	0.002 UL	0.0062 J	0.0027 J	1 UL	0.709	0.0024 U
Barium, Dissolved	2	2.6	0.0701 L	0.0248 J	0.014 J	0.25 UL	-	0.0804 B
Barium, Total	-	-	0.0891 L	0.144 J	0.023 J	0.483 L	0.462 J	0.0726 B
Beryllium, Dissolved	0.004	0.073	0.00025 UL	0.00098 B	0.0011 B	0.196 L	-	0.00029 U
Beryllium, Total	-	-	0.000389 L	0.003 B	0.0017 B	0.498 L	0.0475 B	0.00029 U
Boron, Dissolved	0.6	3.3	0.0341 J	0.0731 J	0.0447 J	3.3 U	-	0.322 J
Boron, Total	-	-	0.051 J	0.0429 J	0.0883 J	3.3 U	0.9 B	0.232
Cadmium, Dissolved	0.005	0.018	0.0025 UL	0.00039 U	0.00039 U	0.25 UL	-	0.00039 U
Cadmium, Total	-	-	0.0025 UL	0.00066 J	0.00039 U	0.25 UL	0.202 J	0.00039 U
Chromium, Dissolved	0.1	0.11 (i)	0.0025 UL	0.0094	0.0012 J	3.24 L	-	0.0018 B
Chromium, Total	-	-	0.00504 L	0.0261	0.0032 J	9.2 L	11.8	0.0015 B
Cobalt, Dissolved	2	0.73	0.00661 L	0.0078 J	0.0185 J	1.51 L	-	0.008 B
Cobalt, Total	-	-	0.00597 L	0.0231 J	0.0191 J	3.89 L	4.94	0.0059 B
Copper, Dissolved	1	1.5	0.005 UL	0.0011 U	0.0011 U	0.5 UL	-	0.0031 B
Copper, Total	-	-	0.005 UL	0.0203 J	0.0011 U	0.5 UL	0.318 B	0.0052 B
Iron, Dissolved	0.3	11	0.135 L	1.3	25.7	5,950 L	-	2.98 J
Iron, Total	-	-	3.76 L	25.7	27.6	14,600 L	24,800	2.34 J
Lead, Dissolved	0.005	-	0.00336 L	0.0026 U	0.0026 U	0.753 L	-	0.0026 U
Lead, Total	-	-	0.00574 L	0.0135	0.0028 J	1.62 L	0.663 K	0.0026 U
Manganese, Dissolved	0.05	0.73 (j)	2.06 L	.18	10.2	64.9 L	-	5.92
Manganese, Total	-	-	1.71 L	18.7	10.7	165 L	227	4.13 J
Mercury, Dissolved	2	-	0.000052 U	0.025 U	0.025 U	0.0017 B	-	0.025 U
Mercury, Total	-	-	0.000052 U	0.064 B	0.025 UL	0.0016 B	1.6 B	0.025 U
Nickel, Dissolved	0.1	0.73	0.039 L	0.0178 J	0.0137 J	1.68 L	-	0.004 B
Nickel, Total	-	-	0.0452 L	0.0421	0.0158 J	4.69 L	5.6	0.0025 B
Selenium, Dissolved	0.05	0.18	0.005 UL	0.0023 U	0.0023 U	0.5 UL	-	0.0023 U
Selenium, Total	-	-	0.005 UL	0.0023 U	0.0024 J	0.5 UL	0.899 K	0.0023 U
Silver, Dissolved	0.1	0.18	0.002 UL	0.0017 J	0.00067 J	0.2 UL	-	0.00058 U
Silver, Total	-	-	0.002 UL	0.0015 J	0.00072 J	0.2 UL	0.0289 U	0.00058 U
Thallium, Dissolved	0.04 (f)	0.0026	0.0001 U	0.000033 U	0.000033 U	0.0096	-	0.000033 U
Thallium, Total	-	-	0.000268	0.000034 B	0.000033 U	0.00753	0.0097 J	0.000033 U
Tin, Dissolved	61	22	0.05 U	0.0045 U	0.0045 U	5 U	-	0.0045 U
Tin, Total	-	-	0.05 U	0.0057 J	0.0045 U	5 U	0.738 J	0.0045 U
Vanadium, Dissolved	0.72	0.26	0.005 UL	0.0054 B	0.0047 B	1.63 L	-	0.001 U
Vanadium, Total	-	-	0.005 UL	0.0238 J	0.007 B	4.7 L	7.49	0.001 U
Zinc, Dissolved	2	11	0.0232 L	0.0013 U	0.0118 B	7.97 L	-	0.0047 B
Zinc, Total	-	-	0.0233 L	0.0803	0.0322	20.6 L	29.6	0.005 B
General Chemistry (mg/l)								
Total Dissolved Solids	-	-	-	2,440	2,050	-	254,000	900

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 1 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 1
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.	OW-4	OW-5		OW-6	
		Sample Date:	04/02/03	01/08/02	04/02/03 (b)	01/09/02	04/03/03
Volatile Organic Compounds (µg/l)	**ACT 2 MSC (c)**	**RBC (d)**					
1,1,1,2-Tetrachloroethane	70	0.41	0.13 U	0.25 U	0.13 U	0.25 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
1,1-Dichloroethane	7	353	0.21 U	0.5 U	0.21 U	0.5 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.18 U	0.75 U	0.18 U	0.75 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.16 U	0.2 U	0.16 U	0.2 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (f)	0.047	0.82 U	1 U	0.82 U	1 U	0.82 U
1,2-Dibromoethane	0.2 (f)	0.00075	0.19 U	0.25 U	0.19 U	0.25 U	0.19 U
1,2-Dichloroethane	5	0.12	0.092 U	0.25 U	0.092 U	0.25 U	0.092 U
1,2-Dichloropropane	5	0.16	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.1 U	0.125 U	0.1 U	0.125 U	0.1 U
2-Butanone	5,800	1,906	1.2 U	2.5 UR	1.3 J	2.5 UR	1.2 U
2-Hexanone	-	1,460	1.2 U	2.5 U	1.2 U	2.5 U	1.2 U
4-Methyl-2-pentanone	410	2,000	1 U	2.5 U	1 U	2.5 U	1 U
Acetone	10,000	610	2.5 U	6.9 L	6.9 B	14 L	5 B
Benzene	5	0.34	0.11 U	0.125 U	0.11 U	**186**	2
Bromodichloromethane	100	0.17	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
Bromoform	100	8.5	0.18 U	0.54 U	0.18 U	0.54 U	0.18 U
Bromomethane	10	8.5	0.37 UJ	0.5 U	0.37 UJ	0.5 U	0.37 UJ
Carbon disulfide	4,100	1,043	0.16 U	0.5 U	0.16 U	0.5 U	0.16 U
Carbon tetrachloride	5	0.16	0.2 U	0.25 U	0.2 U	0.25 U	0.2 U
Chlorobenzene	100	106	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
Chloroethane	900	3.6	0.18 U	0.5 U	0.27 J	0.5 U	0.18 U
Chloroform	100	0.15	0.14 U	0.125 U	0.14 U	0.125 U	0.14 U
Chloromethane	3	190	0.075 U	0.25 U	0.48 J	0.25 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Ethylbenzene	700	1,340	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
Hexachlorobutadiene	1	0.86	-	0.25 U	-	0.25 U	-
Isopropylbenzene	2,300	658	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	0.33 U	0.5 U	0.33 U	0.5 U	0.33 U
Methylene chloride	5	4.1	0.16 U	0.25 U	0.16 U	0.25 U	0.16 U
Naphthalene	100	6.5	-	0.2 U	-	0.2 U	-
n-Butylbenzene	4,100	243	0.21 U	0.25 U	0.21 U	0.25 U	0.21 U
n-Propylbenzene	4,100	243	0.15 U	0.125 U	0.15 U	0.125 U	0.15 U
o-Xylene	10,000	212.6 (h)	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
p-Isopropyltoluene	-	-	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
sec-Butylbenzene	4,100	243	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Styrene	100	1,624	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
tert-Butylbenzene	4,100	243	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
Tetrachloroethene	5	0.1	0.24 U	0.25 U	0.24 U	0.25 U	0.24 U
Toluene	1,000	747	0.27 J	0.25 U	0.14 U	0.25 U	0.37 J
Trichloroethene	5	0.026	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Vinyl chloride	2	0.015	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 1 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 1
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	OW-4	OW-5		OW-6	
		Sample Date:	04/02/03	01/08/02	04/02/03 (b)	01/09/02	04/03/03
Semivolatile Organic Compounds (µg/l)	ACT 2 MSC (c)	RBC (d)					
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-	-	-
2,4,6-Trichlorophenol	31	6.1	1.5 U	2.21 UL	1.8 U	1.78 U	1.4 U
2,4-Dichlorophenol	20	109.5	1.3 U	2.41 UL	1.6 U	1.95 U	1.3 U
2,4-Dinitrophenol	50 (f)	73	1.6 U	11.6 UL	1.9 U	9.35 U	1.5 U
2,4-Dinitrotoluene	10 (f)	73	1.3 U	1.82 UL	1.5 U	1.47 U	1.2 U
2-Chlorophenol	40	30.4	1.4 U	2.15 UL	1.6 U	1.74 U	1.3 U
2-Methylnaphthalene	2,000	-	1.5 U	2.64 UL	1.8 U	2.13 U	1.5 U
2-Nitroaniline	5.8	-	1.1 U	2 UL	1.3 U	1.62 U	1 U
3,3'-Dichlorobenzidine	20 (f)	-	3.8 U	5.55 UL	4.6 U	4.49 U	3.7 U
3-Nitroaniline	5.8	3.35	2.7 U	1.99 UL	3.2 U	1.61 U	2.6 U
4,6-Dinitro-2-methylphenol	-	3.65	1.3 U	2.86 UL	1.6 U	2.31 U	1.3 U
4-Chloro-3-methylphenol	-	-	1.3 U	2.27 UL	1.6 U	1.83 U	1.2 U
4-Nitroaniline	5.8	3.35	1.1 U	2.32 UL	1.4 U	1.88 U	1.1 U
4-Nitrophenol	60	292	1.7 U	2.1 UL	2.1 U	1.7 U	1.7 U
Acenaphthene	3,800	365	1.5 U	2.42 UL	1.8 U	1.96 U	1.5 U
Benzo(a)anthracene	10 (f)	0.092	0.91 U	2.29 UL	1.1 U	1.85 U	0.89 U
Benzo(a)pyrene	0.2	0.0092	2.5 U	2.28 UL	3 U	1.84 U	2.4 U
Benzo(b)fluoranthene	10 (f)	0.092	0.84 U	2.81 UL	1 U	2.27 U	0.81 U
Benzo(g,h,i)perylene	10 (f)	-	0.98 U	4.05 UL	1.2 U	3.27 U	0.95 U
Benzo(k)fluoranthene	10 (f)	0.92	1.1 U	2.88 UL	1.3 U	2.33 U	1 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.4 U	2.04 UL	1.7 U	1.65 U	1.4 U
bis(2-Ethylhexyl)phthalate	6	4.8	0.89 U	5.2 L	1.1 U	2.56 U	0.86 U
Carbazole	130	3.35	3.1 U	0.568 UL	3.8 U	0.459 U	3 U
Chrysene	10 (f)	9.2	0.93 U	3.22 UL	1.1 U	2.6 U	0.91 U
Dibenzo(a,h)anthracene	10 (f)	0.0092	1 U	4.53 UL	1.2 U	3.66 U	0.99 U
Dibenzofuran	10 (f)	12.2	1.5 U	2.38 UL	1.8 U	1.93 U	1.4 U
Di-n-butyl phthalate	10,000	3,650	1.1 U	6.41 UL	1.3 U	5.18 U	1 U
Di-n-octyl phthalate	2,000	730	0.93 U	2.62 UL	1.1 U	2.11 U	0.9 U
Fluorene	1,900	243	1.5 U	2.32 UL	1.8 U	1.88 U	1.5 U
Hexachlorobenzene	1	0.042	1.2 U	3.41 UL	1.5 U	2.76 U	1.2 U
Hexachlorobutadiene	1	0.86	1.4 U	3.01 UL	1.7 U	2.44 U	1.4 U
Hexachlorocyclopentadiene	50	219	6.1 U	3.35 UL	7.4 U	2.7 U	5.9 U
Hexachloroethane	1	4.8	1.3 U	2.55 UL	1.6 U	2.06 U	1.3 U
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	0.98 U	2.65 UL	1.2 U	2.15 U	0.95 U
Isophorone	100	70.5	1.4 U	2.29 UL	1.7 U	1.85 U	1.3 U
Naphthalene	100	6.5	1.5 U	3.58 UL	1.8 U	2.89 U	1.4 U
Nitrobenzene	51	3.5	1.4 U	2.06 UL	1.7 U	1.67 U	1.4 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.5 U	1.97 UL	1.8 U	1.6 U	1.5 U
N-Nitrosodiphenylamine	530	14	4.1 U	5.47 UL	4.9 U	4.42 U	4 U
Pentachlorophenol	1	0.56	0.8 U	2.18 UL	0.96 U	1.76 U	0.78 U
Phenanthrene	1,100	-	1 U	2.26 UL	1.3 U	1.82 U	1 U
Phenol	4,000	10,950	1.9 U	0.936 UL	2.3 U	0.756 U	1.9 U
Pyrene	130	182.5	0.92 U	3.6 UL	1.1 U	2.91 U	0.89 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 1 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 1
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	OW-4	OW-5		OW-6	
		Sample Date:	04/02/03	01/08/02	04/02/03 (b)	01/09/02	04/03/03
Metals (mg/l)	ACT 2 MSC (c)	RBC (d)					
Aluminum, Dissolved	0.2	37	0.0156 U	0.5 UL	0.0278 B	7.16 L	8.48
Aluminum, Total	-	-	0.0156 U	56.2 L	0.253	11 L	9.94
Antimony, Dissolved	0.03 (f)	0.015	0.0017 B	0.0063	0.0011 B	0.0018	0.00012 UL
Antimony, Total	-	-	0.0017 B	0.00441	0.00097 B	0.0005 U	0.00012 UL
Arsenic, Dissolved	0.05	0.000045	0.0024 U	0.0374 L	0.016	0.0432 L	0.0025 B
Arsenic, Total	-	-	0.0024 U	0.243 L	0.0139	0.0608 L	0.0053 B
Barium, Dissolved	2	2.6	0.0276 J	0.025 UL	0.0269 J	0.0092 L	0.0102 J
Barium, Total	-	-	0.0295 J	1.88 L	0.0322 J	0.0717 L	0.0118 J
Beryllium, Dissolved	0.004	0.073	0.00029 U	0.0025 UL	0.00029 U	0.00457 L	0.0056
Beryllium, Total	-	-	0.00029 U	0.00968 L	0.00029 U	0.00539 L	0.005 B
Boron, Dissolved	0.6	3.3	0.0209 B	2.37	2.74	0.12	0.11 J
Boron, Total	-	-	0.0228 B	1.98	2.8	0.12	0.117 J
Cadmium, Dissolved	0.005	0.018	0.00039 U	0.025 UL	0.00039 U	0.0025 UL	0.001 J
Cadmium, Total	-	-	0.00039 U	0.025 UL	0.00039 U	0.0025 UL	0.0012 J
Chromium, Dissolved	0.1	0.11 (i)	0.00063 U	0.025 UL	0.0014 J	0.0196 L	0.0051
Chromium, Total	-	-	0.00063 U	0.098 L	0.0017 J	0.0346 L	0.0059
Cobalt, Dissolved	2	0.73	0.00059 U	0.025 UL	0.0013 B	0.333 L	0.479
Cobalt, Total	-	-	0.00059 U	0.0504 L	0.0016 B	0.327 L	0.516
Copper, Dissolved	1	1.5	0.0015 B	0.05 UL	0.0061 B	0.005 UL	0.0012 B
Copper, Total	-	-	0.003 B	0.181 L	0.012 B	0.0334 L	0.0029 B
Iron, Dissolved	0.3	11	0.017 U	0.528 B	0.017 U	36.9 L	22.3
Iron, Total	-	-	0.153 B	107 L	0.311 B	46.2 L	24.1
Lead, Dissolved	0.005	-	0.0026 U	0.025 UL	0.0026 U	0.0124 L	0.0035 K
Lead, Total	-	-	0.0026 U	0.099 L	0.0026 U	0.0218 L	0.0034 K
Manganese, Dissolved	0.05	0.73 (j)	0.0043 B	1.73 L	0.14	27.7 L	36.3
Manganese, Total	-	-	0.01 B	3.18 L	0.106	27.2 L	37.8
Mercury, Dissolved	2	-	0.025 U	0.000052 U	0.088 B	0.000052 U	0.025 U
Mercury, Total	-	-	0.025 U	0.00057	0.13 B	0.000072 B	0.028 B
Nickel, Dissolved	0.1	0.73	0.007 J	0.05 UL	0.0025 J	0.187 L	0.228
Nickel, Total	-	-	0.0039 J	0.114 L	0.0043 J	0.194 L	0.239
Selenium, Dissolved	0.05	0.18	0.0047 K	0.05 UL	0.0023 U	0.0118 L	0.0046 UL
Selenium, Total	-	-	0.0043 K	0.05 UL	0.0024 K	0.0119 L	0.0046 UL
Silver, Dissolved	0.1	0.18	0.00058 U	0.02 UL	0.00058 U	0.00875 L	0.0031 J
Silver, Total	-	-	0.00058 U	0.02 UL	0.00058 U	0.00902 L	0.0036 J
Thallium, Dissolved	0.04 (f)	0.0026	0.000033 U	0.0001 B	0.00081 J	0.00047	0.00014 B
Thallium, Total	-	-	0.000033 U	0.00815	0.00071 J	0.00117	0.00016 J
Tin, Dissolved	61	22	0.0045 U	0.0957 J	0.0362 J	0.05 U	0.0045 U
Tin, Total	-	-	0.0045 U	0.458 J	0.0345 J	0.05 U	0.0069 J
Vanadium, Dissolved	0.72	0.26	0.001 U	0.05 UL	0.009 J	0.005 UL	0.001 U
Vanadium, Total	-	-	0.0013 B	0.177 L	0.0089 J	0.005 UL	0.0015 J
Zinc, Dissolved	2	11	0.0266	0.05 UL	0.0013 U	0.385 L	0.449
Zinc, Total	-	-	0.0162 J	0.276 L	0.0231	0.383 L	0.475
General Chemistry (mg/l)							
Total Dissolved Solids	-	-	767	-	5,620	-	1,660

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 1 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 1
Crompton Corporation
Petrolia, Pennsylvania

a LD = identification, µg/l = micrograms per liter, ** = indicates no criterion developed or constituent not analyzed, mg/l = milligrams per liter
b Total Dissolved Solids (TDS) value greater than 2,500. Act 2 non-residential medium specific concentrations (MSCs) for used aquifers, where TDS greater than 2,500 used for comparison. The secondary maximum contaminant level is listed for aluminum, iron, and manganese.
c Act 2 non-residential MSCs for used aquifers, where TDS less than or equal to 2,500.
d U.S. EPA Region III Risk Based Concentration (RBC) for tapwater (April 2003).
e Data Qualifiers:
U = concentrations not detected at listed method detection limit
J = constituent detected at an estimated concentration for organics, method blank contamination for inorganics
B = method blank contamination for organics, constituent detected at an estimated concentration for inorganics
L = reported value may be biased low, actual value expected to be higher
K = reported value may be biased high, actual value expected to be lower
R = result rejected for data validation
f Practical Quantitation Limits (PQLs) were substituted for the criterion, except where TDS > 2,500.
g Criterion for 1,3-Dichloropropene
h Criterion for xylenes
i Criterion for Chromium VI
j Criterion for manganese, nonfood

Table 2 - DRAFT

Groundwater Sampling Results Summary
Management Area 2
Crompton Corporation
Petrolia, Pennsylvania (a)

		Sample I.D.:	MW-1		MW-12		MW-13	
		Sample Date:	01/09/02	03/27/03	01/09/02	04/01/03	01/08/02	3/31/03 (b)
Volatile Organic Compounds (µg/l)	ACT 2 MSC (c)	RBC (d)						
1,1,1,2-Tetrachloroethane	70	0.41	0.25 U (e)	0.13 U	0.25 UJ	0.13 U	0.25 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.125 U	0.16 U	0.125 UJ	0.16 U	0.125 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.25 U	0.12 U	0.25 UJ	0.12 U	0.25 U	0.12 U
1,1-Dichloroethene	7	353	0.5 U	0.21 U	0.5 UJ	0.21 U	0.5 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.125 U	0.16 U	0.125 UJ	0.16 U	0.125 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.75 U	0.18 U	0.75 UJ	0.18 U	0.75 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.2 U	0.16 U	0.2 UJ	0.16 U	0.2 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 UJ	0.11 U	0.25 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (f)	0.047	1 U	0.82 U	1 UJ	0.82 U	1 U	0.82 U
1,2-Dibromoethane	0.2 (f)	0.00075	**0.25** U	0.19 U	**0.25** UJ	0.19 U	**0.25** U	0.19 U
1,2-Dichloroethane	5	0.12	2.9	0.43 J	0.25 UJ	0.092 U	0.25 U	0.092 U
1,2-Dichloropropane	5	0.16	0.125 U	0.11 U	0.125 UJ	0.11 U	0.125 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 UJ	0.11 U	0.25 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.125 U	0.1 U	0.125 UJ	0.1 U	0.125 U	0.1 U
2-Butanone	5,800	1,906	2.5 U	1.2 U	2.5 UR	1.2 U	2.5 UR	1.2 U
2-Hexanone	-	1,460	2.5 U	1.2 U	2.5 UJ	1.2 U	2.5 U	1.2 U
4-Methyl-2-pentanone	410	2,000	2.5 U	1 U	2.5 UJ	1 U	2.5 UR	1 U
Acetone	10,000	610	2.5 UR	3.3 J	4 L	5.7 B	2.5 UR	2.5 U
Benzene	5	0.34	0.125 U	0.11 U	**[redacted]** J	0.35 J	0.125 U	0.11 U
Bromodichloromethane	100	0.17	0.25 U	0.12 U	0.25 UJ	0.12 U	0.25 U	0.12 U
Bromoform	100	8.5	0.54 U	0.18 U	0.54 UJ	0.18 U	0.54 U	0.18 U
Bromomethane	10	8.5	0.5 U	0.37 UJ	0.5 UJ	0.37 UJ	0.5 U	0.37 UJ
Carbon disulfide	4,100	1,043	0.5 U	0.16 U	0.5 UJ	0.16 U	0.5 U	0.16 U
Carbon tetrachloride	5	0.16	0.25 U	0.2 U	0.25 UJ	0.2 U	0.25 U	0.2 U
Chlorobenzene	100	106	0.125 U	0.11 U	0.125 UJ	0.11 U	0.125 U	0.11 U
Chloroethane	900	3.6	0.5 U	0.18 U	0.5 UJ	0.18 U	0.5 U	0.18 U
Chloroform	100	0.15	0.125 U	0.14 U	0.125 UJ	0.14 U	0.125 U	0.14 U
Chloromethane	3	190	0.25 U	0.075 U	0.25 UJ	0.075 U	0.25 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.25 U	0.18 U	0.25 UJ	0.18 U	0.25 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.25 U	0.095 U	0.25 UJ	0.095 U	0.25 U	0.095 U
Ethylbenzene	700	1,340	0.25 U	0.11 U	0.25 UJ	0.11 U	0.25 U	0.11 U
Hexachlorobutadiene	1	0.86	0.25 U	-	0.25 UJ	-	0.25 U	-
Isopropylbenzene	2,300	658	0.25 U	0.17 U	0.25 UJ	0.17 U	0.25 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	0.5 U	0.33 U	0.5 UJ	0.33 U	0.5 U	0.33 U
Methylene chloride	5	4.1	0.25 U	0.16 U	0.25 UJ	0.16 U	0.25 U	0.16 U
Naphthalene	100	6.5	0.2 U	-	0.2 UJ	-	0.2 U	-
n-Butylbenzene	4,100	243	0.25 U	0.21 U	0.25 UJ	0.21 U	0.25 U	0.21 U
n-Propylbenzene	4,100	243	0.125 U	0.15 U	0.125 UJ	0.15 U	0.125 U	0.15 U
o-Xylene	10,000	212.6 (h)	0.25 U	0.14 U	0.25 UJ	0.14 U	0.25 U	0.14 U
p-Isopropyltoluene	-	-	0.25 U	0.14 U	0.25 UJ	0.14 U	0.25 U	0.14 U
sec-Butylbenzene	4,100	243	0.25 U	0.18 U	0.25 UJ	0.18 U	0.25 U	0.18 U
Styrene	100	1,624	0.125 U	0.11 U	0.125 UJ	0.11 U	0.125 U	0.11 U
tert-Butylbenzene	4,100	243	0.25 U	0.14 U	0.25 UJ	0.14 U	0.25 U	0.14 U
Tetrachloroethene	5	0.1	0.25 U	0.24 U	0.25 UJ	0.24 U	0.25 U	0.24 U
Toluene	1,000	747	0.25 U	0.26 J	0.25 UJ	0.28 B	0.25 U	0.14 U
Trichloroethene	5	0.026	0.25 U	0.095 U	0.25 UJ	0.095 U	0.25 U	0.095 U
Vinyl chloride	2	0.015	0.25 U	0.17 U	0.25 UJ	0.17 U	0.25 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 2 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 2
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-1		MW-12		MW-13	
		Sample Date:	01/09/02	03/27/03	01/09/02	04/01/03	01/08/02	3/31/03 (b)
Semivolatile Organic Compounds (µg/l)	**ACT 2 MSC (c)**	**RBC (d)**						
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-	-	-	-
2,4,6-Trichlorophenol	31	6.1	1.78 U	1.4 U	1.83 U	1.4 U	1.78 UR	1.4 U
2,4-Dichlorophenol	20	109.5	1.95 U	1.3 U	2 U	1.3 U	1.95 UR	1.3 U
2,4-Dinitrophenol	50 (f)	73	9.35 U	1.5 U	9.6 U	1.5 U	9.35 UR	1.5 U
2,4-Dinitrotoluene	10 (f)	73	1.47 U	1.2 U	1.51 U	1.2 U	1.47 UR	1.2 U
2-Chlorophenol	40	30.4	1.74 U	1.3 U	1.79 U	1.3 U	1.74 UR	1.3 U
2-Methylnaphthalene	2,000	-	2.13 U	1.5 U	2.19 U	1.5 U	2.13 UR	1.5 U
2-Nitroaniline	5.8	-	1.62 U	1 U	1.66 U	1 U	1.62 UR	1 U
3,3'-Dichlorobenzidine	20 (f)	-	4.49 U	3.8 U	4.61 U	3.7 U	4.49 UR	3.7 U
3-Nitroaniline	5.8	3.35	1.61 U	2.6 U	1.65 U	2.6 U	1.61 UR	2.6 U
4,6-Dinitro-2-methylphenol	-	3.65	2.31 U	1.3 U	2.37 U	1.3 U	2.31 UR	1.3 U
4-Chloro-3-methylphenol	-	-	1.83 U	1.3 U	1.88 U	1.2 U	1.83 UR	1.2 U
4-Nitroaniline	5.8	3.35	1.88 U	1.1 U	1.93 U	1.1 U	1.88 UR	1.1 U
4-Nitrophenol	60	292	1.7 U	1.7 U	1.74 U	1.7 U	1.7 UR	1.7 U
Acenaphthene	3,800	365	1.96 U	1.5 U	2.01 U	1.5 U	1.96 UR	1.5 U
Benzo(a)anthracene	10 (f)	0.092	1.85 U	0.89 U	1.9 U	0.89 U	1.85 UR	0.89 U
Benzo(a)pyrene	0.2	0.0092	1.84 U	2.4 U	1.89 U	2.4 U	1.84 UR	2.4 U
Benzo(b)fluoranthene	10 (f)	0.092	2.27 U	0.82 U	2.33 U	0.81 U	2.27 UR	0.81 U
Benzo(g,h,i)perylene	10 (f)	-	3.27 U	0.96 U	3.36 U	0.95 U	3.27 UR	0.95 U
Benzo(k)fluoranthene	10 (f)	0.92	2.33 U	1.1 U	2.39 U	1 U	2.33 UR	1 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.65 U	1.4 U	1.69 U	1.4 U	1.65 UR	1.4 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.56 U	0.88 J	4.6 J	0.86 U	2.56 UR	0.86 U
Carbazole	130	3.35	0.459 U	3.1 U	0.471 U	3 U	0.459 UR	3 U
Chrysene	10 (f)	9.2	2.6 U	0.91 U	2.67 U	0.91 U	2.6 UR	0.91 U
Dibenzo(a,h)anthracene	10 (f)	0.0092	3.66 U	1 U	3.76 U	0.99 U	3.66 UR	0.99 U
Dibenzofuran	10 (f)	12.2	1.93 U	1.5 U	1.98 U	1.4 U	1.93 UR	1.4 U
Di-n-butyl phthalate	10,000	3,650	5.18 U	1.1 U	5.32 U	1 U	5.18 UR	1.6 J
Di-n-octyl phthalate	2,000	730	5.8 J	0.91 U	2.17 U	0.9 U	2.11 UR	0.9 U
Fluorene	1,900	243	1.88 U	1.5 U	1.93 U	1.5 U	1.88 UR	1.5 U
Hexachlorobenzene	1	0.042	2.76 U	1.2 U	2.83 U	1.2 U	2.76 UR	1.2 U
Hexachlorobutadiene	1	0.86	2.44 U	1.4 U	2.5 U	1.4 U	2.44 UR	1.4 U
Hexachlorocyclopentadiene	50	219	2.7 U	6 U	2.78 U	5.9 U	2.7 UR	5.9 U
Hexachloroethane	1	4.8	2.06 U	1.3 U	2.12 U	1.3 U	2.06 UR	1.3 U
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	2.15 U	0.96 U	2.2 U	0.95 U	2.15 UR	0.95 U
Isophorone	100	70.5	1.85 U	1.3 U	1.9 U	1.3 U	1.85 UR	1.3 U
Naphthalene	100	6.5	2.89 U	1.4 U	2.97 U	1.4 U	2.89 UR	1.4 U
Nitrobenzene	51	3.5	1.67 U	1.4 U	1.71 U	1.4 U	1.67 UR	1.4 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.6 U	1.5 U	1.64 U	1.5 U	1.6 UR	1.5 U
N-Nitrosodiphenylamine	530	14	4.42 U	4 U	4.54 U	4 U	4.42 UR	4 U
Pentachlorophenol	1	0.56	1.76 U	0.78 U	1.81 U	0.78 U	1.76 UR	0.78 U
Phenanthrene	1,100	-	1.82 U	1 U	1.87 U	1 U	1.82 UR	1 U
Phenol	4,000	10,950	0.756 U	1.9 U	0.777 U	1.9 U	0.756 UR	1.9 U
Pyrene	130	182.5	2.91 U	0.9 U	2.99 U	0.89 U	2.91 UR	0.89 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 2 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 2
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-1		MW-12		MW-13	
		Sample Date:	01/09/02	03/27/03	01/09/02	04/01/03	01/08/02	3/31/03 (b)
Metals (mg/l)	ACT 2 MSC (c)	RBC (d)						
Aluminum, Dissolved	0.2	37	0.0721 K	0.0212 B	[redacted] L	0.0352 B	0.05 U	0.0195 B
Aluminum, Total	-	-	4.11 K	9.27	25.6 L	0.912	6.02 K	0.261
Antimony, Dissolved	0.03 (f)	0.015	0.0018	0.00012 U	0.0018	0.00012 U	0.0019	0.00012 U
Antimony, Total	-	-	0.0005 U	0.00016 B	0.0005 U	0.00012 U	0.0005 U	0.00012 U
Arsenic, Dissolved	0.05	0.000045	0.002 U	0.0024 U	0.002 UL	0.0024 U	0.002 U	0.0024 U
Arsenic, Total	-	-	0.002 U	0.0044 B	0.0358 L	0.0028 J	0.0218	0.0024 U
Barium, Dissolved	2	2.6	0.0304	0.0303 J	0.0245 L	0.0282 J	0.0192	0.0268 J
Barium, Total	-	-	0.135	0.275	1.08 L	0.0709 J	0.122	0.0317 J
Beryllium, Dissolved	0.004	0.073	0.00025 U	0.00051 B	0.000259 L	0.00076 B	0.00025 U	0.00065 B
Beryllium, Total	-	-	0.00067 J	0.0018 B	0.0032 L	0.0013 B	0.000532 J	0.0012 B
Boron, Dissolved	0.6	3.3	0.109	0.0945 J	0.0751 J	0.229	0.0726 J	0.0477 J
Boron, Total	-	-	0.106	0.105 J	0.084 J	0.212	0.221	0.0495 J
Cadmium, Dissolved	0.005	0.018	0.0025 U	0.00039 U	0.0025 UL	0.00039 U	0.0025 U	0.00039 U
Cadmium, Total	-	-	0.0025 U	0.00039 U	0.0025 UL	0.00039 U	0.0025 U	0.00039 U
Chromium, Dissolved	0.1	0.11 (i)	0.0025 U	0.00063 U	0.0148 L	0.0021 B	0.0025 U	0.00063 U
Chromium, Total	-	-	0.0114 J	0.0145	0.067 L	0.0033 B	0.0227	0.00071 B
Cobalt, Dissolved	2	0.73	0.0025 U	0.002 B	0.0229 L	0.0143 J	0.0025 U	0.00059 U
Cobalt, Total	-	-	0.00547 J	0.011 J	0.0567 L	0.0148 J	0.00721 J	0.00059 U
Copper, Dissolved	1	1.5	0.005 U	0.0011 U	0.005 UL	0.0011 U	0.005 U	0.0011 U
Copper, Total	-	-	0.005 U	0.0123 J	0.0341 L	0.002 B	0.00673 J	0.0011 U
Iron, Dissolved	0.3	11	[redacted] L	[redacted]	[redacted] L	0.017 U	0.0335 K	0.017 U
Iron, Total	-	-	10.2 L	19.4	41.9 L	1.35	8.19 K	0.196
Lead, Dissolved	0.005	-	0.0027 J	0.0026 UL	[redacted] L	0.0026 UL	0.00304 J	0.0026 UL
Lead, Total	-	-	0.00775	0.0073 L	0.0331 L	0.0026 UL	0.00779	0.0026 UL
Manganese, Dissolved	0.05	0.73 (j)	[redacted]	[redacted]	[redacted] L	[redacted]	0.0453	0.0061 J
Manganese, Total	-	-	0.862	0.494	15.9 L	10.5	0.53	0.0207
Mercury, Dissolved	2	-	0.000052 U	0.025 U	0.000052 U	0.025 U	0.000052 U	0.025 U
Mercury, Total	-	-	0.000052 U	0.025 U	0.00011 B	0.025 U	0.000052 U	0.025 U
Nickel, Dissolved	0.1	0.73	0.005 U	0.0052 J	0.0383 L	0.0198 B	0.005 U	0.001 B
Nickel, Total	-	-	0.0127 J	0.0235 J	0.0913 L	0.0207 J	0.0183 J	0.0016 B
Selenium, Dissolved	0.05	0.18	0.00539 B	0.0023 U	0.0111 L	0.0023 U	0.005 U	0.0023 U
Selenium, Total	-	-	0.0102	0.0026 B	0.0112 L	0.0023 U	0.005 U	0.0023 U
Silver, Dissolved	0.1	0.18	0.002 U	0.00058 U	0.00885 L	0.0013 J	0.002 U	0.00058 U
Silver, Total	-	-	0.00245 J	0.00058 U	0.0104 L	0.0012 J	0.002 U	0.00058 U
Thallium, Dissolved	0.04 (f)	0.0026	0.00011 J	0.000033 U	0.0002	0.000077 B	0.00019 B	0.000033 U
Thallium, Total	-	-	0.000264	0.000033 U	0.00121	0.000073 B	0.000522 B	0.000033 U
Tin, Dissolved	61	22	0.05 U	0.0046 J	0.05 U	0.0045 U	0.05 U	0.0045 U
Tin, Total	-	-	0.05 U	0.0074 J	0.05 U	0.0045 U	0.05 U	0.0046 J
Vanadium, Dissolved	0.72	0.26	0.005 U	0.0021 J	0.005 UL	0.003 J	0.005 U	0.0056 J
Vanadium, Total	-	-	0.00677 J	0.016 J	0.0345 L	0.0038 J	0.00946 J	0.0074 J
Zinc, Dissolved	2	11	0.016 J	0.0079 K	0.0123 L	0.0059 K	0.00877 J	0.0023 K
Zinc, Total	-	-	0.0311	0.0836 K	0.132 L	0.0235 K	0.0461	0.0026 K
General Chemistry (mg/l)								
Total Dissolved Solids	-	-	-	639	-	1,190	-	1,290

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 2 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 2
Crompton Corporation
Petrolia, Pennsylvania

Volatile Organic Compounds (µg/l)	ACT 2 MSC (e)	Sample I.D.: Sample Date: RBC (d)	MW-13 (cont'd) 03/31/03 (b)	MW-14 01/08/02	MW-14 04/01/03	MW-30 01/09/02	MW-30 03/31/03	MW-31 04/02/03
1,1,1,2-Tetrachloroethane	70	0.41	0.13 U	0.25 U	0.13 U	0.25 U	0.13 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U	0.12 U
1,1-Dichloroethene	7	353	0.21 U	0.5 U	0.21 U	0.5 U	0.21 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.18 U	0.75 U	0.18 U	0.75 U	0.18 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.16 U	0.2 U	0.16 U	0.2 U	0.16 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (f)	0.047	0.82 U	1 U	0.82 U	1 U	0.82 U	0.82 U
1,2-Dibromoethane	0.2 (f)	0.00075	0.19 U	**0.25** U	0.19 U	**0.25** U	0.19 U	0.19 U
1,2-Dichloroethane	5	0.12	0.092 U	0.25 U	0.092 U	0.25 U	0.092 U	0.092 U
1,2-Dichloropropane	5	0.16	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.1 U	0.125 U	0.1 U	0.125 U	0.1 U	0.1 U
2-Butanone	5,800	1,906	1.2 U	2.5 UR	1.2 U	2.5 U	1.2 U	1.2 U
2-Hexanone	-	1,460	1.2 U	2.5 U	1.2 U	2.5 U	1.2 U	1.2 U
4-Methyl-2-pentanone	410	2,000	1 U	2.5 U	1 U	2.5 U	1 U	1 U
Acetone	10,000	610	2.5 U	2.5 UR	2.5 U	2.5 UR	2.5 U	2.5 U
Benzene	5	0.34	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U	0.64 J
Bromodichloromethane	100	0.17	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U	0.12 U
Bromoform	100	8.5	0.18 U	0.54 U	0.18 U	0.54 U	0.18 U	0.18 U
Bromomethane	10	8.5	0.37 UJ	0.5 U	0.37 UJ	0.5 U	0.37 UJ	0.37 UJ
Carbon disulfide	4,100	1,043	0.16 U	0.5 U	0.16 U	0.5 U	0.16 U	0.39 J
Carbon tetrachloride	5	0.16	0.2 U	0.25 U	0.2 U	0.25 U	0.2 U	0.2 U
Chlorobenzene	100	106	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
Chloroethane	900	3.6	0.18 U	0.5 U	0.18 U	0.5 U	0.18 U	0.18 U
Chloroform	100	0.15	0.14 U	0.125 U	0.14 U	0.125 U	0.14 U	0.14 U
Chloromethane	3	190	0.075 U	0.25 U	0.075 U	0.25 U	0.075 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U	0.095 U
Ethylbenzene	700	1,340	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
Hexachlorobutadiene	1	0.86	-	0.25 U	-	0.25 U	-	-
Isopropylbenzene	2,300	658	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	0.33 U	0.5 U	0.33 U	0.5 U	0.33 U	0.33 U
Methylene chloride	5	4.1	0.16 U	0.25 U	0.16 U	0.25 U	0.16 U	0.16 U
Naphthalene	100	6.5	-	0.2 U	-	0.2 U	-	-
n-Butylbenzene	4,100	243	0.21 U	0.25 U	0.21 U	0.25 U	0.21 U	0.21 U
n-Propylbenzene	4,100	243	0.15 U	0.125 U	0.15 U	0.125 U	0.15 U	0.15 U
o-Xylene	10,000	212.6 (h)	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
p-Isopropyltoluene	-	-	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
sec-Butylbenzene	4,100	243	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U	0.18 U
Styrene	100	1,624	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
tert-Butylbenzene	4,100	243	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
Tetrachloroethene	5	0.1	0.24 U	0.25 U	0.24 U	0.25 U	0.24 U	0.24 U
Toluene	1,000	747	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U	1.9
Trichloroethene	5	0.026	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U	0.095 U
Vinyl chloride	2	0.015	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 2 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 2
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-13 (cont'd)	MW-14		MW-30		MW-31
		Sample Date:	03/31/03 (b)	01/08/02	04/01/03	01/09/02	03/31/03	04/02/03
Semivolatile Organic Compounds (µg/l)	**ACT 2 MSC (c)**	**RBC (d)**						
1,2,4-Trichlorobenzene	70	7.2	-	-	1.3 U	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	1.3 U	-	-	-
2,4,6-Trichlorophenol	31	6.1	1.4 U	1.72 U	1.4 U	1.81 U	1.4 U	1.8 R
2,4-Dichlorophenol	20	109.5	1.3 U	1.88 U	1.3 U	1.98 U	1.3 U	1.6 R
2,4-Dinitrophenol	50 (f)	73	1.5 U	9.02 U	1.5 U	9.49 U	1.5 U	1.9 R
2,4-Dinitrotoluene	10 (f)	73	1.2 U	1.42 U	1.2 U	1.49 U	1.2 U	1.5 R
2-Chlorophenol	40	30.4	1.3 U	1.68 U	1.3 U	1.77 U	1.3 U	1.7 R
2-Methylnaphthalene	2,000	-	1.5 U	2.06 U	1.5 U	2.17 U	1.5 U	1.9 U
2-Nitroaniline	5.8	-	1 U	1.56 U	1 U	1.64 U	1 U	1.3 U
3,3'-Dichlorobenzidine	20 (f)	-	3.8 U	4.33 U	3.7 U	4.56 U	3.7 U	4.7 U
3-Nitroaniline	5.8	3.35	2.6 U	1.55 U	2.6 U	1.63 U	2.6 U	3.3 U
4,6-Dinitro-2-methylphenol	-	3.65	1.3 U	2.23 U	1.3 U	2.35 U	1.3 U	1.6 R
4-Chloro-3-methylphenol	-	-	1.3 U	1.77 U	1.2 U	1.86 U	1.2 U	1.6 R
4-Nitroaniline	5.8	3.35	1.1 U	1.81 U	1.1 U	1.91 U	1.1 U	1.4 U
4-Nitrophenol	60	292	1.7 U	1.64 U	1.7 U	1.73 U	1.7 U	2.1 R
Acenaphthene	3,800	365	1.5 U	1.89 U	1.5 U	1.99 U	1.5 U	1.9 U
Benzo(a)anthracene	10 (f)	0.092	0.89 U	1.79 U	0.89 U	1.88 U	0.89 U	1.1 U
Benzo(a)pyrene	0.2	0.0092	**2.4 U**	**1.78 U**	**2.4 U**	**1.87 U**	**2.4 U**	**3 U**
Benzo(b)fluoranthene	10 (f)	0.092	0.82 U	2.19 U	0.81 U	2.31 U	0.81 U	1 U
Benzo(g,h,i)perylene	10 (f)	-	0.96 U	3.16 U	0.95 U	3.33 U	0.95 U	1.2 U
Benzo(k)fluoranthene	10 (f)	0.92	1.1 U	2.25 U	1 U	2.37 U	1 U	1.3 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.4 U	1.59 U	1.4 U	1.67 U	1.4 U	1.7 U
bis(2-Ethylhexyl)phthalate	6	4.8	0.87 U	2.47 U	0.86 U	2.6 U	0.86 U	[redacted] J
Carbazole	130	3.35	3.1 U	0.443 U	3 U	0.466 U	3 U	3.8 U
Chrysene	10 (f)	9.2	0.91 U	2.51 U	0.91 U	2.64 U	0.91 U	1.1 U
Dibenzo(a,h)anthracene	10 (f)	0.0092	1 U	3.53 U	0.99 U	3.72 U	0.99 U	1.2 U
Dibenzofuran	10 (f)	12.2	1.5 U	1.86 U	1.4 U	1.96 U	1.4 U	1.8 U
Di-n-butyl phthalate	10,000	3,650	1.1 U	5 U	1 U	5.26 U	1 U	1.3 U
Di-n-octyl phthalate	2,000	730	0.91 U	2.04 U	0.9 U	100	0.9 U	1.1 U
Fluorene	1,900	243	1.5 U	1.81 U	1.5 U	1.91 U	1.5 U	1.9 U
Hexachlorobenzene	1	0.042	**1.2 U**	**2.66 U**	**1.2 U**	**2.8 U**	**1.2 U**	**1.5 U**
Hexachlorobutadiene	1	0.86	**1.4 U**	**2.35 U**	**1.4 U**	**2.47 U**	**1.4 U**	**1.8 U**
Hexachlorocyclopentadiene	50	219	6 U	2.61 U	5.9 U	2.75 U	5.9 U	7.5 U
Hexachloroethane	1	4.8	**1.3 U**	**1.99 U**	**1.3 U**	**2.09 U**	**1.3 U**	**1.6 U**
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	0.96 U	2.07 U	0.95 U	2.18 U	0.95 U	1.2 U
Isophorone	100	70.5	1.3 U	1.79 U	1.3 U	1.88 U	1.3 U	1.7 U
Naphthalene	100	6.5	1.4 U	2.79 U	1.4 U	2.94 U	1.4 U	1.8 U
Nitrobenzene	51	3.5	1.4 U	1.61 U	1.4 U	1.69 U	1.4 U	1.7 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.5 U	1.54 U	1.5 U	1.62 U	1.5 U	1.8 U
N-Nitrosodiphenylamine	530	14	4 U	4.27 U	4 U	4.49 U	4 U	5 U
Pentachlorophenol	1	0.56	0.78 U	1.7 U	0.78 U	1.79 U	0.78 U	0.98 R
Phenanthrene	1,100	-	1 U	1.76 U	1 U	1.85 U	1 U	1.3 U
Phenol	4,000	10,950	1.9 U	0.73 U	1.9 U	0.768 U	1.9 U	2.4 R
Pyrene	130	182.5	0.9 U	2.81 U	0.89 U	2.96 U	0.89 U	1.1 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 2 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 2
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-13 (cont'd)	MW-14		MW-30		MW-31
		Sample Date:	03/31/03 (h)	01/08/02	04/01/03	01/09/02	03/31/03	04/02/03
Metals (mg/l)	ACT 2 MSC (c)	RBC (d)						
Aluminum, Dissolved	0.2	37	0.0296 B	[redacted] K	[redacted]	[redacted] L	[redacted]	[redacted]
Aluminum, Total	-	-	0.23	7.91 K	4.21	4.96 L	0.816	345
Antimony, Dissolved	0.03 (f)	0.015	0.00012 U	0.0017	0.00026 B	0.0013	0.00012 U	0.00013 B
Antimony, Total	-	-	0.00012 U	0.0005 U	0.00012 U	0.0005 U	0.00012 U	0.00015 B
Arsenic, Dissolved	0.05	0.000045	0.0024 U	0.002 U	0.0034 J	0.002 UL	0.0024 U	0.0089 B
Arsenic, Total	-	-	0.0024 U	0.021	0.0032 J	0.00236 L	0.0024 U	0.0603
Barium, Dissolved	2	2.6	0.0267 J	0.0119	0.0186 J	0.0158 L	0.0233 J	0.58
Barium, Total	-	-	0.0305 J	0.074	0.0198 J	0.0869 L	0.0244 J	8.52
Beryllium, Dissolved	0.004	0.073	0.00074 B	0.00111 J	0.0032 B	0.00126 L	0.0018 B	0.00055 B
Beryllium, Total	-	-	0.0011 B	0.00175 J	0.0036 B	0.0017 L	0.0022 B	0.0248
Boron, Dissolved	0.6	3.3	0.0482 J	0.249	0.246	0.125	0.0792 J	0.0782 J
Boron, Total	-	-	0.0479 J	0.386	0.248	0.133	0.0764 J	0.143 J
Cadmium, Dissolved	0.005	0.018	0.00039 U	0.0025 U	0.00045 J	0.0025 UL	0.0017 J	0.00039 U
Cadmium, Total	-	-	0.00039 U	0.0025 U	0.0004 J	0.0025 UL	0.0016 J	0.0022 J
Chromium, Dissolved	0.1	0.11 (i)	0.0011 B	0.00465 J	0.002 B	0.0083 L	0.002 B	0.0502
Chromium, Total	-	-	0.00063 U	0.0297	0.0021 B	0.0161 L	0.0023 B	0.645
Cobalt, Dissolved	2	0.73	0.00066 B	0.0522	0.0869	0.0816 L	0.0715	0.0254 J
Cobalt, Total	-	-	0.00059 U	0.0589	0.0878	0.0849 L	0.0713	0.37
Copper, Dissolved	1	1.5	0.0011 U	0.005 U	0.0011 U	0.005 UL	0.0013 B	0.0455
Copper, Total	-	-	0.0011 U	0.00601 J	0.0011 U	0.00657 L	0.0011 U	0.654
Iron, Dissolved	0.3	11	0.017 U	[redacted] K	[redacted]	0.285 L	0.017 U	[redacted]
Iron, Total	-	-	0.148	15.3 K	18.8	5.03 L	0.0402 B	1,170
Lead, Dissolved	0.005	-	0.0026 UL	0.00411 J	0.0026 UL	0.00464 L	0.0026 UL	[redacted] K
Lead, Total	-	-	0.0026 UL	0.0139	0.0026 UL	0.00841 L	0.0026 UL	0.418
Manganese, Dissolved	0.05	0.73 (j)	0.0062 J	[redacted]	[redacted]	[redacted] L	[redacted]	[redacted]
Manganese, Total	-	-	0.0186	5.51	8.74	9.82 L	11	17.9
Mercury, Dissolved	2	-	0.025 U	0.000052 U	0.025 U	0.000052 U	0.025 U	0.025 U
Mercury, Total	-	-	0.025 U	0.000052 U	0.025 U	0.000052 U	0.025 U	0.8 K
Nickel, Dissolved	0.1	0.73	0.002 B	0.0922	[redacted]	0.0929 L	0.0947	0.0613
Nickel, Total	-	-	0.0016 B	0.114	0.141	0.102 L	0.095	0.733
Selenium, Dissolved	0.05	0.18	0.0023 B	0.005 U	0.0023 U	0.00719 B	0.0023 U	0.0027 K
Selenium, Total	-	-	0.0023 U	0.005 U	0.0028 B	0.00733 L	0.0023 U	0.0243 L
Silver, Dissolved	0.1	0.18	0.00098 J	0.00237 J	0.001 J	0.0049 L	0.0014 J	0.00058 U
Silver, Total	-	-	0.00058 U	0.0025 B	0.0012 J	0.00493 L	0.0012 J	0.00058 U
Thallium, Dissolved	0.04 (f)	0.0026	0.000033 U	0.00021 B	0.000089 B	0.00014 J	0.000033 U	0.000033 U
Thallium, Total	-	-	0.000033 U	0.000466 B	0.000082 B	0.000381	0.000033 U	0.00069 J
Tin, Dissolved	61	22	0.0045 U	0.05 U	0.0088 J	0.05 U	0.0045 U	0.0143 J
Tin, Total	-	-	0.0047 J	0.05 U	0.0062 J	0.05 U	0.0045 U	0.0618 J
Vanadium, Dissolved	0.72	0.26	0.0054 J	0.005 U	0.0042 J	0.005 UL	0.0048 J	0.0457 J
Vanadium, Total	-	-	0.0056 J	0.00776 J	0.0044 J	0.005 UL	0.0036 J	0.794
Zinc, Dissolved	2	11	0.0013 U	0.139	0.175 K	0.0849 L	0.0869 K	0.162
Zinc, Total	-	-	0.0013 U	0.124	0.178 K	0.0967 L	0.089 K	2.67
General Chemistry (mg/l)								
Total Dissolved Solids	-	-	1,310	-	1,240	-	1,190	483

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 2 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 2
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-32	MW-23	W-3
		Sample Date:	04/01/03	04/11/03	04/11/03
Volatile Organic Compounds (µg/l)	**ACT 2 MSC (c)**	**RBC (d)**			
1,1,1,2-Tetrachloroethane	70	0.41	0.13 U	0.13 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.16 U	0.16 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.12 U	0.12 U	0.12 U
1,1-Dichloroethene	7	353	0.21 U	0.21 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.16 U	0.16 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.18 U	0.18 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.16 U	0.16 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.11 U	0.11 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (f)	0.047	0.82 U	0.82 U	0.82 U
1,2-Dibromoethane	0.2 (f)	0.00075	0.19 U	0.19 U	0.19 U
1,2-Dichloroethane	5	0.12	0.092 U	0.092 U	0.092 U
1,2-Dichloropropane	5	0.16	0.11 U	0.11 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.11 U	0.11 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.1 U	0.1 U	0.1 U
2-Butanone	5,800	1,906	1.2 U	1.2 U	1.2 U
2-Hexanone	-	1,460	1.2 U	1.2 U	1.2 U
4-Methyl-2-pentanone	410	2,000	1 U	1 U	1 U
Acetone	10,000	610	2.5 U	2.5 U	7.3 B
Benzene	5	0.34	0.11 U	0.11 U	0.11 U
Bromodichloromethane	100	0.17	0.12 U	0.12 U	0.12 U
Bromoform	100	8.5	0.18 U	0.18 U	0.18 U
Bromomethane	10	8.5	0.37 UJ	0.37 UJ	0.37 UJ
Carbon disulfide	4,100	1,043	0.16 U	0.16 U	0.16 U
Carbon tetrachloride	5	0.16	0.2 U	0.2 U	0.2 U
Chlorobenzene	100	106	0.11 U	0.11 U	0.11 U
Chloroethane	900	3.6	0.18 U	0.18 U	0.18 U
Chloroform	100	0.15	0.14 U	0.14 U	0.14 U
Chloromethane	3	190	0.075 U	0.075 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.18 U	0.18 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.095 U	0.095 U	0.095 U
Ethylbenzene	700	1,340	0.11 U	0.11 U	0.11 U
Hexachlorobutadiene	1	0.86	-	-	-
Isopropylbenzene	2,300	658	0.17 U	0.17 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	0.33 U	0.33 U	0.33 U
Methylene chloride	5	4.1	0.16 U	0.16 U	0.16 U
Naphthalene	100	6.5	-	-	-
n-Butylbenzene	4,100	243	0.21 U	0.21 U	0.21 U
n-Propylbenzene	4,100	243	0.15 U	0.15 U	0.15 U
o-Xylene	10,000	212.6 (h)	0.14 U	0.14 U	0.14 U
p-Isopropyltoluene	-	-	0.14 U	0.14 U	0.14 U
sec-Butylbenzene	4,100	243	0.18 U	0.18 U	0.18 U
Styrene	100	1,624	0.11 U	0.11 U	0.11 U
tert-Butylbenzene	4,100	243	0.14 U	0.14 U	0.14 U
Tetrachloroethene	5	0.1	0.24 U	0.24 U	0.24 U
Toluene	1,000	747	0.14 U	0.31 J	0.8 J
Trichloroethene	5	0.026	0.095 U	0.095 U	0.095 U
Vinyl chloride	2	0.015	0.17 U	0.17 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 2 DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 2
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-32	MW-33	W-3
		Sample Date:	04/01/03	04/11/03	04/11/03
Semivolatile Organic Compounds (ug/l)	**ACT 2 MSC (c)**	**RBC (d)**			
1,2,4-Trichlorobenzene	70	7.2	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-
2,4,6-Trichlorophenol	51	6.1	1.4 U	1.4 U	1.6 U
2,4-Dichlorophenol	20	109.5	1.3 U	1.3 U	1.4 U
2,4-Dinitrophenol	50 (f)	73	1.5 U	1.5 UJ	1.7 UJ
2,4-Dinitrotoluene	10 (f)	73	1.2 U	1.2 U	1.4 U
2-Chlorophenol	40	30.4	1.3 U	1.3 U	1.5 U
2-Methylnaphthalene	2,000	-	1.5 U	1.5 U	1.6 U
2-Nitroaniline	5.8	-	1 U	1 U	1.1 U
3,3'-Dichlorobenzidine	20 (f)	-	3.7 U	3.7 U	4.1 U
3-Nitroaniline	5.8	3.35	2.6 U	2.6 U	2.9 U
4,6-Dinitro-2-methylphenol	-	3.65	1.3 U	1.3 U	1.4 U
4-Chloro-3-methylphenol	-	-	1.2 U	1.2 U	1.4 U
4-Nitroaniline	5.8	3.35	1.1 U	1.1 U	1.2 U
4-Nitrophenol	60	292	1.7 U	1.7 U	1.9 U
Acenaphthene	3,800	365	1.5 U	1.5 U	1.6 U
Benzo(a)anthracene	10 (f)	0.092	0.89 U	0.89 U	0.98 U
Benzo(a)pyrene	0.2	0.0092	2.4 U	2.4 U	2.6 U
Benzo(b)fluoranthene	10 (f)	0.092	0.81 U	0.81 U	0.9 U
Benzo(g,h,i)perylene	10 (f)	-	0.95 U	0.95 U	1 U
Benzo(k)fluoranthene	10 (f)	0.92	1 U	1 U	1.2 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.4 U	1.4 U	1.5 U
bis(2-Ethylhexyl)phthalate	6	4.8	1.5 J	0.86 U	1.2 J
Carbazole	130	3.35	3 U	3 U	3.4 U
Chrysene	10 (f)	9.2	0.91 U	0.91 U	1 U
Dibenzo(a,h)anthracene	10 (f)	0.0092	0.99 U	0.99 U	1.1 U
Dibenzofuran	10 (f)	12.2	1.4 U	1.4 U	1.6 U
Di-n-butyl phthalate	10,000	3,650	1 U	1 U	1.2 U
Di-n-octyl phthalate	2,000	730	0.9 U	0.9 U	1 U
Fluorene	1,900	243	1.5 U	1.5 U	1.6 U
Hexachlorobenzene	1	0.042	1.2 U	1.2 U	1.3 U
Hexachlorobutadiene	1	0.86	1.4 U	1.4 U	1.5 U
Hexachlorocyclopentadiene	50	219	5.9 U	5.9 U	6.6 U
Hexachloroethane	1	4.8	1.3 U	1.3 U	1.4 U
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	0.95 U	0.95 U	1 U
Isophorone	100	70.5	1.3 U	1.3 U	1.5 U
Naphthalene	100	6.5	1.4 U	1.4 U	1.6 U
Nitrobenzene	51	3.5	1.4 U	1.4 U	1.5 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.5 U	1.5 U	1.6 U
N-Nitrosodiphenylamine	530	14	4 U	4 U	4.4 U
Pentachlorophenol	1	0.56	0.78 U	0.78 U	0.86 U
Phenanthrene	1,100	-	1 U	1 U	1.1 U
Phenol	4,000	10,950	1.9 U	1.9 U	2.1 U
Pyrene	130	182.5	0.89 U	0.89 U	0.99 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 2 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 2
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-32	MW-33	W-3
		Sample Date:	04/01/03	04/11/03	04/11/03
Metals (mg/l)	ACT 2 MSC (c)	RBC (d)			
Aluminum, Dissolved	0.2	37	0.197 J	0.0803 B	0.0428 B
Aluminum, Total		-	0.314	0.173 B	0.607 K
Antimony, Dissolved	0.03 (f)	0.015	0.00018 B	0.00016 B	0.00012 U
Antimony, Total	-	-	0.00016 B	0.00012 UL	0.00014 B
Arsenic, Dissolved	0.05	0.000045	0.0024 U	0.0024 U	0.0024 U
Arsenic, Total	-	-	0.0024 U	0.0024 U	0.0058 J
Barium, Dissolved	2	2.6	0.0227 J	0.0203 J	0.0259 J
Barium, Total	-	-	0.0266 J	0.0219 J	0.043 J
Beryllium, Dissolved	0.004	0.073	0.0013 B	0.0011 B	0.0012 B
Beryllium, Total	-	-	0.0018 B	0.0014 B	0.0015 B
Boron, Dissolved	0.6	3.3	0.0778 J	0.176 J	0.124 J
Boron, Total	-	-	0.0784 J	0.173 J	0.0934 J
Cadmium, Dissolved	0.005	0.018	0.0015 J	0.00039 U	0.00039 U
Cadmium, Total	-	-	0.0013 J	0.00039 U	0.00039 U
Chromium, Dissolved	0.1	0.11 (i)	0.0017 B	0.0011 J	0.0012 J
Chromium, Total	-	-	0.0018 B	0.0012 J	0.0048 J
Cobalt, Dissolved	2	0.73	0.0376 J	0.0312 J	0.0108 J
Cobalt, Total	-	-	0.0383 J	0.0316 J	0.0493 J
Copper, Dissolved	1	1.5	0.0011 U	0.0011 U	0.0011 U
Copper, Total	-	-	0.0011 U	0.0011 U	0.0056 B
Iron, Dissolved	0.3	11	0.017 U	[redacted]	[redacted]
Iron, Total	-	-	0.0476 B	2.31	3.87
Lead, Dissolved	0.005	-	0.0031 L	0.0026 U	0.0026 U
Lead, Total	-	-	0.0026 UL	0.0026 U	0.0045
Manganese, Dissolved	0.05	0.73 (j)	[redacted]	[redacted]	[redacted]
Manganese, Total	-	-	8.08	5.57	7.77
Mercury, Dissolved	2	-	0.025 U	0.025 U	0.025 UL
Mercury, Total	-	-	0.025 U	0.025 UL	0.025 UL
Nickel, Dissolved	0.1	0.73	0.0776	0.0588	0.0151 J
Nickel, Total	-	-	0.0775	0.0585	0.0945
Selenium, Dissolved	0.05	0.18	0.0023 U	0.0025 J	0.0023 U
Selenium, Total	-	-	0.0023 U	0.0023 U	0.0023 U
Silver, Dissolved	0.1	0.18	0.0011 J	0.00058 U	0.00058 U
Silver, Total	-	-	0.0011 J	0.00058 U	0.00058 U
Thallium, Dissolved	0.04 (f)	0.0026	0.000033 U	0.000036 B	0.000033 U
Thallium, Total	-	-	0.000033 U	0.000033 U	0.000033 U
Tin, Dissolved	61	22	0.0045 U	0.0045 U	0.0045 U
Tin, Total	-	-	0.0045 U	0.0045 U	0.0099 J
Vanadium, Dissolved	0.72	0.26	0.0056 J	0.004 B	0.0044 B
Vanadium, Total	-	-	0.004 J	0.0018 B	0.005 B
Zinc, Dissolved	2	11	0.0582 K	0.0354	0.0013 U
Zinc, Total	-	-	0.0584 K	0.0355	0.11
General Chemistry (mg/l)					
Total Dissolved Solids	-	-	1,280	1,160	-

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

a/ LD = identification, µg/l = micrograms per liter; '-' = indicates no criterion developed or constituent not analyzed, mg/l = milligrams per liter.
b/ Sample and duplicate.
c/ Act 2 non-residential medium-specific concentrations (MSCs) for used aquifers, where Total Dissolved Solids less than or equal to 2,500.
The secondary maximum contaminant level is listed for aluminum, iron, and manganese.
d/ U.S. EPA Region III Risk Based Concentration (RBC) for tapwater (April 2003).
e/ Data Qualifiers
U = concentrations not detected at listed method detection limit
J = constituent detected at an estimated concentration for organics, method blank contamination for inorganics
B = method blank contamination for organics, constituent detected at an estimated concentration for inorganics
K = reported value may be biased high, actual value expected to be lower
L = reported value may be biased low, actual value expected to be higher
R = result rejected for data validation
f/ Practical Quantitation Limits (PQLs) were substituted for the criterion.
g/ Criterion for 1,3-Dichloropropene.
h/ Criterion for xylenes.
i/ Criterion for Chromium VI.
j/ Criterion for manganese, nonfood.

Table 3 - DRAFT

Groundwater Sampling Results Summary
Management Area 3
Crompton Corporation
Petrolia, Pennsylvania (a)

		Sample I.D. :	MW-3		MW-4		MW-20		MW-24	
		Sample Date:	01/10/02	04/09/03	01/09/02	04/04/03 (b)	01/09/02	04/10/03	01/09/02	04/10/03
Volatile Organic Compounds (µg/l)	ACT 2 MSC (c)	RBC (d)								
1,1,1,2 Tetrachloroethane	70	0.41	0.25 U (e)	0.13 U	0.25 U	0.13 U	0.25 U	0.13 U	0.25 U	0.13 U
1,1,2,2 Tetrachloroethane	0.3	0.053	0.125 U	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,1,2 Trichloroethane	5	0.19	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
1,1 Dichloroethane	7	353	0.5 U	0.21 U	0.5 U	0.21 U	0.5 U	0.21 U	0.5 U	0.21 U
1,2,3 Trichlorobenzene	-	-	0.125 U	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,2,3 Trichloropropane	40	0.0053	0.75 U	0.18 U	0.75 U	0.18 U	0.75 U	0.18 U	0.75 U	0.18 U
1,2,4 Trichlorobenzene	70	7.2	0.2 U	0.16 U	0.2 U	0.16 U	0.2 U	0.16 U	0.2 U	0.16 U
1,2,4 Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 U	0.11 U	6.8	0.33 J	0.25 U	0.11 U
1,2 Dibromo-3-chloropropane	5 (f)	0.047	1 U	0.82 U	1 U	0.82 U	1 U	0.82 U	1 U	0.82 U
1,2 Dibromoethane	0.2 (f)	0.00075	0.25 U	0.19 U	0.25 U	0.19 U	0.25 U	0.19 U	0.25 U	0.19 U
1,2 Dichloroethane	5	0.12	0.25 U	0.092 U	0.25 U	0.092 U	0.25 U	0.092 U	0.25 U	0.092 U
1,2 Dichloropropane	5	0.16	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
1,3,5 Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
1,4 Dichlorobenzene	75	0.47	0.125 U	0.1 U	0.125 U	0.1 U	0.125 U	0.1 U	0.125 U	0.1 U
2-Butanone	5,800	1,906	2.5 UR	1.2 U	2.5 UR	1.2 U	2.5 U	1.2 U	2.5 UR	1.2 U
2-Hexanone	-	1,460	2.5 U	1.2 U	2.5 U	1.2 U	2.5 U	1.2 U	2.5 U	1.2 U
4-Methyl-2-pentanone	410	2,000	2.5 UR	1 U	2.5 UR	1 U	2.5 U	1 U	2.5 U	1 U
Acetone	10,000	610	2.5 UR	2.5 U	2.5 UR	2.5 U	2.5 UR	2.5 U	3.1 L	2.5 U
Benzene	5	0.34	0.125 U	0.11 U	0.21 J	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
Bromodichloromethane	100	0.17	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
Bromoform	100	8.5	0.54 U	0.18 U	0.54 U	0.18 U	0.54 U	0.18 U	0.54 U	0.18 U
Bromomethane	10	8.5	0.5 U	0.37 UJ	0.5 U	0.37 UJ	0.5 U	0.37 U	0.5 U	0.37 U
Carbon disulfide	4,100	1,043	0.5 U	0.16 U	0.5 U	0.16 U	0.5 U	0.16 U	0.5 U	0.16 U
Carbon tetrachloride	5	0.16	0.25 U	0.2 U	0.25 U	0.2 U	0.25 U	0.2 U	0.25 U	0.2 U
Chlorobenzene	100	106	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
Chloroethane	900	3.6	0.5 U	0.18 U	0.5 U	0.18 U	0.5 U	0.18 U	0.5 U	0.18 U
Chloroform	100	0.15	0.125 U	0.14 U	0.125 U	0.14 U	0.125 U	0.14 U	0.125 U	0.14 U
Chloromethane	3	190	0.25 U	0.075 U	0.25 U	0.075 U	0.25 U	0.075 U	0.25 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Ethylbenzene	700	1,340	0.25 U	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
Hexachlorobutadiene	1	0.86	0.25 U	-	0.25 U	-	0.25 U	-	0.25 U	-
Isopropylbenzene	2,300	658	0.25 U	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	0.5 U	0.33 U	0.5 U	0.33 U	0.5 U	0.33 U	0.5 U	0.33 U
Methylene chloride	5	4.1	0.25 U	0.16 U	0.25 U	0.16 U	0.25 U	0.16 U	0.25 U	0.16 U
Naphthalene	100	6.5	0.2 U	-	0.2 U	-	0.2 U	-	0.2 U	-
n-Butylbenzene	4,100	243	0.25 U	0.21 U	0.25 U	0.21 U	0.25 U	0.21 U	0.25 U	0.21 U
n-Propylbenzene	4,100	243	0.125 U	0.15 U	0.125 U	0.15 U	0.125 U	0.15 U	0.125 U	0.15 U
o-Xylene	10,000	212.6 (h)	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
p-Isopropyltoluene	-	-	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
sec-Butylbenzene	4,100	243	0.25 U	0.18 U	0.25 U	0.18 U	0.39 J	0.24 J	0.25 U	0.18 U
Styrene	100	1,624	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
tert-Butylbenzene	4,100	243	0.25 U	0.14 U	0.52 J	0.43 J	12	9.5	0.25 U	0.14 U
Tetrachloroethene	5	0.1	0.25 U	0.24 U	0.25 U	0.24 U	0.25 U	0.24 U	0.25 U	0.24 U
Toluene	1,000	747	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
Trichloroethene	5	0.026	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Vinyl chloride	2	0.015	0.25 U	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 3 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 3
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-2		MW-4		MW-20		MW-24	
		Sample Date:	01/10/02	04/09/02	01/09/02	04/04/02 (b)	01/09/02	04/10/02	01/09/02	04/10/02
Semivolatile Organic Compounds (µg/l)	ACT 2 MSC (c)	RBC (d)								
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	33	6.1	1.72 U	1.4 U	1.87 U	1.5 U	1.72 U	1.5 U	1.81 U	1.4 U
2,4-Dichlorophenol	20	109.5	1.88 U	1.3 U	2.04 U	1.3 U	1.88 U	1.3 U	1.98 U	1.3 U
2,4-Dinitrophenol	50 (f)	73	9.02 U	1.5 U	9.8 U	1.6 U	9.02 U	1.6 U	9.49 U	1.5 U
2,4-Dinitrotoluene	10 (f)	73	1.42 U	1.2 U	1.54 U	1.3 U	1.42 U	1.3 U	1.49 U	1.2 U
2-Chlorophenol	40	30.4	1.68 U	1.3 U	1.83 U	1.4 U	1.68 U	1.4 U	1.77 U	1.3 U
2-Methylnaphthalene	2,000	-	2.06 U	1.5 U	2.24 U	1.5 U	2.06 U	1.5 U	2.17 U	1.5 U
2-Nitroaniline	5.8	-	1.56 U	1 U	1.7 U	1.1 U	1.56 U	1.1 U	1.64 U	1 U
3,3'-Dichlorobenzidine	20 (f)	-	4.33 U	3.8 U	4.71 U	3.8 U	4.33 U	3.9 U	4.56 U	3.7 U
3-Nitroaniline	5.8	3.35	1.55 U	2.6 U	1.68 U	2.7 U	1.55 U	2.7 U	1.63 U	2.6 U
4,6-Dinitro-2-methylphenol	-	3.65	2.23 U	1.3 U	2.42 U	1.3 U	2.23 U	1.4 U	2.35 U	1.3 U
4-Chloro-3-methylphenol	-	-	1.77 U	1.3 U	1.92 U	1.3 U	1.77 U	1.3 U	1.86 U	1.2 U
4-Nitroaniline	5.8	3.35	1.81 U	1.1 U	1.97 U	1.1 U	1.81 U	1.1 U	1.91 U	1.1 U
4-Nitrophenol	60	292	1.64 U	1.7 U	1.78 U	1.7 U	1.64 U	1.8 U	1.73 U	1.7 U
Acenaphthene	3,800	365	1.89 U	1.5 U	2.05 U	1.5 U	1.89 U	1.5 U	1.99 U	1.5 U
Benzo(a)anthracene	10 (f)	0.092	1.79 U	0.89 U	1.95 U	0.91 U	1.79 U	0.92 U	1.88 U	0.89 U
Benzo(a)pyrene	0.2	0.0092	1.78 U	2.4 U	1.93 U	2.5 U	1.78 U	2.5 U	1.87 U	2.4 U
Benzo(b)fluoranthene	10 (f)	0.092	2.19 U	0.82 U	2.38 U	0.84 U	2.19 U	0.85 U	2.31 U	0.81 U
Benzo(g,h,i)perylene	10 (f)	-	3.16 U	0.96 U	3.43 U	0.98 U	3.16 U	0.99 U	3.33 U	0.95 U
Benzo(k)fluoranthene	10 (f)	0.92	2.25 U	1.1 U	2.45 U	1.1 U	2.25 U	1.1 U	2.37 U	1 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.59 U	1.4 U	1.73 U	1.4 U	1.59 U	1.4 U	1.67 U	1.4 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.47 U	0.87 U	2.68 U	0.89 U	2.47 U	0.9 U	2.6 U	0.86 U
Carbazole	130	3.35	0.443 U	3.1 U	0.482 U	3.1 U	0.443 U	3.2 U	0.466 U	3 U
Chrysene	10 (f)	9.2	2.51 U	0.91 U	2.73 U	0.93 U	2.51 U	0.94 U	2.64 U	0.91 U
Dibenzo(a,h)anthracene	10 (f)	0.0092	3.53 U	1 U	3.84 U	1 U	3.53 U	1 U	3.72 U	0.99 U
Dibenzofuran	10 (f)	12.2	1.86 U	1.5 U	2.02 U	1.5 U	1.86 U	1.5 U	1.96 U	1.4 U
Di-n-butyl phthalate	10,000	3,650	5 U	1.1 U	5.43 U	1.1 U	5 U	1.1 U	5.26 U	1 U
Di-n-octyl phthalate	2,000	730	2.04 U	0.91 U	2.9 J	0.93 U	2.04 U	0.94 U	2.15 U	0.9 U
Fluorene	1,900	243	1.81 U	1.5 U	1.97 U	1.5 U	1.81 U	1.5 U	1.91 U	1.5 U
Hexachlorobenzene	1	0.042	2.66 U	1.2 U	2.89 U	1.2 U	2.66 U	1.2 U	2.8 U	1.2 U
Hexachlorobutadiene	1	0.86	2.35 U	1.4 U	2.55 U	1.4 U	2.35 U	1.5 U	2.47 U	1.4 U
Hexachlorocyclopentadiene	50	219	2.61 U	6 U	2.84 U	6.1 U	2.61 U	6.2 U	2.75 U	5.9 U
Hexachloroethane	1	4.8	1.99 U	1.3 U	2.16 U	1.3 U	1.99 U	1.4 U	2.09 U	1.3 U
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	2.07 U	0.96 U	2.25 U	0.98 U	2.07 U	0.99 U	2.18 U	0.95 U
Isophorone	100	70.5	1.79 U	1.3 U	1.95 U	1.4 U	1.79 U	1.4 U	1.88 U	1.3 U
Naphthalene	100	6.5	2.79 U	1.4 U	3.03 U	1.5 U	2.79 U	1.5 U	2.94 U	1.4 U
Nitrobenzene	51	3.5	1.61 U	1.4 U	1.75 U	1.4 U	1.61 U	1.4 U	1.69 U	1.4 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.54 U	1.5 U	1.67 U	1.5 U	1.54 U	1.5 U	1.62 U	1.5 U
N-Nitrosodiphenylamine	530	14	4.27 U	4 U	4.64 U	4.1 U	4.27 U	4.1 U	4.49 U	4 U
Pentachlorophenol	1	0.56	1.7 U	0.78 U	1.85 U	0.8 U	1.7 U	0.81 U	1.79 U	0.78 U
Phenanthrene	1,100	-	1.76 U	1 U	1.91 U	1 U	1.76 U	1.1 U	1.85 U	1 U
Phenol	4,000	10,950	0.73 U	1.9 U	0.793 U	1.9 U	0.73 U	2 U	0.768 U	1.9 U
Pyrene	130	182.5	2.81 U	0.9 U	3.05 U	0.92 U	2.81 U	0.93 U	2.96 U	0.89 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 3 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 3
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-2		MW-4		MW-20		MW-24	
		Sample Date:	01/10/02	04/09/03	01/09/02	04/04/03 (b)	01/09/02	04/10/03	01/09/02	04/10/03
Metals (mg/l)	ACT 2 MSC (c)	RBC (d)								
Aluminum, Dissolved	0.2	37	[redacted]	[redacted]	0.07 K	0.0809 B	0.05 U	0.028 B	0.0684 K	0.0233 B
Aluminum, Total	-	-	29.6 K	16.4 K	4.34 K	0.42 UL	14.7 K	0.345 K	308 K	0.25 K
Antimony, Dissolved	0.03 (f)	0.015	0.0019	0.00012 U	0.0014	0.00012 U	0.0015	0.00012 U	0.0016	0.00012 U
Antimony, Total	-	-	0.0005 UL	0.00012 UL	0.00075 J	0.00012 UL	0.0005 U	0.00012 UL	0.00106	0.00012 UL
Arsenic, Dissolved	0.05	0.000045	0.002 U	0.0024 U	0.02 U	0.0024 U	0.004 U	0.0024 U	0.00207 J	0.0024 U
Arsenic, Total	-	-	0.0114	0.0024 U	0.01 U	0.0024 U	0.002 U	0.0024 U	0.0954	0.0024 U
Barium, Dissolved	2	2.6	0.0116 L	0.015 J	0.011	0.0148 J	0.181	0.205	0.45	0.55
Barium, Total	-	-	0.22 L	0.0177 J	0.0369	0.0182 J	0.307	0.211	3.39	0.542
Beryllium, Dissolved	0.004	0.073	0.00399 J	[redacted]	[redacted]	0.00029 U	0.000957 J	0.001 B	0.00025 U	0.00094 B
Beryllium, Total	-	-	0.00586	0.0059 B	0.00498	0.00029 U	0.00241 J	0.0014 B	0.0482	0.0015 B
Boron, Dissolved	0.6	3.3	0.321	0.345	0.0602 J	0.0251 B	0.0803 J	0.084 J	0.033 U	0.0144 J
Boron, Total	-	-	0.369	0.341	0.103	0.063 J	0.121	0.0799 J	0.204	0.015 J
Cadmium, Dissolved	0.005	0.018	0.0025 U	0.00089 J	0.0025 U	0.00039 U	0.0025 U	0.00039 U	0.0025 U	0.00039 U
Cadmium, Total	-	-	0.0025 U	0.001 J	0.0025 U	0.00099 J	0.0025 U	0.00039 U	0.00301 J	0.00039 U
Chromium, Dissolved	0.1	0.11 (f)	0.00972 J	0.0058	0.0199 J	0.00063 U	0.00449 J	0.00063 U	0.0025 U	0.0015 B
Chromium, Total	-	-	0.0331 L	0.0062	0.0266	0.00089 J	0.0304	0.00063 U	0.567	0.0077
Cobalt, Dissolved	2	0.73	0.101	0.109	0.0714	0.0973	0.00262 J	0.00059 U	0.0025 U	0.0022 B
Cobalt, Total	-	-	0.121 L	0.106	0.0749	0.096	0.0211	0.00059 U	0.402	0.0016 B
Copper, Dissolved	1	1.5	0.0192 J	0.021 J	0.005 U	0.0011 U	0.005 U	0.0011 U	0.005 U	0.0011 U
Copper, Total	-	-	0.041	0.0209 J	0.005 U	0.0011 U	0.03	0.0011 U	0.611	0.0011 U
Iron, Dissolved	0.3	11	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Iron, Total	-	-	41.5 K	8.51	278 L	310	84.2 L	64.8	1,070 L	9.28
Lead, Dissolved	0.005	-	0.0048 J	0.0026 U	[redacted]	0.0026 U	[redacted]	0.0026 U	0.0025 J	0.0026 U
Lead, Total	-	-	0.035 L	0.0026 U	0.0302	0.0026 U	0.0309	0.0026 U	0.439	0.0026 U
Manganese, Dissolved	0.05	0.73 (j)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Manganese, Total	-	-	7.04 L	7.37	27.5	30.8	3.14	3.3	19.1	3.11
Mercury, Dissolved	2	-	0.000052 U	0.025 U	0.000052 U	0.044 B	0.000052 U	0.025 U	0.000052 U	0.025 UL
Mercury, Total	-	-	0.00019 J	0.029 B	0.000052 U	0.025 U	0.000052 U	0.034 B	0.00071	0.025 U
Nickel, Dissolved	0.1	0.73	[redacted]	[redacted]	0.0363 J	0.0516	0.005 U	0.00083 U	0.005 U	0.0072 B
Nickel, Total	-	-	0.185 L	0.165	0.0422	0.0497	0.0323 J	0.00083 U	0.735	0.0056 J
Selenium, Dissolved	0.05	0.18	0.005 UL	0.0023 U	0.005 U	0.0057 L	0.005 U	0.0023 U	0.005 U	0.0023 U
Selenium, Total	-	-	0.005 U	0.0023 U	0.005 U	0.0046 UL	0.005 U	0.0023 U	0.05 U	0.0023 U
Silver, Dissolved	0.1	0.18	0.00285 J	0.00058 U	0.00634	0.0033 B	0.002 U	0.00058 U	0.002 U	0.00058 U
Silver, Total	-	-	0.00261 J	0.00058 U	0.00656	0.0034 J	0.002 U	0.00058 U	0.002 U	0.00058 U
Thallium, Dissolved	0.04 (f)	0.0026	0.00038	0.00011 B	0.0001 U	0.000033 U	0.0001 U	0.000033 U	0.0001 U	0.000033 U
Thallium, Total	-	-	0.000645	0.00012 B	0.000279	0.000033 U	0.000253	0.000033 U	0.00329	0.000033 U
Tin, Dissolved	61	22	0.05 U	0.0054 J	0.05 U	0.0045 U	0.05 U	0.0045 U	0.05 U	0.0045 U
Tin, Total	-	-	0.05 U	0.0073 J	0.05 U	0.0071 J	0.05 U	0.0045 U	0.05 U	0.0045 U
Vanadium, Dissolved	0.72	0.26	0.005 U	0.0026 B	0.005 U	0.0128 J	0.005 U	0.0037 B	0.005 U	0.0027 B
Vanadium, Total	-	-	0.0264	0.0032 B	0.005 U	0.0084 J	0.0234	0.0034 B	0.434	0.0031 B
Zinc, Dissolved	2	11	0.352	0.422	0.014 J	0.0053 J	0.0102 J	0.0013 U	0.00683 J	0.0013 U
Zinc, Total	-	-	0.448 L	0.415	0.0323	0.0078 J	0.109	0.0017 B	1.99	0.0051 B
General Chemistry										
Total Dissolved Solids	-	-	-	1,300	-	2,520	-	244	-	487

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

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a/ LD = identification, µg/l = micrograms per liter, -- = indicates no criterion developed or constituent not analyzed, mg/l = milligrams per liter
b/ TDS value greater than 2,500. Act 2 MSCs for used aquifers, where TDS > 2,500 used for comparison.
c/ Act 2 non-residential medium-specific concentrations (MSCs) for used aquifers, where Total Dissolved Solids (TDS) less than or equal to 2,500.
The secondary maximum contaminant level is listed for aluminum, iron, and manganese.
d/ U.S. EPA Region III Risk Based Concentration (RBC) for tapwater (April 2003).
e/ Data Qualifiers
U = concentrations not detected at listed method detection limit
J = constituent detected at an estimated concentration for organics, method blank contamination for inorganics
B = method blank contamination for organics, constituent detected at an estimated concentration for inorganics
R = reported value may be biased high, actual value expected to be lower
L = reported value may be biased low, actual value expected to be higher
R = result rejected for data validation
f/ Practical Quantitation Limits (PQLs) were substituted for the criterion, except where TDS greater than 2,500.
g/ Criterion for 1,3 Dichloropropene.
h/ Criterion for xylenes
i/ Criterion for Chromium VI
j/ Criterion for manganese, nonfood.

Table 4 - DRAFT

Groundwater Sampling Results Summary
Management Area 4
Crompton Corporation
Petrolia, Pennsylvania (a)

		Sample I.D.:	MW-20		MW-21		MW-22		MW-23	
		Sample Date:	01/09/02	04/10/03	01/10/02	04/04/03 (b)	01/10/02	04/04/03	01/11/02	04/08/03
Volatile Organic Compounds (µg/l)	ACT 2 MSC (c)	RBC (d)								
1,1,1,2-Tetrachloroethane	70	0.41	0.25 U (e)	0.13 U	0.25 U	0.13 U	0.25 U	0.13 U	0.25 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.125 U	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
1,1-Dichloroethene	7	353	0.5 U	0.21 U	0.5 U	0.21 U	0.5 U	0.21 U	0.5 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.125 U	0.16 U	0.125 U	0.16 U	0.125 UJ	0.27 J	0.125 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.75 U	0.18 U	0.75 U	0.18 U	0.75 U	0.18 U	0.75 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.2 U	0.16 U	0.2 U	0.16 U	0.2 U	0.16 U	0.2 U	0.16 U
1,2,4-Trimethylbenzene	35	12	6.8	0.33 J	3.3	2.9	0.25 U	0.11 U	0.34 J	0.11 U
1,2-Dibromo-3-chloropropane	5 (f)	0.047	1 U	0.82 U	1 U	0.82 U	1 U	0.82 U	1 U	0.82 U
1,2-Dibromoethane	0.2 (f)	0.00075	0.25 U	0.19 U	0.25 U	0.19 U	0.25 U	0.19 U	0.25 U	0.19 U
1,2-Dichloroethane	5	0.12	0.25 U	0.092 U	0.51 J	0.092 U	0.25 U	0.092 U	0.25 U	0.092 U
1,2-Dichloropropane	5	0.16	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.25 U	0.11 U	1.8	1.5	0.25 U	0.11 U	0.25 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.125 U	0.1 U	0.125 U	0.1 U	0.125 U	0.1 U	0.125 U	0.1 U
2-Butanone	5,800	1,906	2.5 U	1.2 U	2.5 UR	1.2 U	2.5 UR	1.2 U	2.5 UR	1.2 U
2-Hexanone	-	1,460	2.5 U	1.2 U	2.5 U	1.2 U	2.5 UJ	1.2 U	2.5 U	1.2 U
4-Methyl-2-pentanone	410	2,000	2.5 U	1 U	2.5 UR	1 U	2.5 UR	1 U	2.5 UR	1 U
Acetone	10,000	610	2.5 UR	2.5 U	2.5 UR	2.5 U	5.9 L	2.5 U	6 L	2.5 U
Benzene	5	0.34	0.125 U	0.11 U	3	1.8	0.79 J	0.81 J	0.4 J	0.11 U
Bromodichloromethane	100	0.17	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
Bromoform	100	8.5	0.54 U	0.18 U	0.54 U	0.18 U	0.54 U	0.18 U	0.54 U	0.18 U
Bromomethane	10	8.5	0.5 U	0.37 U	0.5 U	0.37 UJ	0.5 U	0.37 UJ	0.5 U	0.37 U
Carbon disulfide	4,100	1,043	0.5 U	0.16 U	0.5 U	0.16 U	0.5 UJ	0.16 U	0.5 U	0.16 U
Carbon tetrachloride	5	0.16	0.25 U	0.2 U	0.25 U	0.2 U	0.25 U	0.2 U	0.25 U	0.2 U
Chlorobenzene	100	106	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
Chloroethane	900	3.6	0.5 U	0.18 U	0.5 U	0.18 U	0.5 U	0.18 U	0.5 U	0.18 U
Chloroform	100	0.15	0.125 U	0.14 U	0.125 U	0.14 U	0.125 U	0.14 U	0.125 U	0.14 U
Chloromethane	3	190	0.25 U	0.075 U	0.25 U	0.075 U	0.25 U	0.075 U	0.25 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Ethylbenzene	700	1,340	0.25 U	0.11 U	0.5 J	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
Hexachlorobutadiene	1	0.86	0.25 U	-	0.25 U	-	0.25 U	-	0.25 U	-
Isopropylbenzene	2,300	658	0.25 U	0.17 U	0.33 J	0.24 J	0.25 U	0.17 U	0.25 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	0.5 U	0.33 U	2.9	1.9	0.5 U	0.33 U	0.5 U	0.33 U
Methylene chloride	5	4.1	0.25 U	0.16 U	0.25 U	0.16 U	0.25 U	0.16 U	0.25 U	0.16 U
Naphthalene	100	6.5	0.2 U	-	0.38 B	-	0.2 UJ	-	10 J	-
n-Butylbenzene	4,100	243	0.25 U	0.21 U	0.25 U	0.21 U	0.25 U	0.21 U	0.25 U	0.21 U
n-Propylbenzene	4,100	243	0.125 U	0.15 U	0.25 J	0.25 J	0.125 U	0.15 U	0.125 U	0.15 U
o-Xylene	10,000	212.6 (h)	0.25 U	0.14 U	3.9	2.8	0.25 U	0.14 U	0.62 J	0.14 U
p-Isopropyltoluene	-	-	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
sec-Butylbenzene	4,100	243	0.39 J	0.24 J	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Styrene	100	1,624	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
tert-Butylbenzene	4,100	243	12	9.5	0.62 J	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
Tetrachloroethene	5	0.1	0.25 U	0.24 U	0.25 U	0.24 U	0.25 U	0.24 U	0.25 U	0.24 U
Toluene	1,000	747	0.25 U	0.14 U	0.45 J	0.38 J	0.25 U	0.14 U	0.25 U	0.36 J
Trichloroethene	5	0.026	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Vinyl chloride	2	0.015	0.25 U	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 4 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 4
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-20		MW-21		MW-22		MW-23	
		Sample Date:	01/09/02	04/10/03	01/10/02	04/04/03 (b)	01/10/02	04/04/03	01/11/02	04/08/03
Semivolatile Organic Compounds (µg/l)	ACT 2 MSC (c)	RBC (d)								
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	31	6.1	1.72 U	1.5 U	1.78 U	1.5 U	1.81 U	1.5 U	1.78 U	1.7 U
2,4-Dichlorophenol	20	109.5	1.88 U	1.3 U	1.95 U	1.3 U	1.98 U	1.3 U	1.95 U	1.5 U
2,4-Dinitrophenol	50 (f)	73	9.02 U	1.6 U	9.35 U	1.6 U	9.49 U	1.6 U	9.35 U	1.8 U
2,4-Dinitrotoluene	10 (f)	73	1.42 U	1.3 U	1.47 U	1.3 U	1.49 U	1.3 U	1.47 U	1.5 U
2-Chlorophenol	40	30.4	1.68 U	1.4 U	1.74 U	1.4 U	1.77 U	1.4 U	1.74 U	1.6 U
2-Methylnaphthalene	2,000	-	2.06 U	1.5 U	2.13 U	1.6 U	2.17 U	1.5 U	2.8 J	1.8 U
2-Nitroaniline	5.8	-	1.56 U	1.1 U	1.62 U	1.1 U	1.64 U	1.1 U	1.62 U	1.2 U
3,3'-Dichlorobenzidine	20 (f)	-	4.33 U	3.9 U	4.49 U	4 U	4.56 U	3.9 U	4.49 U	4.5 U
3-Nitroaniline	5.8	3.35	1.55 U	2.7 U	1.61 U	2.8 U	1.63 U	2.7 U	1.61 U	3.1 U
4,6-Dinitro-2-methylphenol	-	3.65	2.23 U	1.4 U	2.31 U	1.4 U	2.35 U	1.4 U	2.31 U	1.6 U
4-Chloro-3-methylphenol	-	-	1.77 U	1.3 U	1.83 U	1.3 U	1.86 U	1.3 U	1.83 U	1.5 U
4-Nitroaniline	5.8	3.35	1.81 U	1.1 U	1.88 U	1.2 U	1.91 U	1.1 U	1.88 U	1.3 U
4-Nitrophenol	60	292	1.64 U	1.8 U	1.7 U	1.8 U	1.73 U	1.8 U	1.7 U	2 U
Acenaphthene	3,800	365	1.89 U	1.5 U	1.96 U	1.6 U	1.99 U	1.5 U	5.4 J	1.8 U
Benzo(a)anthracene	10 (f)	0.092	1.79 U	0.92 U	1.85 U	0.94 U	1.88 U	0.92 U	1.85 U	1.1 U
Benzo(a)pyrene	0.2	0.0092	1.78 U	2.5 U	1.84 U	2.5 U	1.87 U	2.5 U	1.84 U	2.9 U
Benzo(b)fluoranthene	10 (f)	0.092	2.19 U	0.85 U	2.27 U	0.87 U	2.31 UJ	0.85 U	2.27 U	0.98 U
Benzo(g,h,i)perylene	10 (f)	-	3.16 U	0.99 U	3.27 U	1 U	3.33 U	0.99 U	3.27 U	1.1 U
Benzo(k)fluoranthene	10 (f)	0.92	2.25 U	1.1 U	2.33 U	1.1 U	2.37 UJ	1.1 U	2.33 U	1.3 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.59 U	1.4 U	1.65 U	1.5 U	1.67 U	1.4 U	1.65 U	1.6 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.47 U	0.9 U	2.56 U	0.92 U	4.4 J	0.9 U	3.5 J	1 U
Carbazole	130	3.35	0.443 U	3.2 U	0.459 U	3.2 U	0.466 U	3.2 U	0.459 U	3.6 U
Chrysene	10 (f)	9.2	2.51 U	0.94 U	2.6 U	0.96 U	2.64 U	0.94 U	2.6 U	1.1 U
Dibenzo(a,h)anthracene	10 (f)	0.0092	3.53 U	1 U	3.66 U	1 U	3.72 U	1 U	3.66 U	1.2 U
Dibenzofuran	10 (f)	12.2	1.86 U	1.5 U	1.93 U	1.5 U	1.96 U	1.5 U	1.93 U	1.7 U
Di-n-butyl phthalate	10,000	3,650	5 U	1.1 U	5.18 U	1.1 U	5.26 U	1.1 U	5.18 U	1.3 U
Di-n-octyl phthalate	2,000	730	2.04 U	0.94 U	2.11 U	0.96 U	2.15 UJ	0.94 U	2.11 U	1.1 U
Fluorene	1,900	243	1.81 U	1.5 U	1.88 U	1.6 U	1.91 U	1.5 U	2.7 J	1.8 U
Hexachlorobenzene	1	0.042	2.66 U	1.2 U	2.76 U	1.3 U	2.8 U	1.2 U	2.76 U	1.4 U
Hexachlorobutadiene	1	0.86	2.35 U	1.5 U	2.44 U	1.5 U	2.47 U	1.5 U	2.44 U	1.7 U
Hexachlorocyclopentadiene	50	219	2.61 U	6.2 U	2.7 U	6.3 U	2.75 U	6.2 U	2.7 U	7.1 U
Hexachloroethane	1	4.8	1.99 U	1.4 U	2.06 U	1.4 U	2.09 U	1.4 U	2.06 U	1.6 U
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	2.07 U	0.99 U	2.15 U	1 U	2.18 U	0.99 U	2.15 U	1.1 U
Isophorone	100	70.5	1.79 U	1.4 U	1.85 U	1.4 U	1.88 U	1.4 U	1.85 U	1.6 U
Naphthalene	100	6.5	2.79 U	1.5 U	2.89 U	1.5 U	2.94 U	1.5 U	8.7 J	1.7 U
Nitrobenzene	51	3.5	1.61 U	1.4 U	1.67 U	1.5 U	1.69 U	1.4 U	1.67 U	1.7 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.54 U	1.5 U	1.6 U	1.6 U	1.62 U	1.5 U	1.6 U	1.8 U
N-Nitrosodiphenylamine	530	14	4.27 U	4.1 U	4.42 U	4.2 U	4.49 U	4.1 U	4.42 U	4.8 U
Pentachlorophenol	1	0.56	1.7 U	0.81 U	1.76 U	0.82 U	1.79 U	0.81 U	1.76 U	0.93 U
Phenanthrene	1,100	-	1.76 U	1.1 U	1.82 U	1.1 U	1.85 U	1.1 U	3.6 J	1.2 U
Phenol	4,000	10,950	0.73 U	2 U	0.756 U	2 U	0.768 U	2 U	0.756 U	2.3 U
Pyrene	130	182.5	2.81 U	0.93 U	2.91 U	0.95 U	2.96 U	0.93 U	2.91 U	1.1 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 4 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 4
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.	MW-20		MW-21		MW-22		MW-23	
		Sample Date	01/09/02	04/10/03	01/10/02	04/04/03 (b)	01/10/02	04/04/03	01/11/02	04/08/03
Metals (mg/l)	ACT 2 MSC (c)	RBC (d)								
Aluminum, Dissolved	0.2	37	0.05 U	0.028 B	0.146	[redacted]	0.1 U	0.0982 B	0.25 U	0.0484 B
Aluminum, Total	-	-	14.7 K	0.345 K	44 K	17.6	106 K	0.704	0.269	2.4 K
Antimony, Dissolved	0.03 (f)	0.015	0.0015	0.00012 U	0.0018	0.00012 UL	0.0018	0.00012 UL	0.0022	0.00014 B
Antimony, Total	-	-	0.0005 U	0.00012 UL	0.0005 UL	0.00012 UL	0.0005 UL	0.00012 UL	0.0005 U	0.00025 B
Arsenic, Dissolved	0.05	0.000045	0.004 U	0.0024 U	0.01 U	0.0024 U	0.01 U	0.0024 U	0.02 U	0.0027 J
Arsenic, Total	-	-	0.002 U	0.0024 U	0.0096	0.0024 U	0.0515	0.0024 U	0.02 U	0.0114
Barium, Dissolved	2	2.6	0.181	0.205	0.188 L	0.359	0.0126 L	0.0142 J	0.0112 L	0.0384 J
Barium, Total	-	-	0.307	0.211	1.28 L	0.346	2.08 L	0.0363 J	0.0214 L	0.209
Beryllium, Dissolved	0.004	0.073	0.000957 J	0.001 B	0.00264 J	0.00054 B	0.0022 J	0.00029 U	0.00238 J	0.00088 B
Beryllium, Total	-	-	0.00241 J	0.0014 B	0.0084	0.00059 B	0.0153	0.00029 U	0.00233 J	0.0012 B
Boron, Dissolved	0.6	3.3	0.0803 J	0.084 J	0.115	0.0904 J	0.158 J	0.0948 J	0.192	0.14 J
Boron, Total	-	-	0.121	0.0799 J	0.116	0.0957 J	0.214 L	0.105 J	0.212	0.143 J
Cadmium, Dissolved	0.005	0.018	0.0025 U	0.00039 U	0.0025 U	0.0024 J	0.0025 U	0.00039 U	0.0025 U	0.00039 U
Cadmium, Total	-	-	0.0025 U	0.00039 U	0.0025 U	0.0034 J	0.0025 U	0.00039 U	0.0025 U	0.00039 U
Chromium, Dissolved	0.1	0.11 (I)	0.00449 J	0.00063 U	0.0141 J	0.001 J	0.00441 J	0.00063 U	0.0108 J	0.0017 J
Chromium, Total	-	-	0.0304	0.00063 U	0.0806 L	0.0032 J	0.202 L	0.00075 J	0.012 J	0.0779
Cobalt, Dissolved	2	0.73	0.00262 J	0.00059 U	0.0676	0.169	0.00626 J	0.0028 B	0.011 J	0.0024 B
Cobalt, Total	-	-	0.0211	0.00059 U	0.0686 L	0.166	0.0636 L	0.0034 B	0.0108 J	0.0043 J
Copper, Dissolved	1	1.5	0.005 U	0.0011 U	0.005 U	0.0011 U	0.005 U	0.0011 U	0.005 U	0.0011 U
Copper, Total	-	-	0.03	0.0011 U	0.15	0.0011 U	0.35	0.005 B	0.005 U	0.0198 J
Iron, Dissolved	0.3	11	[redacted] L	[redacted]	[redacted] L	[redacted]	[redacted] K	[redacted]	[redacted] L	[redacted]
Iron, Total	-	-	84.2 L	64.8	306 K	294	621 K	143	723 L	99
Lead, Dissolved	0.005	-	[redacted]	0.0026 U	[redacted]	0.0027 K	[redacted]	0.0026 U	[redacted]	0.0026 U
Lead, Total	-	-	0.0309	0.0026 U	0.146 L	0.0026 U	0.275 L	0.0026 U	0.0242	0.0151
Manganese, Dissolved	0.05	0.73 (j)	[redacted]	[redacted]	[redacted] L	[redacted]	[redacted] L	[redacted]	[redacted] L	[redacted]
Manganese, Total	-	-	3.14	3.3	9.93 L	29.8	4.71 L	4.4	7.48 L	2.91
Mercury, Dissolved	2	-	0.000052 U	0.025 U	0.000052 U	0.025 U	0.000052 U	0.025 U	0.000052 U	0.029 B
Mercury, Total	-	-	0.000052 U	0.034 B	0.00038	0.12 B	0.00027 B	0.025 U	0.000052 U	0.15 B
Nickel, Dissolved	0.1	0.73	0.005 U	0.00083 U	0.0613	[redacted]	0.005 U	0.0029 J	0.0131 J	0.0435
Nickel, Total	-	-	0.0323 J	0.00083 U	0.085 L	0.137	0.148 L	0.0043 J	0.0131 J	0.0464
Selenium, Dissolved	0.05	0.18	0.005 U	0.0023 U	0.005 U	0.0046 UL	0.005 U	0.0029 K	0.005 UL	0.0023 U
Selenium, Total	-	-	0.005 U	0.0023 U	0.005 U	0.007 L	0.025 U	0.0046 K	0.005 UL	0.0034 J
Silver, Dissolved	0.1	0.18	0.002 U	0.00058 U	0.00358 J	0.0028 J	0.002 U	0.00058 U	0.0021 J	0.00058 U
Silver, Total	-	-	0.002 U	0.00058 U	0.00266 J	0.003 J	0.002 U	0.00058 U	0.002 U	0.00058 U
Thallium, Dissolved	0.04 (f)	0.0026	0.0001 U	0.000033 U	0.00014 J	0.000039 B	0.00016 J	0.000033 U	0.00016 J	0.000033 U
Thallium, Total	-	-	0.000253	0.000033 U	0.000859	0.000039 B	0.00126	0.000033 U	0.000161 J	0.000033 U
Tin, Dissolved	61	22	0.05 U	0.0045 U	0.05 U	0.01 J	0.05 U	0.0055 J	0.05 U	0.0048 J
Tin, Total	-	-	0.05 U	0.0045 U	0.05 U	0.01 J	0.05 U	0.0059 J	0.05 U	0.007 J
Vanadium, Dissolved	0.72	0.26	0.005 U	0.0037 B	0.005 U	0.0071 J	0.005 U	0.0071 J	0.005 U	0.0057 B
Vanadium, Total	-	-	0.0234	0.0034 B	0.0549	0.0107 J	0.24	0.0091 J	0.005 U	0.014 J
Zinc, Dissolved	2	11	0.0102 J	0.0013 U	0.136 L	0.377	0.0125 L	0.0116 J	0.0247 UJ	0.0134 B
Zinc, Total	-	-	0.109	0.0017 B	0.25 L	0.375	0.429 L	0.0134 J	0.0245 UJ	0.0381
General Chemistry										
Total Dissolved Solids	-	-	-	244	-	4,360	-	1,160	-	1,560

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 4 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 4
Crompton Corporation
Petrolia, Pennsylvania

a/ I.D. = identification; µg/l = micrograms per liter; '-' = indicates no criterion developed or constituent not analyzed; mg/l = milligrams per liter.
b/ Total Dissolved Solids (TDS) value greater than 2,500. Act 2 non-residential medium-specific concentrations (MSCs) for used aquifers, where TDS > 2,500 used for comparison.
The secondary maximum contaminant level is listed for aluminum, iron, and manganese.
c/ Act 2 non-residential medium-specific concentrations (MSCs) for used aquifers, where TDS less than or equal to 2,500.
d/ U.S. EPA Region III Risk Based Concentration (RBC) for tapwater (April 2003).
e/ Data Qualifiers:
U = concentrations not detected at listed method detection limit
J = constituent detected at an estimated concentration for organics; method blank contamination for inorganics
B = method blank contamination for organics; constituent detected at an estimated concentration for inorganics
K = reported value may be biased high; actual value expected to be lower
L = reported value may be biased low; actual value expected to be higher
R = result rejected for data validation
f/ Practical Quantitation Limits (PQLs) were substitued for the criterion, except where TDS > 2,500.
g/ Criterion for 1,3-Dichloropropene.
h/ Criterion for xylenes.
i/ Criterion for Chromium VI.
j/ Criterion for manganese, nonfood.

Table 9 - DRAFT

Groundwater Sampling Results Summary
Management Area 5
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-25		MW-26		MW-27	
		Sample Date:	01/09/02	04/10/03	01/09/02	04/10/03	01/09/02	04/10/03
Volatile Organic Compounds (µg/l)	**ACT 2 MSC (b)**	**RBC (c)**						
1,1,1,2-Tetrachloroethane	70	0.41	0.25 UJ (d)	0.13 U	0.25 U	0.13 U	0.25 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.125 UJ	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.25 UJ	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
1,1-Dichloroethene	7	353	0.5 UJ	0.21 U	0.5 U	0.21 U	0.5 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.125 UJ	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.75 UJ	0.18 U	0.75 U	0.18 U	0.75 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.2 UJ	0.16 U	0.2 U	0.16 U	0.2 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.25 UJ	0.11 U	0.25 U	0.11 U	5	0.11 U
1,2-Dibromo-3-chloropropane	5 (e)	0.047	1 UJ	0.82 U	1 U	0.82 U	1 U	0.82 U
1,2-Dibromoethane	0.2 (e)	0.00075	**0.25** UJ	0.19 U	**0.25** U	0.19 U	**0.25** U	0.19 U
1,2-Dichloroethane	5	0.12	0.25 UJ	0.092 U	0.25 U	0.092 U	0.25 U	0.092 U
1,2-Dichloropropane	5	0.16	0.125 UJ	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.25 UJ	0.11 U	0.25 U	0.11 U	3.3	0.11 U
1,4-Dichlorobenzene	75	0.47	0.125 UJ	0.1 U	0.125 U	0.1 U	0.125 U	0.1 U
2-Butanone	5,800	1,906	2.5 UR	1.2 U	3.2 L	1.2 U	10	1.2 U
2-Hexanone	-	1,460	2.5 UJ	1.2 U	2.5 U	1.2 U	2.5 U	1.2 U
4-Methyl-2-pentanone	410	2,000	2.5 UJ	1 U	2.5 U	1 U	2.5 U	1 U
Acetone	10,000	610	3.7 L	2.5 U	30 L	2.6 B	1,200 L	4 B
Benzene	5	0.34	0.125 UJ	0.11 U	0.69 J	0.11 U	**780**	2.6
Bromodichloromethane	100	0.17	0.25 UJ	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
Bromoform	100	8.5	0.54 UJ	0.18 U	0.54 U	0.18 U	0.54 U	0.18 U
Bromomethane	10	8.5	0.5 UJ	0.37 UJ	0.5 U	0.37 UJ	0.5 U	0.37 UJ
Carbon disulfide	4,100	1,043	0.5 UJ	0.16 U	0.5 U	0.16 U	0.5 U	0.16 U
Carbon tetrachloride	5	0.16	0.25 UJ	0.2 U	0.25 U	0.2 U	0.25 U	0.2 U
Chlorobenzene	100	106	0.125 UJ	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
Chloroethane	900	3.6	0.5 UJ	0.18 U	0.5 U	0.18 U	0.5 U	0.18 U
Chloroform	100	0.15	0.125 UJ	0.14 U	0.125 U	0.14 U	0.125 U	0.14 U
Chloromethane	3	190	0.25 UJ	0.075 U	0.25 U	0.075 U	0.25 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (f)	0.25 UJ	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.25 UJ	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Ethylbenzene	700	1,340	0.25 UJ	0.11 U	0.25 U	0.11 U	1.8	0.11 U
Hexachlorobutadiene	1	0.86	0.25 UJ	-	0.25 U	-	0.25 U	-
Isopropylbenzene	2,300	658	0.25 UJ	0.17 U	0.25 U	0.17 U	0.63 J	0.17 U
m-,p-Xylene	10,000	212.6 (g)	0.5 UJ	0.33 U	0.5 U	0.33 U	15	0.33 U
Methylene chloride	5	4.1	0.25 UJ	0.16 U	0.25 U	0.16 U	0.25 U	0.16 U
Naphthalene	100	6.5	0.2 UJ	-	0.2 U	-	2.4	-
n-Butylbenzene	4,100	243	0.25 UJ	0.21 U	0.25 U	0.21 U	0.25 U	0.21 U
n-Propylbenzene	4,100	243	0.125 UJ	0.15 U	0.125 U	0.15 U	0.41 J	0.15 U
o-Xylene	10,000	212.6 (g)	0.25 UJ	0.14 U	0.25 U	0.14 U	5.3	0.14 U
p-Isopropyltoluene	-	-	0.25 UJ	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
sec-Butylbenzene	4,100	243	0.25 UJ	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Styrene	100	1,624	0.125 UJ	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
tert-Butylbenzene	4,100	243	0.25 UJ	0.14 U	0.25 U	0.22 J	0.25 U	0.14 U
Tetrachloroethene	5	0.1	0.25 UJ	0.24 U	0.25 U	0.24 U	0.25 U	0.24 U
Toluene	1,000	747	0.25 UJ	0.14 U	0.25 U	0.14 U	7.8	0.2 J
Trichloroethene	5	0.026	0.25 UJ	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Vinyl chloride	2	0.015	0.25 UJ	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 5 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 5
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-25		MW-26		MW-27	
		Sample Date:	01/09/02	04/10/03	01/09/02	04/10/03	01/09/02	04/10/03
Semivolatile Organic Compounds (µg/l	**ACT 2 MSC (b)**	**RBC (c)**						
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-	-	-	-
2,4,6-Trichlorophenol	31	6.1	1.81 U	1.4 U	1.72 U	1.4 U	17.2 U	1.4 U
2,4-Dichlorophenol	20	109.5	1.98 U	1.3 U	1.88 U	1.3 U	18.8 U	1.3 U
2,4-Dinitrophenol	50 (e)	73	9.49 U	1.5 U	9.02 U	1.5 U	90.2 U	1.5 U
2,4-Dinitrotoluene	10 (e)	73	1.49 U	1.2 U	1.42 U	1.2 U	14.2 U	1.2 U
2-Chlorophenol	40	30.4	1.77 U	1.3 U	1.68 U	1.3 U	16.8 U	1.3 U
2-Methylnaphthalene	2,000	-	2.17 U	1.5 U	2.06 U	1.5 U	20.6 U	1.5 U
2-Nitroaniline	20 (e)	-	1.64 U	1 U	1.56 U	1 U	15.6 U	1 U
3,3'-Dichlorobenzidine	20	-	4.56 U	3.7 U	4.33 U	3.7 U	43.3 U	3.7 U
3-Nitroaniline	5.8	3.35	1.63 U	2.6 U	1.55 U	2.6 U	15.5 U	2.6 U
4,6-Dinitro-2-methylphenol	-	3.65	2.35 U	1.3 U	2.23 U	1.3 U	22.3 U	1.3 U
4-Chloro-3-methylphenol	-	-	1.86 U	1.2 U	1.77 U	1.2 U	17.7 U	1.2 U
4-Nitroaniline	5.8	3.35	1.91 U	1.1 U	1.81 U	1.1 U	18.1 U	1.1 U
4-Nitrophenol	60	292	1.73 U	1.7 U	1.64 U	1.7 U	16.4 U	1.7 U
Acenaphthene	3,800	365	1.99 U	1.5 U	1.89 U	1.5 U	18.9 U	1.5 U
Benzo(a)anthracene	10 (e)	0.092	1.88 U	0.89 U	1.79 U	0.89 U	17.9 U	0.89 U
Benzo(a)pyrene	0.2	0.0092	1.87 U	2.4 U	1.78 U	2.4 U	17.8 U	2.4 U
Benzo(b)fluoranthene	10 (e)	0.092	2.31 U	0.81 U	2.19 U	0.81 U	21.9 U	0.81 U
Benzo(g,h,i)perylene	10 (e)	-	3.33 U	0.95 U	3.16 U	0.95 U	31.6 U	0.95 U
Benzo(k)fluoranthene	10 (e)	0.92	2.37 U	1 U	2.25 U	1 U	22.5 U	1 U
bis(2-Chloroethyl)ether	10 (e)	0.0096	1.67 U	1.4 U	1.59 U	1.4 U	15.9 U	1.4 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.6 U	0.86 U	6.7 J	0.86 U	24.7 U	0.86 U
Carbazole	130	3.35	0.466 U	3 U	0.443 U	3 U	4.43 U	3 U
Chrysene	10	9.2	2.64 U	0.91 U	2.51 U	0.91 U	25.1 U	0.91 U
Dibenzo(a,h)anthracene	10	0.0092	3.72 U	0.99 U	3.53 U	0.99 U	35.3 U	0.99 U
Dibenzofuran	10	12.2	1.96 U	1.4 U	1.86 U	1.4 U	18.6 U	1.4 U
Di-n-butyl phthalate	10,000	3,650	5.26 U	1 U	5 U	1 U	50 U	1 U
Di-n-octyl phthalate	2,000	730	2.15 U	0.9 U	5.5 J	0.9 U	20.4 U	0.9 U
Fluorene	1,900	243	1.91 U	1.5 U	1.81 U	1.5 U	18.1 U	1.5 U
Hexachlorobenzene	1	0.042	2.8 U	1.2 U	2.66 U	1.2 U	26.6 U	1.2 U
Hexachlorobutadiene	1	0.86	2.47 U	1.4 U	2.35 U	1.4 U	23.5 U	1.4 U
Hexachlorocyclopentadiene	50	219	2.75 U	5.9 U	2.61 U	5.9 U	26.1 U	5.9 U
Hexachloroethane	1	4.8	2.09 U	1.3 U	1.99 U	1.3 U	19.9 U	1.3 U
Indeno(1,2,3-cd)pyrene	10 (e)	0.092	2.18 U	0.95 U	2.07 U	0.95 U	20.7 U	0.95 U
Isophorone	100	70.5	1.88 U	1.3 U	1.79 U	1.3 U	17.9 U	1.3 U
Naphthalene	100	6.5	2.94 U	1.4 U	2.79 U	1.4 U	27.9 U	1.4 U
Nitrobenzene	51	3.5	1.69 U	1.4 U	1.61 U	1.4 U	16.1 U	1.4 U
N-Nitroso-di-n-propylamine	10 (e)	0.0096	1.62 U	1.5 U	1.54 U	1.5 U	15.4 U	1.5 U
N-Nitrosodiphenylamine	530	14	4.49 U	4 U	4.27 U	4 U	42.7 U	4 U
Pentachlorophenol	1	0.56	1.79 U	0.78 U	1.7 U	0.78 U	17 U	0.78 U
Phenanthrene	1,100	-	1.85 U	1 U	1.76 U	1 U	17.6 U	1 U
Phenol	4,000	10,950	0.768 U	1.9 U	0.73 U	1.9 U	7.3 U	1.9 U
Pyrene	130	182.5	2.96 U	0.89 U	2.81 U	0.89 U	28.1 U	0.89 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 5 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 5
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-25		MW-26		MW-27	
		Sample Date:	01/09/02	04/10/03	01/09/02	04/10/03	01/09/02	04/10/03
Metals (mg/l)	ACT 2 MSC (b)	RBC (c)						
Aluminum, Dissolved	0.2	37	0.05 UL	0.025 B	**0.5** UL	0.0512 B	**50.4** L	0.0312 B
Aluminum, Total	-	-	3.85 L	0.0758 B	49.5 L	15.2 K	78.1 L	2.73 K
Antimony, Dissolved	0.03 (e)	0.015	0.0014	0.00012 U	0.002	0.00013 B	0.00079 J	0.00012 U
Antimony, Total	-	-	0.00249	0.00012 UL	0.0005 U	0.0015 B	0.0005 U	0.00012 UL
Arsenic, Dissolved	0.05	0.000045	0.002 UL	0.0024 U	0.02 UL	0.0071 J	0.0259 L	0.0025 J
Arsenic, Total	-	-	0.002 UL	0.0024 U	0.02 UL	0.0237	0.0429 L	0.0069 J
Barium, Dissolved	2	2.6	0.332 L	0.298	1.89 L	1.2	1.74 L	0.749
Barium, Total	-	-	0.536 L	0.305	3.92 L	1.66	3.04 L	0.939
Beryllium, Dissolved	0.004	0.073	0.00025 UL	0.001 B	0.0025 UL	0.00097 B	**0.00714** L	0.00089 B
Beryllium, Total	-	-	0.000381 L	0.0016 B	0.00803 L	0.0027 B	0.0122 L	0.0016 B
Boron, Dissolved	0.6	3.3	0.101	0.0299 J	0.0798 J	0.0602 J	0.107	0.0929 J
Boron, Total	-	-	0.0568 J	0.0306 J	0.0984 J	0.064 J	0.126	0.0937 J
Cadmium, Dissolved	0.005	0.018	0.0025 UL	0.00039 U	**0.025** UL	0.00039 U	**0.025** UL	0.00039 U
Cadmium, Total	-	-	0.0025 UL	0.00039 U	0.025 UL	0.00039 U	0.025 UL	0.00039 U
Chromium, Dissolved	0.1	0.11 (h)	0.0025 UL	0.00063 U	0.025 UL	0.00063 U	0.0982 L	0.00079 J
Chromium, Total	-	-	0.00682 L	0.00063 U	0.0987 L	0.0228	0.17 L	0.0163
Cobalt, Dissolved	2	0.73	0.0025 UL	0.00059 U	0.025 UL	0.00076 B	0.0738 L	0.00059 U
Cobalt, Total	-	-	0.00307 L	0.00059 U	0.115 L	0.0274 J	0.144 L	0.0039 J
Copper, Dissolved	1	1.5	0.005 UL	0.0011 U	0.05 UL	0.0011 U	0.111 L	0.0011 U
Copper, Total	-	-	0.005 UL	0.0011 U	0.106 L	0.0307	0.178 L	0.0136 J
Iron, Dissolved	0.3	11	**1.58** L	**3.05**	**5.17** L	**12.5**	**116** L	**6.17**
Iron, Total	-	-	8.56 L	4.17	167 L	60.9	247 L	16.7
Lead, Dissolved	0.005	-	0.0025 UL	0.0026 U	**0.025** UL	0.0026 U	**0.0872** L	0.0026 U
Lead, Total	-	-	0.0064 L	0.0026 U	0.116 L	0.0277	0.158 L	0.0069
Manganese, Dissolved	0.05	0.73 (i)	**0.963** L	**0.715**	**5.68** L	**0.49**	**3.37** L	**5.38**
Manganese, Total	-	-	0.826 L	0.69	9.33 L	1.18	8.04 L	5.91
Mercury, Dissolved	2	-	0.000052 U	0.025 U	0.000052 U	0.054 B	0.00021 B	0.025 U
Mercury, Total	-	-	0.000052 U	0.068 B	0.00025 B	0.094 B	0.00037	0.057 B
Nickel, Dissolved	0.1	0.73	0.005 UL	0.00083 U	0.05 UL	0.00097 J	**0.107** L	0.0034 J
Nickel, Total	-	-	0.00615 L	0.00083 U	0.122 L	0.0325 J	0.2 L	0.0092 J
Selenium, Dissolved	0.05	0.18	0.005 UL	0.0023 U	0.05 UL	0.0023 U	0.05 UL	0.0023 U
Selenium, Total	-	-	0.005 UL	0.0023 U	0.05 UL	0.0033 J	0.05 UL	0.0027 J
Silver, Dissolved	0.1	0.18	0.002 UL	0.00058 U	0.02 UL	0.00058 U	0.02 UL	0.00058 U
Silver, Total	-	-	0.002 UL	0.00058 U	0.02 UL	0.00058 U	0.02 UL	0.00058 U
Thallium, Dissolved	0.04 (e)	0.0026	0.0001 U	0.000033 U	0.0001 U	0.000033 U	0.00065	0.000033 U
Thallium, Total	-	-	0.0001 B	0.000033 U	0.000739	0.00013 B	0.00114	0.000033 U
Tin, Dissolved	61	22	0.05 U	0.0045 U	0.05 U	0.0045 U	0.05 U	0.0045 U
Tin, Total	-	-	0.05 U	0.0045 U	0.05 U	0.0047 J	0.05 U	0.0045 U
Vanadium, Dissolved	0.72	0.26	0.005 UL	0.001 U	0.05 UL	0.0024 B	0.121 L	0.0019 B
Vanadium, Total	-	-	0.00624 L	0.0011 B	0.109 L	0.0375 J	0.196 L	0.0082 B
Zinc, Dissolved	2	11	0.0072 L	0.0018 B	0.137 L	0.0018 B	0.314 L	0.0013 U
Zinc, Total	-	-	0.0355 L	0.0013 U	0.325 L	0.1	0.593 L	0.0315
General Chemistry (mg/l)								
Total Dissolved Solids	-	-	-	146	-	1,190	-	472

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 5 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 5
Crompton Corporation
Petrolia, Pennsylvania

a/ ID = identification, mg/l = micrograms per liter, '-' = indicates no criterion developed or constituent not analyzed, mg/l = milligrams per liter.
b/ Act 2 non-residential medium-specific concentrations (MSCs) for used aquifers, where Total Dissolved Solids less than or equal to 2,500
The secondary maximum contaminant level is listed for aluminum, iron, and manganese.
c/ U.S. EPA Region III Risk Based Concentration (RBC) for tapwater (April 2003).
d/ Data Qualifiers
U = concentrations not detected at listed method detection limit
J = constituent detected at an estimated concentration for organics; method blank contamination for inorganics
B = method blank contamination for organics, constituent detected at an estimated concentration for inorganics
L = reported value mabe biased low; actual value expected to be higher
R = result rejected for data validation
K = reported value may be based high; actual value expected to be higher
e/ Practical Quantitation Limits (PQLs) were substitued for the criterion.
f/ Criterion for 1,3-Dichloropropene.
g/ Criterion for xylenes.
h/ Criterion for Chromium VI.
i/ Criterion for manganese, nonfood.

Table 6 - DRAFT

Groundwater Sampling Results Summary
Management Area 6
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	901		902		903	
		Sample Date:	01/08/02	04/09/03	01/08/02	04/09/03	01/08/02	04/09/03 (b)
Volatile Organic Compounds (µg/l)	ACT 2 MSC (c)	RBC (d)						
1,1,1,2-Tetrachloroethane	70	0.41	0.25 U (e)	0.13 U	0.25 U	0.13 U	0.25 U	0.25 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.125 U	0.16 U	0.125 U	0.16 U	0.125 U	**0.33 U**
1,1,2-Trichloroethane	5	0.19	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.25 U
1,1-Dichloroethene	7	353	0.5 U	0.21 U	0.5 U	0.21 U	0.5 U	0.41 U
1,2,3-Trichlorobenzene	-	-	0.125 U	0.16 U	0.125 U	0.16 U	0.125 U	0.33 U
1,2,3-Trichloropropane	40	0.0053	0.75 U	0.18 U	0.75 U	0.18 U	0.75 U	0.36 U
1,2,4-Trichlorobenzene	70	7.2	0.2 U	0.16 U	0.2 U	0.16 U	0.2 U	0.32 U
1,2,4-Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 U	0.11 U	2.9	2.4
1,2-Dibromo-3-chloropropane	5 (f)	0.047	1 U	0.82 U	1 U	0.82 U	1 U	1.6 U
1,2-Dibromoethane	0.2 (f)	0.00075	**0.25** U	0.19 U	**0.25** U	0.19 U	**0.25** U	**0.38** U
1,2-Dichloroethane	5	0.12	0.82 J	0.092 U	0.25 U	0.092 U	0.25 U	0.18 U
1,2-Dichloropropane	5	0.16	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.22 U
1,3,5-Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 U	0.11 U	2.2	2.7
1,4-Dichlorobenzene	75	0.47	0.125 U	0.1 U	0.125 U	0.1 U	0.125 U	0.21 U
2-Butanone	5,800	1,906	2.5 UR	1.2 U	2.5 UR	1.2 U	60 L	42
2-Hexanone	-	1,460	2.5 U	1.2 U	2.5 U	1.2 U	6 J	2.4 U
4-Methyl-2-pentanone	410	2,000	2.5 U	1 U	2.5 U	1 U	2.5 U	2 U
Acetone	10,000	610	4.7 L	2.5 U	16 L	2.5 U	380 L	180
Benzene	5	0.34	0.125 U	0.11 U	0.125 U	3.4	**160**	**67**
Bromodichloromethane	100	0.17	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.23 U
Bromoform	100	8.5	0.54 U	0.18 U	0.54 U	0.18 U	0.54 U	0.36 U
Bromomethane	10	8.5	0.5 U	0.37 U	0.5 U	0.37 U	0.5 U	0.74 U
Carbon disulfide	4,100	1,043	0.5 U	0.16 U	0.5 U	0.16 U	2.7 J	1.6 J
Carbon tetrachloride	5	0.16	0.25 U	0.2 U	0.25 U	0.2 U	0.25 U	0.41 U
Chlorobenzene	100	106	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.23 U
Chloroethane	900	3.6	0.5 U	0.18 U	0.5 U	0.18 U	0.5 U	0.36 U
Chloroform	100	0.15	0.125 U	0.14 U	0.125 U	0.14 U	0.125 U	0.28 U
Chloromethane	3	190	0.25 U	0.075 U	0.25 U	0.075 U	0.25 U	0.15 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.35 U
Dichlorodifluoromethane	1,000	347.6	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.19 U
Ethylbenzene	700	1,340	0.25 U	0.11 U	0.25 U	0.11 U	0.46 J	0.51 J
Hexachlorobutadiene	1	0.86	0.25 U	-	0.25 U	-	0.25 U	-
Isopropylbenzene	2,300	658	0.25 U	0.17 U	0.25 U	0.17 U	0.35 J	0.49 J
m-,p-Xylene	10,000	212.6 (h)	0.5 U	0.33 U	0.5 U	0.33 U	2.2	2.5
Methylene chloride	5	4.1	0.25 U	0.16 U	0.25 U	0.16 U	0.25 U	0.32 U
Naphthalene	100	6.5	0.2 U	-	0.2 U	-	0.61 J	-
n-Butylbenzene	4,100	243	0.25 U	0.21 U	0.25 U	0.21 U	0.25 U	0.42 U
n-Propylbenzene	4,100	243	0.125 U	0.15 U	0.125 U	0.15 U	0.18 J	0.3 U
o-Xylene	10,000	212.6 (h)	0.25 U	0.14 U	0.25 U	0.92 J	2.7	1.7 J
p-Isopropyltoluene	-	-	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.51 J
sec-Butylbenzene	4,100	243	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.35 U
Styrene	100	1,624	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.22 U
tert-Butylbenzene	4,100	243	1.4	0.83 J	0.79 J	0.44 J	0.25 U	0.28 U
Tetrachloroethene	5	0.1	0.25 U	0.24 U	0.25 U	0.24 U	0.25 U	0.48 U
Toluene	1,000	747	0.25 U	0.14 U	0.25 U	0.34 J	2.5	2.8
Trichloroethene	5	0.026	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.19 U
Vinyl chloride	2	0.015	0.25 U	0.17 U	0.25 U	0.17 U	0.25 U	0.33 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 6 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 6
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	901		902		903	
		Sample Date:	01/08/02	04/09/03	01/08/02	04/09/03	01/08/02	04/09/03 (b)
Semivolatile Organic Compounds (µg/l)	**ACT 2 MSC (c)**	**RBC (d)**						
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-	-	-	-
2,4,6-Trichlorophenol	31	6.1	1.81 U	1.4 U	1.83 U	1.5 U	1.72 U	1.4 U
2,4-Dichlorophenol	20	109.5	1.98 U	1.3 U	2 U	1.3 U	1.88 U	1.2 U
2,4-Dinitrophenol	50 (f)	73	9.49 U	1.5 U	9.6 U	1.6 U	9.02 U	1.5 U
2,4-Dinitrotoluene	10 (f)	73	1.49 U	1.2 U	1.51 UL	1.3 U	1.42 U	1.2 U
2-Chlorophenol	40	30.4	1.77 U	1.3 U	1.79 U	1.4 U	1.68 U	1.3 U
2-Methylnaphthalene	2,000	-	2.17 U	1.5 U	2.19 UL	1.5 U	2.06 U	1.4 U
2-Nitroaniline	20 (f)	-	1.64 U	1 U	1.66 UL	1.1 U	1.56 U	1 U
3,3'-Dichlorobenzidine	20	-	4.56 U	3.7 U	4.61 UL	3.8 U	4.33 U	3.6 U
3-Nitroaniline	5.8	3.35	1.63 U	2.6 U	1.65 UL	2.7 U	1.55 U	2.5 U
4,6-Dinitro-2-methylphenol	-	3.65	2.35 U	1.3 U	2.37 U	1.3 U	2.23 U	1.3 U
4-Chloro-3-methylphenol	-	-	1.86 U	1.2 U	1.88 U	1.3 U	1.77 U	1.2 U
4-Nitroaniline	5.8	3.35	1.91 U	1.1 U	1.93 UL	1.1 U	1.81 U	1.1 U
4-Nitrophenol	60	292	1.73 U	1.7 U	1.74 U	1.7 U	1.64 U	1.7 U
Acenaphthene	3,800	365	1.99 U	1.5 U	2.01 UL	1.5 U	1.89 U	1.4 U
Benzo(a)anthracene	10 (f)	0.092	1.88 U	0.89 U	1.9 UL	0.91 U	1.79 U	0.87 U
Benzo(a)pyrene	0.2	0.0092	1.87 U	2.4 U	1.89 UL	2.5 U	1.78 U	2.3 U
Benzo(b)fluoranthene	10 (f)	0.092	2.31 U	0.81 U	2.33 UL	0.84 U	2.19 U	0.8 U
Benzo(g,h,i)perylene	10 (f)	-	3.33 U	0.95 U	3.36 UL	0.98 U	3.16 U	0.93 U
Benzo(k)fluoranthene	10 (f)	0.92	2.37 U	1 U	2.39 UL	1.1 U	2.25 U	1 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.67 U	1.4 U	1.69 UL	1.4 U	1.59 U	1.3 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.6 U	0.86 U	2.7 L	0.89 U	2.47 U	0.84 U
Carbazole	130	3.35	0.466 U	3 U	0.471 UL	3.1 U	0.443 U	3 U
Chrysene	10	9.2	2.64 U	0.91 U	2.67 UL	0.93 U	2.51 U	0.89 U
Dibenzo(a,h)anthracene	10	0.0092	3.72 U	0.99 U	3.76 UL	1 U	3.53 U	0.97 U
Dibenzofuran	10	12.2	1.96 U	1.4 U	1.98 UL	1.5 U	1.86 U	1.4 U
Di-n-butyl phthalate	10,000	3,650	5.26 U	1 U	5.32 UL	1.1 U	5 U	1 U
Di-n-octyl phthalate	2,000	730	2.15 U	0.9 U	2.17 UL	0.93 U	2.04 U	0.88 U
Fluorene	1,900	243	1.91 U	1.5 U	1.93 UL	1.5 U	1.81 U	1.4 U
Hexachlorobenzene	1	0.042	2.8 U	1.2 U	2.83 UL	1.2 U	2.66 U	1.2 U
Hexachlorobutadiene	1	0.86	2.47 U	1.4 U	2.5 UL	1.4 U	2.35 U	1.4 U
Hexachlorocyclopentadiene	50	219	2.75 U	5.9 U	2.78 UL	6.1 U	2.61 U	5.8 U
Hexachloroethane	1	4.8	2.09 U	1.3 U	2.12 UL	1.3 U	1.99 U	1.3 U
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	2.18 U	0.95 U	2.2 UL	0.98 U	2.07 U	0.93 U
Isophorone	100	70.5	1.88 U	1.3 U	1.9 UL	1.4 U	1.79 U	1.3 U
Naphthalene	100	6.5	2.94 U	1.4 U	2.97 UL	1.5 U	2.79 U	1.4 U
Nitrobenzene	51	3.5	1.69 U	1.4 U	1.71 UL	1.4 U	1.61 U	1.4 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.62 U	1.5 U	1.64 UL	1.5 U	1.54 U	1.4 U
N-Nitrosodiphenylamine	530	14	4.49 U	4 U	4.54 UL	4.1 U	4.27 U	3.9 U
Pentachlorophenol	1	0.56	1.79 U	0.78 U	1.81 U	0.8 U	1.7 U	0.76 U
Phenanthrene	1,100	-	1.85 U	1 U	1.87 UL	1 U	1.76 U	0.99 U
Phenol	4,000	10,950	0.768 U	1.9 U	0.777 U	1.9 U	0.73 U	5.5 J
Pyrene	130	182.5	2.96 U	0.89 U	2.99 UL	0.92 U	2.81 U	0.88 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 6 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 6
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	901		902		903	
		Sample Date:	01/08/02	04/09/03	01/08/02	04/09/03	01/08/02	04/09/03 (b)
Metals (mg/l)	ACT 2 MSC (c)	RBC (d)						
Aluminum, Dissolved	0.2	37	0.126 K	**4.04**	0.05 U	0.0445 B	**1,400** K	**630**
Aluminum, Total	-	-	6.14 K	4.73 K	13.7 K	1.54 K	1,490 K	665 K
Antimony, Dissolved	0.03 (f)	0.015	0.0018	0.00028 B	0.0022	0.00012 U	0.0025	0.00016 B
Antimony, Total	-	-	0.000562 J	0.00099 B	0.001	0.00012 UL	0.00116	0.00015 B
Arsenic, Dissolved	0.05	0.000045	0.002 U	0.0024 U	0.002 U	0.0024 U	**0.4** UL	0.0238 U
Arsenic, Total	-	-	0.0183	0.0024 U	0.0262	0.0024 U	0.4 UL	0.0238 U
Barium, Dissolved	2	2.6	0.052	0.0194 J	0.224	0.311	0.25 U	0.0202 B
Barium, Total	-	-	0.194	0.0205 J	0.556	0.305	0.25 U	0.0208 B
Beryllium, Dissolved	0.004	0.073	0.000389 J	**0.0049** B	0.000266 J	0.00075 B	**0.157** J	**0.063** B
Beryllium, Total	-	-	0.00118 J	0.0054 B	0.00235 J	0.0012 B	0.17 J	0.0599 B
Boron, Dissolved	0.6	3.3	0.1	0.0909 J	0.0348 J	0.0615 J	**1.65** U	0.203 J
Boron, Total	-	-	0.307	0.0877 J	0.272	0.0605 J	0.855 J	0.206 J
Cadmium, Dissolved	0.005	0.018	0.0025 U	0.00039 U	0.0025 U	0.00039 U	**0.25** U	0.0039 U
Cadmium, Total	-	-	0.0025 U	0.00039 U	0.0025 U	0.00039 U	0.25 U	0.0039 U
Chromium, Dissolved	0.1	0.11 (i)	0.00808 J	0.0029 J	0.0025 U	0.00063 U	**1.1** J	**0.19**
Chromium, Total	-	-	0.0184 J	0.0032 J	0.0452	0.0069	1.12 J	0.179
Cobalt, Dissolved	2	0.73	0.0127 J	0.199	0.0025 U	0.00059 U	**2.22**	0.738
Cobalt, Total	-	-	0.0234	0.207	0.0211	0.0016 B	2.22	0.702
Copper, Dissolved	1	1.5	0.005 U	0.0011 U	0.005 U	0.0013 B	0.5 U	0.0108 U
Copper, Total	-	-	0.0418	0.0011 U	0.0228	0.0018 B	0.5 U	0.0108 U
Iron, Dissolved	0.3	11	**39.1** K	**123**	**26.5** K	**87.4**	**5,860** K	**2,230**
Iron, Total	-	-	53.1 K	120	66.2 K	92.3	5,870 K	2,130
Lead, Dissolved	0.005	-	**0.00681**	0.0026 U	0.00388 J	0.0026 U	**0.619**	**0.0264** U
Lead, Total	-	-	0.0278	0.0026 U	0.0311	0.0027 J	0.657	0.0264 U
Manganese, Dissolved	0.05	0.73 (j)	**8.01**	**27.8**	**2.3**	**5.5**	**351**	**145**
Manganese, Total	-	-	8.86	27.1	2.85	5.42	351	138
Mercury, Dissolved	2	-	0.000052 U	0.025 U	0.000052 U	0.025 U	0.000099 J	0.025 U
Mercury, Total	-	-	0.000052 U	0.025 UL	0.000052 U	0.025 UL	0.000053 J	0.025 UL
Nickel, Dissolved	0.1	0.73	0.00631 B	**0.24**	0.005 U	0.0018 J	**1.38** J	**0.65**
Nickel, Total	-	-	0.0251 J	0.252	0.024 J	0.005 J	1.38 J	0.608
Selenium, Dissolved	0.05	0.18	0.005 U	0.0077 J	0.005 U	0.0024 J	**0.5** U	0.0404 J
Selenium, Total	-	-	0.005 U	0.007 J	0.005 U	0.0045 J	0.5 U	0.0351 J
Silver, Dissolved	0.1	0.18	0.00315 J	0.0021 J	0.002 U	0.00058 U	**0.2** U	0.0058 U
Silver, Total	-	-	0.00364 J	0.0018 J	0.002 U	0.00058 U	0.2 U	0.0058 U
Thallium, Dissolved	0.04 (f)	0.0026	0.00014 B	0.000033 U	0.00011 B	0.000033 U	0.00016 B	0.00024 J
Thallium, Total	-	-	0.000542	0.000033 U	0.000403	0.000033 U	0.00029	0.00024 J
Tin, Dissolved	61	22	0.05 U	0.0045 U	0.05 U	0.0045 U	5 U	0.0454 U
Tin, Total	-	-	0.05 U	0.0045 U	0.05 U	0.0056 J	5 U	0.0454 U
Vanadium, Dissolved	0.72	0.26	0.005 U	0.0074 B	0.005 U	0.008 B	0.5 U	0.274 J
Vanadium, Total	-	-	0.00983 J	0.0079 B	0.0275	0.0096 B	0.5 U	0.247 J
Zinc, Dissolved	2	11	0.005 U	0.704	0.005 U	0.0013 U	**10.4**	**3.89**
Zinc, Total	-	-	0.062	0.75	0.0783	0.0222	10.6	3.7
General Chemistry (mg/l)								
Total Dissolved Solids	-	-	-	1,200	-	732	-	16,700

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 6 DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 6
Crompton Corporation
Petrolia, Pennsylvania

		Sample ID	904		904 R	MW-17	
		Sample Date	1/5/02 (b)	01/08/02 (b)	04/09/03 (b)	01/08/02	04/09/03
Volatile Organic Compounds (µg/l)	**ACT 2 MSC (c)**	**RBC (d)**					
1,1,1,2-Tetrachloroethane	70	0.41	0.25 UJ	0.25 UJ	6.4 U	0.25 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.125 UJ	0.125 UJ	8.2 U	0.125 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.25 UJ	0.25 UJ	6.1 U	0.25 U	0.12 U
1,1-Dichloroethane	7	353	0.5 UJ	0.5 UJ	10 U	0.5 U	0.21 U
1,2,3-Trichlorobenzene			0.125 UJ	0.125 UJ	54	0.125 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.75 UJ	0.75 UJ	9.1 U	0.75 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.2 UJ	0.2 UJ	33 J	0.2 U	0.16 U
1,2,4-Trimethylbenzene	35	12	9.3 J	8.7 J	5.7 U	0.25 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (f)	0.047	1 UJ	1 UJ	41 U	1 U	0.82 U
1,2-Dibromoethane	0.2 (f)	0.00075	0.25 UJ	0.25 UJ	9.6 U	0.25 U	0.19 U
1,2-Dichloroethane	5	0.12	0.25 UJ	0.25 UJ	4.6 U	0.25 U	0.092 U
1,2-Dichloropropane	5	0.16	0.4 J	0.43 J	5.4 U	0.125 U	0.11 U
1,3,5-Trimethylbenzene	35	12	18 J	17 J	5.7 U	0.25 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.125 UJ	0.125 UJ	5.2 U	0.125 U	0.1 U
2-Butanone	5,800	1,906	200 L	200 L	90 J	2.5 UR	1.2 U
2-Hexanone		1,460	19 J	19 J	59 U	2.5 U	1.2 U
4-Methyl-2-pentanone	410	2,000	5.7 J	5.4 J	51 U	2.5 UR	1 U
Acetone	10,000	610	1,100 L	1,100 L	620	2.5 UR	2.5 U
Benzene	5	0.34	**1,000**	**950**	**1,600**	0.125 U	0.11 U
Bromodichloromethane	100	0.17	0.25 UJ	0.25 UJ	5.8 U	0.25 U	0.12 U
Bromoform	100	8.5	0.54 UJ	0.54 UJ	9.1 U	0.54 U	0.18 U
Bromomethane	10	8.5	0.5 UJ	0.5 UJ	19 U	0.5 U	0.37 U
Carbon disulfide	4,100	1,043	3 J	2.7 J	8.2 U	0.5 U	0.16 U
Carbon tetrachloride	5	0.16	0.25 UJ	0.25 UJ	10 U	0.25 U	0.2 U
Chlorobenzene	100	106	0.125 UJ	0.125 UJ	5.7 U	0.125 U	0.11 U
Chloroethane	900	3.6	2.9 J	2.7 J	8.9 U	0.5 U	0.18 U
Chloroform	100	0.15	0.125 UJ	0.125 UJ	7 U	0.125 U	0.14 U
Chloromethane	3	190	0.25 UJ	0.25 UJ	3.8 U	0.25 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.25 UJ	0.25 UJ	8.8 U	0.25 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.25 UJ	0.25 UJ	4.8 U	0.25 U	0.095 U
Ethylbenzene	700	1,340	2.1 J	2 J	5.7 U	0.25 U	0.11 U
Hexachlorobutadiene	1	0.86	0.25 UJ	0.25 UJ	-	0.25 U	-
Isopropylbenzene	2,300	658	1.3 J	1.2 J	8.6 U	0.25 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	17 J	16 J	16 U	0.5 U	0.33 U
Methylene chloride	5	4.1	0.25 UJ	0.25 UJ	8 U	0.25 U	0.16 U
Naphthalene	100	6.5	1 J	0.91 J	-	0.2 U	-
n-Butylbenzene	4,100	243	2.1 J	2 J	11 U	0.25 U	0.21 U
n-Propylbenzene	4,100	243	0.43 J	0.42 J	7.4 U	0.125 U	0.15 U
o-Xylene	10,000	212.6 (h)	7.2 J	7 J	7.1 U	0.25 U	0.14 U
p-Isopropyltoluene	-	-	0.25 UJ	0.25 UJ	6.8 U	0.25 U	0.14 U
sec-Butylbenzene	4,100	243	0.25 UJ	0.25 UJ	8.8 U	0.25 U	0.18 U
Styrene	100	1,624	0.125 UJ	0.125 UJ	5.5 U	0.125 U	0.11 U
tert-Butylbenzene	4,100	243	1.1 J	1.1 J	7 U	0.59 J	0.65 J
Tetrachloroethene	5	0.1	0.25 UJ	0.25 UJ	12 U	0.25 U	0.24 U
Toluene	1,000	747	11 J	11 J	6.8 U	0.25 U	0.14 U
Trichloroethene	5	0.026	0.25 UJ	0.25 UJ	4.7 U	0.25 U	0.095 U
Vinyl chloride	2	0.015	0.25 UJ	0.25 UJ	8.3 U	0.25 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 6 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 6
Crompton Corporation
Petrolia, Pennsylvania

Sample I.D.			904		904 R	MW 17	
Sample Date			1/8/92 (b)	01/08/92 (b)	04/09/03 (b)	01/08/92	04/09/03
Semivolatile Organic Compounds (µg/l)	**ACT 2 MSC (c)**	**RBC (d)**					
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	1.4 U
1,4-Dichlorobenzene	75	0.47	-	-	-	-	1.4 U
2,4,6-Trichlorophenol	31	6.1	1.72 U	1.78 U	1.4 U	1.72 UR	1.5 U
2,4-Dichlorophenol	20	109.5	1.88 U	1.95 U	1.3 U	1.88 UR	1.4 U
2,4-Dinitrophenol	50 (f)	73	9.02 U	9.35 U	1.5 U	9.02 UR	1.7 U
2,4-Dinitrotoluene	10 (f)	73	1.42 U	1.47 U	1.2 U	1.42 UR	1.3 U
2-Chlorophenol	40	30.4	1.68 U	1.74 U	1.3 U	1.68 UR	1.4 U
2-Methylnaphthalene	2,000	-	2.06 U	2.13 U	1.5 U	2.06 UR	1.6 U
2-Nitroaniline	20 (f)	-	1.56 U	1.62 U	1 U	1.56 UR	1.1 U
3,3'-Dichlorobenzidine	20	-	4.33 U	4.49 U	3.7 U	4.33 UR	4 U
3-Nitroaniline	5.8	3.35	1.55 U	1.61 U	2.6 U	1.55 UR	2.8 U
4,6-Dinitro-2-methylphenol	-	3.65	2.23 U	2.31 U	1.3 U	2.23 UR	1.4 U
4-Chloro-3-methylphenol	-	-	1.77 U	1.83 U	1.2 U	1.77 UR	1.4 U
4-Nitroaniline	5.8	3.35	1.81 U	1.88 U	1.1 U	1.81 UR	1.2 U
4-Nitrophenol	60	292	1.64 U	1.7 U	1.7 U	1.64 UR	1.8 U
Acenaphthene	3,800	365	1.89 U	1.96 U	1.5 U	1.89 UR	1.6 U
Benzo(a)anthracene	10 (f)	0.092	1.79 U	1.85 U	0.88 U	1.79 UR	0.96 U
Benzo(a)pyrene	0.2	0.0092	1.78 U	1.84 U	2.4 U	1.78 UR	2.6 U
Benzo(b)fluoranthene	10 (f)	0.092	2.19 U	2.27 U	0.81 U	2.19 UR	0.88 U
Benzo(g,h,i)perylene	10 (f)	-	3.16 U	3.27 U	0.94 U	3.16 UR	1 U
Benzo(k)fluoranthene	10 (f)	0.92	2.25 U	2.33 U	1 U	2.25 UR	1.1 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.59 U	1.65 U	1.4 U	1.59 UR	1.5 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.47 U	2.56 U	1 J	2.47 UR	0.93 U
Carbazole	130	3.35	0.443 U	0.459 U	3 U	0.443 UR	3.3 U
Chrysene	10	9.2	2.51 U	2.6 U	0.9 U	2.51 UR	0.98 U
Dibenzo(a,h)anthracene	10	0.0092	3.53 U	3.66 U	0.98 U	3.53 UR	1.1 U
Dibenzofuran	10	12.2	1.86 U	1.93 U	1.4 U	1.86 UR	1.6 U
Di-n-butyl phthalate	10,000	3,650	5 U	5.18 U	1 U	5 UR	1.1 U
Di-n-octyl phthalate	2,000	730	2.04 U	2.11 U	0.89 U	2.04 UR	0.98 U
Fluorene	1,900	243	1.81 U	1.88 U	1.5 U	1.81 UR	1.6 U
Hexachlorobenzene	1	0.042	2.66 U	2.76 U	1.2 U	2.66 UR	1.3 U
Hexachlorobutadiene	1	0.86	2.35 U	2.44 U	1.4 U	2.35 UR	1.5 U
Hexachlorocyclopentadiene	50	219	2.61 U	2.7 U	5.9 U	2.61 UR	6.4 U
Hexachloroethane	1	4.8	1.99 U	2.06 U	1.3 U	1.99 UR	1.4 U
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	2.07 U	2.15 U	0.94 U	2.07 UR	1 U
Isophorone	100	70.5	1.79 U	1.85 U	1.3 U	1.79 UR	1.4 U
Naphthalene	100	6.5	2.79 U	2.89 U	1.4 U	2.79 UR	1.5 U
Nitrobenzene	51	3.5	1.61 U	1.67 U	1.4 U	1.61 UR	1.5 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.54 U	1.6 U	1.4 U	1.54 UR	1.6 U
N-Nitrosodiphenylamine	530	14	4.27 U	4.42 U	3.9 U	4.27 UR	4.3 U
Pentachlorophenol	1	0.56	1.7 U	1.76 U	0.77 U	1.7 UR	0.84 U
Phenanthrene	1,100	-	1.76 U	1.82 U	1 U	1.76 UR	1.1 U
Phenol	4,000	10,950	0.73 U	0.756 U	11	0.73 UR	2 U
Pyrene	130	182.5	2.81 U	2.91 U	0.88 U	2.81 UR	0.97 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 6 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 6
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	904		904 R	MW-17	
		Sample Date:	1/8/02 (k)	01/08/02 (k)	04/09/03 (b)	01/08/02	04/09/03
Metals (mg/l)	ACT 2 MSC (c)	RBC (d)					
Aluminum, Dissolved	0.2	37	**362** K	**370** K	**19.4**	**1.9** K	0.0488 B
Aluminum, Total	-	-	393 K	396 K	22.3 K	303 K	0.317 K
Antimony, Dissolved	0.03 (f)	0.015	0.0036	0.0034	0.00012 U	0.0043	0.00098 B
Antimony, Total	-	-	0.00243	0.00263	0.00023 B	0.0038	0.0014 B
Arsenic, Dissolved	0.05	0.000045	**0.2** U	**0.2** U	0.0024 U	0.0189	0.0024 U
Arsenic, Total	-	-	0.2 U	0.2 U	0.0024 U	0.444	0.0024 U
Barium, Dissolved	2	2.6	0.25 U	0.25 U	0.0322 J	0.0803	0.0943 J
Barium, Total	-	-	0.549 J	0.603 J	0.0418 J	11.1	0.102 J
Beryllium, Dissolved	0.004	0.073	**0.0341** J	**0.0361** J	**0.0207** B	0.000367 J	0.00098 B
Beryllium, Total	-	-	0.0394 J	0.0356 J	0.022 B	0.0672	0.0014 B
Boron, Dissolved	0.6	3.3	0.33 U	0.33 U	0.139 J	0.31	0.111 J
Boron, Total	-	-	0.404 J	0.405 J	0.136 J	0.44	0.113 J
Cadmium, Dissolved	0.005	0.018	**0.25** U	**0.25** U	0.0039 U	0.0025 U	0.00039 U
Cadmium, Total	-	-	0.25 U	0.25 U	0.0039 U	0.0105	0.00039 U
Chromium, Dissolved	0.1	0.11 (i)	**0.25** U	**0.25** U	0.00063 U	0.0086 J	0.002 J
Chromium, Total	-	-	0.25 U	0.254 J	0.0047 J	0.492 K	0.0053
Cobalt, Dissolved	2	0.73	0.505 J	0.527 J	0.125	0.0034 J	0.00059 U
Cobalt, Total	-	-	0.548 J	0.562 J	0.125	0.601	0.00059 U
Copper, Dissolved	1	1.5	0.5 U	0.5 U	0.0108 U	0.00859 J	0.0011 U
Copper, Total	-	-	0.5 U	0.5 U	0.0108 U	2.8	0.0011 U
Iron, Dissolved	0.3	11	**1,310** K	**1,350** K	**2,040**	**17.7** K	**17.3**
Iron, Total	-	-	1,410 K	1,440 K	2,120	776 L	17.9
Lead, Dissolved	0.005	-	**0.25** U	**0.25** U	**0.0264** U	**0.00765**	0.0026 U
Lead, Total	-	-	0.329 J	0.322 J	0.0264 U	1.16	0.0026 U
Manganese, Dissolved	0.05	0.73 (j)	**38.1**	**39.2**	**77.5**	**7.08**	**10.2**
Manganese, Total	-	-	39.7	40.2	81	18	10.4
Mercury, Dissolved	2	-	0.000078 J	0.000065 B	0.025 U	0.000052 U	0.025 U
Mercury, Total	-	-	0.00016 J	0.00016 J	0.025 UL	0.0038	0.025 UL
Nickel, Dissolved	0.1	0.73	**0.5** U	**0.5** U	0.0581	0.005 U	0.0027 J
Nickel, Total	-	-	0.5 U	0.5 U	0.0582	0.527	0.0014 J
Selenium, Dissolved	0.05	0.18	**0.5** U	**0.5** U	0.0309 J	0.005 U	0.0039 J
Selenium, Total	-	-	0.5 U	0.5 U	0.0304 J	0.025 UL	0.0028 J
Silver, Dissolved	0.1	0.18	**0.2** U	**0.2** U	0.0039 J	0.00285 J	0.00058 U
Silver, Total	-	-	0.2 U	0.2 U	0.0036 J	0.004 U	0.0007 J
Thallium, Dissolved	0.04 (f)	0.0026	0.0035	0.0037	0.000033 U	0.00021 B	0.000033 U
Thallium, Total	-	-	0.00471	0.00462	0.000033 U	0.0185	0.000033 U
Tin, Dissolved	61	22	5 U	5 U	0.0299 J	0.05 U	0.0045 U
Tin, Total	-	-	5 U	5 U	0.0328 J	0.1 U	0.0045 U
Vanadium, Dissolved	0.72	0.26	0.5 U	0.5 U	0.106 B	0.005 U	0.0041 B
Vanadium, Total	-	-	0.5 U	0.5 U	0.106 B	0.704	0.0054 B
Zinc, Dissolved	2	11	1.85 J	1.91 J	0.373	0.0248	0.0013 U
Zinc, Total	-	-	2.17	2.8	0.364	1.9	0.0013 U
General Chemistry (mg/l)							
Total Dissolved Solids	-	-	-	-	11,300	-	594

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 6 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 6
Crompton Corporation
Petrolia, Pennsylvania

Sample I.D.:			MW-18		MW-19		
Sample Date:			01/08/02	04/09/03	01/08/02	04/08/2003 (k)	04/08/03 (k)
Volatile Organic Compounds (µg/l)	**ACT 2 MSC (c)**	**RBC (d)**					
1,1,1,2-Tetrachloroethane	70	0.41	0.25 U	0.13 U	0.25 U	0.13 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.125 U	0.16 U	0.125 U	0.16 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.25 U	0.12 U	0.25 U	0.12 U	0.12 U
1,1-Dichloroethene	7	353	0.5 U	0.21 U	0.5 U	0.21 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.125 U	0.16 U	0.125 U	0.16 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.75 U	0.18 U	0.75 U	0.18 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.2 U	0.16 U	0.2 U	0.16 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (f)	0.047	1 U	0.82 U	1 U	0.82 U	0.82 U
1,2-Dibromoethane	0.2 (f)	0.00075	0.25 U	0.19 U	0.25 U	0.19 U	0.19 U
1,2-Dichloroethane	5	0.12	0.25 U	0.092 U	0.25 U	0.092 U	0.092 U
1,2-Dichloropropane	5	0.16	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.125 U	0.1 U	0.125 U	0.1 U	0.1 U
2-Butanone	5,800	1,906	2.5 UR	1.2 U	2.5 UR	1.2 U	1.2 U
2-Hexanone	-	1,460	2.5 U	1.2 U	2.5 U	1.2 U	1.2 U
4-Methyl-2-pentanone	410	2,000	2.5 UR	1 U	2.5 U	1 U	1 U
Acetone	10,000	610	6 L	2.5 U	4.1 L	2.5 U	2.5 U
Benzene	5	0.34	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
Bromodichloromethane	100	0.17	0.25 U	0.12 U	0.25 U	0.12 U	0.12 U
Bromoform	100	8.5	0.54 U	0.18 U	0.54 U	0.18 U	0.18 U
Bromomethane	10	8.5	0.5 U	0.37 UJ	0.5 U	0.37 UJ	0.37 UJ
Carbon disulfide	4,100	1,043	0.5 U	0.16 U	0.5 U	0.16 U	0.16 U
Carbon tetrachloride	5	0.16	0.25 U	0.2 U	0.25 U	0.2 U	0.2 U
Chlorobenzene	100	106	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
Chloroethane	900	3.6	0.5 U	0.18 U	0.5 U	0.18 U	0.18 U
Chloroform	100	0.15	0.125 U	0.14 U	0.125 U	0.14 U	0.14 U
Chloromethane	3	190	0.26 J	0.075 U	0.25 U	0.075 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.25 U	0.18 U	0.25 U	0.18 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.25 U	0.095 U	0.25 U	0.095 U	0.095 U
Ethylbenzene	700	1,340	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
Hexachlorobutadiene	1	0.86	0.25 U	-	0.25 U	-	-
Isopropylbenzene	2,300	658	0.25 U	0.17 U	0.25 U	0.17 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	0.5 U	0.33 U	0.5 U	0.33 U	0.33 U
Methylene chloride	5	4.1	0.25 U	0.16 U	0.25 U	0.16 U	0.16 U
Naphthalene	100	6.5	0.2 U	-	0.2 U	-	-
n-Butylbenzene	4,100	243	0.25 U	0.21 U	0.25 U	0.21 U	0.21 U
n-Propylbenzene	4,100	243	0.125 U	0.15 U	0.125 U	0.15 U	0.15 U
o-Xylene	10,000	212.6 (h)	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
p-Isopropyltoluene	-	-	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
sec-Butylbenzene	4,100	243	0.25 U	0.18 U	0.25 U	0.18 U	0.18 U
Styrene	100	1,624	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
tert-Butylbenzene	4,100	243	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
Tetrachloroethene	5	0.1	0.25 U	0.24 U	0.25 U	0.24 U	0.24 U
Toluene	1,000	747	0.25 U	0.14 U	0.25 U	0.14 U	0.24 J
Trichloroethene	5	0.026	0.25 U	0.095 U	0.25 U	0.095 U	0.095 U
Vinyl chloride	2	0.015	0.25 U	0.17 U	0.25 U	0.17 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 6 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 6
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-18		MW-19		
		Sample Date:	01/08/02	04/09/03	01/08/02	04/08/03	04/08/03
Semivolatile Organic Compounds (ug/l)	ACT 2 MSC (c)	RBC (d)					
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-	-	-
2,4,6-Trichlorophenol	31	6.1	1.81 U	1.4 U	1.72 U	1.4 U	1.5 U
2,4-Dichlorophenol	20	109.5	1.98 U	1.3 U	1.88 U	1.3 U	1.3 U
2,4-Dinitrophenol	50 (f)	73	9.49 U	1.5 U	9.02 U	1.5 UJ	1.6 UJ
2,4-Dinitrotoluene	10 (f)	73	1.49 U	1.2 U	1.42 U	1.2 U	1.3 U
2-Chlorophenol	40	30.4	1.77 U	1.3 U	1.68 U	1.3 U	1.3 U
2-Methylnaphthalene	2,000	-	2.17 U	1.5 U	2.06 U	1.5 U	1.5 U
2-Nitroaniline	20 (f)	-	1.64 U	1 U	1.56 U	1 U	1 U
3,3'-Dichlorobenzidine	20	-	4.56 U	3.8 U	4.33 U	3.7 U	3.8 U
3-Nitroaniline	5.8	3.35	1.63 U	2.6 U	1.55 U	2.6 U	2.6 U
4,6-Dinitro-2-methylphenol	-	3.65	2.35 U	1.3 U	2.23 U	1.3 U	1.3 U
4-Chloro-3-methylphenol	-	-	1.86 U	1.3 U	1.77 U	1.2 U	1.3 U
4-Nitroaniline	5.8	3.35	1.91 U	1.1 U	1.81 U	1.1 U	1.1 U
4-Nitrophenol	60	292	1.73 U	1.7 U	1.64 U	1.7 U	1.7 U
Acenaphthene	3,800	365	1.99 U	1.5 U	1.89 U	1.5 U	1.5 U
Benzo(a)anthracene	10 (f)	0.092	1.88 U	0.89 U	1.79 U	0.89 U	0.9 U
Benzo(a)pyrene	0.2	0.0092	1.87 U	2.4 U	1.78 U	2.4 U	2.4 U
Benzo(b)fluoranthene	10 (f)	0.092	2.31 U	0.82 U	2.19 U	0.81 U	0.83 U
Benzo(g,h,i)perylene	10 (f)	-	3.33 U	0.96 U	3.16 U	0.95 U	0.97 U
Benzo(k)fluoranthene	10 (f)	0.92	2.37 U	1.1 U	2.25 U	1 U	1.1 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.67 U	1.4 U	1.59 U	1.4 U	1.4 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.6 U	1.7 J	2.47 U	0.86 U	0.88 U
Carbazole	130	3.35	0.466 U	3.1 U	0.443 U	3 U	3.1 U
Chrysene	10	9.2	2.64 U	0.91 U	2.51 U	0.91 U	0.92 U
Dibenzo(a,h)anthracene	10	0.0092	3.72 U	1 U	3.53 U	0.99 U	1 U
Dibenzofuran	10	12.2	1.96 U	1.5 U	1.86 U	1.4 U	1.5 U
Di-n-butyl phthalate	10,000	3,650	5.26 U	1.1 U	5 U	1 U	1.1 U
Di-n-octyl phthalate	2,000	730	2.15 U	0.91 U	2.04 U	0.9 U	0.92 U
Fluorene	1,900	243	1.91 U	1.5 U	1.81 U	1.5 U	1.5 U
Hexachlorobenzene	1	0.042	2.8 U	1.2 U	2.66 U	1.2 U	1.2 U
Hexachlorobutadiene	1	0.86	2.47 U	1.4 U	2.35 U	1.4 U	1.4 U
Hexachlorocyclopentadiene	50	219	2.75 U	6 U	2.61 U	5.9 U	6.1 U
Hexachloroethane	1	4.8	2.09 U	1.3 U	1.99 U	1.3 U	1.3 U
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	2.18 U	0.96 U	2.07 U	0.95 U	0.97 U
Isophorone	100	70.5	1.88 U	1.3 U	1.79 U	1.3 U	1.4 U
Naphthalene	100	6.5	2.94 U	1.4 U	2.79 U	1.4 U	1.5 U
Nitrobenzene	51	3.5	1.69 U	1.4 U	1.61 U	1.4 U	1.4 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.62 U	1.5 U	1.54 U	1.5 U	1.5 U
N-Nitrosodiphenylamine	530	14	4.49 U	4 U	4.27 U	4 U	4.1 U
Pentachlorophenol	1	0.56	1.79 U	0.78 U	1.7 U	0.78 U	0.79 U
Phenanthrene	1,100	-	1.85 U	1 U	1.76 U	1 U	1 U
Phenol	4,000	10,950	0.768 U	1.9 U	0.73 U	1.9 U	1.9 U
Pyrene	130	182.5	2.96 U	0.9 U	2.81 U	0.89 U	0.91 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 6 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 6
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-18		MW-19		
		Sample Date:	01/08/02	04/09/03	01/08/02	04/08/03	04/08/03
Metals (mg/l)	ACT 2 MSC (c)	RBC (d)					
Aluminum, Dissolved	0.2	37	0.05 U	0.0537 B	**0.257**	0.0538 B	0.055 B
Aluminum, Total	-	-	42.7 K	0.131 B	23 K	2.3 K	1.96 K
Antimony, Dissolved	0.03 (f)	0.015	0.0021	0.00012 U	0.0018	0.00012 U	0.00012 U
Antimony, Total	-	-	0.000506 B	0.00012 UL	0.0005 U	0.00012 UL	0.00012 UL
Arsenic, Dissolved	0.05	0.000045	0.0026 J	0.0042 J	0.002 U	0.0029 J	0.0027 J
Arsenic, Total	-	-	0.0483	0.0044 J	0.0338	0.0076 J	0.0079 J
Barium, Dissolved	2	2.6	0.0587	0.123 J	0.156	0.327	0.338
Barium, Total	-	-	1.49	0.131 J	0.904	0.389	0.391
Beryllium, Dissolved	0.004	0.073	0.00025 U	0.00095 B	0.00025 U	0.00097 B	0.00091 B
Beryllium, Total	-	-	0.00373 J	0.0013 B	0.00294 J	0.0016 B	0.0015 B
Boron, Dissolved	0.6	3.3	0.148	0.08 J	0.0882 J	0.0534 J	0.0558 J
Boron, Total	-	-	0.33	0.0824 J	0.237	0.0552 J	0.0563 J
Cadmium, Dissolved	0.005	0.018	0.0025 U	0.00039 U	0.0025 U	0.00039 U	0.00039 U
Cadmium, Total	-	-	0.0025 U	0.00042 J	0.0025 U	0.00039 U	0.00039 U
Chromium, Dissolved	0.1	0.11 (i)	0.00266 J	0.00063 U	0.0112 J	0.0019 J	0.0019 J
Chromium, Total	-	-	0.0764	0.00063 U	0.0513	0.005	0.0047 J
Cobalt, Dissolved	2	0.73	0.0025 U	0.00059 U	0.0061 J	0.0094 J	0.0097 J
Cobalt, Total	-	-	0.0428	0.00059 U	0.0343	0.0112 J	0.0113 J
Copper, Dissolved	1	1.5	0.005 U	0.0011 U	0.005 U	0.0011 U	0.0011 U
Copper, Total	-	-	0.0771	0.0011 U	0.0514	0.0069 B	0.0063 B
Iron, Dissolved	0.3	11	**2.23**	**4.55**	**4.59**	**21.9**	**22.5**
Iron, Total	-	-	66.6 K	4.84	63.9 K	31.5	30.6
Lead, Dissolved	0.005	-	0.00319 J	0.0026 U	0.00478 J	0.0026 U	0.0026 U
Lead, Total	-	-	0.0664	0.0026 U	0.0733	0.0109	0.0118
Manganese, Dissolved	0.05	0.73 (j)	**2.75**	**3.26**	**17.6**	**13.9**	**14.4**
Manganese, Total	-	-	3.96	3.34	15.3 L	13	13.3
Mercury, Dissolved	2	-	0.000052 U	0.056 B	0.000052 U	0.025 U	0.025 U
Mercury, Total	-	-	0.00058	0.039 B	0.00017 J	0.025 UL	0.025 UL
Nickel, Dissolved	0.1	0.73	0.005 U	0.00083 U	0.005 U	0.0027 J	0.0029 J
Nickel, Total	-	-	0.0761	0.00083 U	0.0454	0.0069 J	0.0064 J
Selenium, Dissolved	0.05	0.18	0.005 U	0.0023 U	0.0114	0.0046 J	0.0035 J
Selenium, Total	-	-	0.005 U	0.0023 U	0.005 U	0.003 J	0.0025 J
Silver, Dissolved	0.1	0.18	0.002 U	0.00058 U	0.0051	0.0011 J	0.0012 J
Silver, Total	-	-	0.002 U	0.00058 U	0.00479	0.001 J	0.001 J
Thallium, Dissolved	0.04 (f)	0.0026	0.0001 U	0.000033 U	0.0001 U	0.000033 U	0.000033 U
Thallium, Total	-	-	0.000963	0.000033 U	0.000397	0.000033 U	0.000033 U
Tin, Dissolved	61	22	0.05 U	0.0045 U	0.05 U	0.0045 U	0.0045 U
Tin, Total	-	-	0.05 U	0.0045 U	0.05 U	0.0045 U	0.0046 J
Vanadium, Dissolved	0.72	0.26	0.005 U	0.0019 B	0.005 U	0.0044 B	0.0045 B
Vanadium, Total	-	-	0.0702	0.002 B	0.0395	0.0063 B	0.0063 B
Zinc, Dissolved	2	11	0.036	0.0013 U	0.0138 J	0.0055 B	0.0048 B
Zinc, Total	-	-	0.234	0.0029 B	0.133	0.0344	0.0387
General Chemistry (mg/l)							
Total Dissolved Solids	-	-	-	816	-	1,690	1,730

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

a/ I.D. = identification; mg/l = micrograms per liter; '-' = indicates no criterion developed or constituent not analyzed; mg/l = milligrams per liter.
b/ TDS value greater than 2,500. Act 2 MSCs for used aquifers, where TDS > 2,500 used for comparison.
c/ Act 2 non-residential medium-specific concentrations (MSCs) for used aquifers, where Total Dissolved Solids (TDS) less than or equal to 2,500.
The secondary maximum contaminant level is listed for aluminum, iron, and manganese.
d/ U.S. Region III Risk Based Concentration (RBC) for tapwater (April 2003).
e/ Data Qualifiers:
U = concentrations not detected at listed method detection limit
J = constituent detected at an estimated concentration for organics; method blank contamination for inorganics
B = method blank contamination for organics; constituent detected at an estimated concentration for inorganics
L = reported value may be biased low; actual value expected to be higher
R = result rejected for data validation
K = reported value may be biased high; actual value expected to be lower
f/ Practical Quantitation Limits (PQLs) were substitued for the criterion, except where TDS > 2,500.
g/ Criterion for 1,3-Dichloropropene.
h/ Criterion for xylenes.
i/ Criterion for Chromium VI.
j/ Criterion for manganese, nonfood.
k/ Sample and duplicate.

Table 7 - [illegible]

Groundwater Sampling Results Summary
Management Area 7
Crompton Corporation
Petrolia, Pennsylvania (a)

		Sample I.D.:	MW-4		MW-7		
		Sample Date	01/10/02	01/30/2002 (b)	01/10/02	03/05/02 (b,c)	03/05/02 (b,c)
Volatile Organic Compounds (µg/l)	ACT 2 MSC (d)	RBC (e)					
1,1,1-Trichloroethane	70	0.41	-	0.16 U (f)	-	0.16 U	0.16 U
1,1,2,2-Tetrachloroethane	0.5	0.053	0.25 U	-	0.25 U	-	-
1,1,2-Trichloroethane	5	0.19	0.25 U	0.16 U	0.25 U	0.16 U	0.16 U
1,1-Dichloroethane	-	-	0.25 U	0.12 U	0.25 U	0.12 U	0.12 U
1,1-Dichloroethene	7	355	-	0.16 U	-	0.16 U	0.16 U
1,1-Dichloropropene	-	-	0.5 U	0.21 U	0.5 U	0.21 U	0.21 U
1,2,3-Trichlorobenzene	-	-	-	0.21 U	-	0.21 U	0.21 U
1,2,3-Trichloropropane	40	0.0053	0.125 U	0.16 U	0.125 U	0.16 U	0.16 U
1,2,4-Trichlorobenzene	70	7.2	0.75 U	0.18 U	0.75 U	0.18 U	0.18 U
1,2,4-Trimethylbenzene	35	12	0.2 U	0.16 U	0.2 U	0.16 U	0.16 U
1,2-Dibromo-3-chloropropane	5 (g)	0.047	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
1,2-Dibromoethane	0.2 (g)	0.00075	1 U	0.82 U	1 U	0.82 U	0.82 U
1,2-Dichlorobenzene	-	-	0.25 U	0.19 U	0.25 U	0.19 U	0.19 U
1,2-Dichloroethane	5	0.12	-	0.15 U	-	0.15 U	0.15 U
1,2-Dichloropropane	5	0.16	0.25 U	0.092 U	0.25 U	0.092 U	0.092 U
1,3,5-Trimethylbenzene	35	12	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
1,3-Dichlorobenzene	-	-	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
1,3-Dichloropropane	-	-	-	0.15 U	-	0.15 U	0.15 U
1,4-Dichlorobenzene	75	0.47	-	0.084 U	-	0.084 U	0.084 U
2,2-Dichloropropane	-	-	0.125 U	0.1 U	0.125 U	0.1 U	0.1 U
2-Butanone	5,800	1,906	-	0.26 U	-	0.26 U	0.26 U
2-Chlorotoluene	-	-	2.5 UR	1.2 U	2.5 UR	1.2 U	1.2 U
2-Hexanone	-	1,460	-	0.12 U	-	0.12 U	0.12 U
4-Chlorotoluene	-	-	2.5 UJ	1.2 U	2.5 U	1.2 U	1.2 U
4-Methyl-2-pentanone	410	2,000	-	0.11 U	-	0.11 U	0.11 U
Acetone	10,000	610	2.5 UR	1 U	2.5 UR	1 U	1 U
Benzene	5	0.34	3 L	2.5 U	2.5 UR	2.5 U	2.5 U
Bromobenzene	-	-	0.8 J	0.24 J	0.24 J	0.11 U	0.11 U
Bromochloromethane	-	-	-	0.11 U	-	0.11 U	0.11 U
Bromodichloromethane	100	0.17	-	0.18 U	-	0.18 U	0.18 U
Bromoform	100	8.5	0.25 U	0.12 U	0.25 U	0.12 U	0.12 U
Bromomethane	10	8.5	0.54 U	0.18 U	0.54 U	0.18 U	0.18 U
Carbon disulfide	4,100	1,043	0.5 U	0.37 U	0.5 U	0.37 U	0.37 U
Carbon tetrachloride	5	0.16	0.5 UJ	0.16 U	0.5 U	0.16 U	0.16 U
Chlorobenzene	100	106	0.25 U	0.2 U	0.25 U	0.2 U	0.2 U
Chloroethane	900	3.6	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
Chloroform	100	0.15	0.5 U	0.18 U	0.5 U	0.18 U	0.18 U
Chloromethane	3	190	0.125 U	0.14 U	0.125 U	0.14 U	0.14 U
cis-1,2-Dichloroethene	-	-	0.25 U	0.075 U	0.25 U	0.075 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (h)	-	0.16 U	-	0.16 U	0.16 U
Dibromochloromethane	-	-	0.25 U	0.18 U	0.25 U	0.18 U	0.18 U
Dibromomethane	-	-	-	0.093 U	-	0.093 U	0.093 U
Dichlorodifluoromethane	1,000	347.6	-	0.18 U	-	0.18 U	0.18 U
Ethylbenzene	700	1,340	0.25 U	0.095 U	0.25 U	0.095 U	0.095 U
Hexachlorobutadiene	1	0.86	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
Isopropylbenzene	2,300	658	0.25 U	-	0.25 U	-	-
m-,p-Xylene	10,000	212.6 (i)	0.25 U	0.17 U	0.25 U	0.17 U	0.17 U
Methylene chloride	5	4.1	0.5 U	0.33 U	0.5 U	0.33 U	0.33 U
Naphthalene	100	6.5	0.25 U	0.16 U	0.25 U	0.16 U	0.16 U
n-Butylbenzene	4,100	243	0.2 U	-	0.29 B	-	-
n-Propylbenzene	4,100	243	0.25 U	0.21 U	0.25 U	0.21 U	0.21 U
o-Xylene	10,000	212.6 (i)	0.125 U	0.15 U	0.125 U	0.15 U	0.15 U
p-Isopropyltoluene	-	-	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
sec-Butylbenzene	4,100	243	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
Styrene	100	1,624	0.25 U	0.18 U	0.25 U	0.18 U	0.18 U
tert-Butylbenzene	4,100	243	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
Tetrachloroethene	5	0.1	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
Toluene	1,000	747	0.25 U	0.24 U	0.25 U	0.24 U	0.24 U
trans-1,2-Dichloroethene	-	-	0.68 J	0.14 U	0.66 J	0.6 J	0.55 J
trans-1,3-Dichloropropene	-	-	-	0.19 U	-	0.19 U	0.19 U
Trichloroethene	5	0.026	-	0.087 U	-	0.087 U	0.087 U
Trichlorofluoromethane	-	-	0.25 U	0.095 U	0.25 U	0.095 U	0.095 U
Vinyl chloride	2	0.015	-	0.38 U	-	0.38 U	0.38 U
			0.25 U	0.28 U	0.25 U	0.28 U	0.28 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 7 DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 7
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-6		MW-7		
		Sample Date:	01/10/02	01/20/2003 (D)	01/10/02	03/05/03 (D,U)	03/05/03 (D,U)
Semivolatile Organic Compounds (ug/l)	**ACT 2 MSC (d)**	**RBC (e)**					
1,2,4-Trichlorobenzene	70	7.3	-	1.4 U	-	1.3 U	1.3 U
1,2-Dichlorobenzene	-	-	-	1.3 U	-	1.3 U	1.3 U
1,3-Dichlorobenzene	-	-	-	1.3 U	-	1.2 U	1.2 U
1,4-Dichlorobenzene	75	0.47	-	1.3 U	-	1.3 U	1.3 U
2,2'-oxybis(1-chloropropane)	-	-	-	1.7 U	-	1.7 U	1.7 U
2,4,5-Trichlorophenol	-	-	-	1.4 U		1.4 U	1.3 U
2,4,6-Trichlorophenol	51	6.1	1.81 U	1.5 U	1.81 U	1.5 U	1.5 U
2,4-Dichlorophenol	20	109.5	1.98 U	1.5 U	1.98 U	1.3 U	1.3 U
2,4-Dimethylphenol		-	-	1.8 U	-	1.8 U	1.8 U
2,4-Dinitrophenol	50 (g)	73	9.49 U	1.6 U	9.49 U	1.6 U	1.6 U
2,4-Dinitrotoluene	10 (g)	73	1.49 U	1.3 U	1.49 U	1.3 U	1.3 U
2,6-Dinitrotoluene	-	-	-	1.4 U	-	1.4 U	1.4 U
2-Chloronaphthalene	-	-	-	1.4 U	-	1.4 U	1.4 U
2-Chlorophenol	40	30.4	1.77 U	1.4 U	1.77 U	1.4 U	1.3 U
2-Methylnaphthalene	2,000	-	2.17 U	1.5 U	2.17 U	1.5 U	1.5 U
2-Methylphenol	-	-	-	1.5 U	-	1.5 U	1.5 U
2-Nitroaniline	20 (g)	-	1.64 U	1.1 U	1.64 U	1.1 U	1 U
2-Nitrophenol	-		-	3 U	-	2.9 U	2.9 U
3,3'-Dichlorobenzidine	20	-	4.56 UJ	3.9 U	4.56 U	3.8 U	3.8 U
3-Nitroaniline	5.8	3.35	1.63 U	2.7 U	1.63 U	2.7 U	2.6 U
4,6-Dinitro-2-methylphenol	-	3.65	2.35 U	1.4 U	2.35 U	1.3 U	1.3 U
4-Bromophenyl phenyl ether	-	-	-	1.2 U	-	1.2 U	1.2 U
4-Chloro-3-methylphenol	-	-	1.86 U	1.3 U	1.86 U	1.3 U	1.3 U
4-Chloroaniline	-	-	-	3.7 U	-	3.7 U	3.6 U
4-Chlorophenyl phenyl ether	-	-	-	1.6 U	-	1.6 U	1.6 U
4-Methylphenol	-	-	-	3.5 U	-	3.4 U	3.4 U
4-Nitroaniline	5.8	3.35	1.91 U	1.1 U	1.91 U	1.1 U	1.1 U
4-Nitrophenol	60	292	1.73 U	1.8 U	1.73 U	1.7 U	1.7 U
Acenaphthene	3,800	365	1.99 U	1.5 U	1.99 U	1.5 U	1.5 U
Acenaphthylene	-	-	-	1.8 U	-	1.8 U	1.8 U
Anthracene	-	-	-	1.2 U	-	1.2 U	1.2 U
Benzo(a)anthracene	10 (g)	0.092	1.88 U	0.92 U	1.88 U	0.91 U	0.9 U
Benzo(a)pyrene	0.2	0.0092	1.87 U	2.5 U	1.87 U	2.5 U	2.4 U
Benzo(b)fluoranthene	10 (g)	0.092	2.31 U	0.85 U	2.31 U	0.84 U	0.83 U
Benzo(g,h,i)perylene	10 (g)	-	3.33 U	0.99 U	3.33 U	0.98 U	0.97 U
Benzo(k)fluoranthene	10 (g)	0.92	2.37 U	1.1 U	2.37 U	1.1 U	1.1 U
bis(2-Chloroethoxy)methane	-	-	-	3.4 U	-	3.4 U	3.3 U
bis(2-Chloroethyl)ether	10 (g)	0.0096	1.67 U	1.4 U	1.67 U	1.4 U	1.4 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.6 U	0.9 U	2.6 U	0.89 U	0.88 U
Butyl benzyl phthalate	-	-	-	1 U	-	0.99 U	0.98 U
Carbazole	130	3.35	0.466 U	3.2 U	0.466 U	3.1 U	3.1 U
Chrysene	10	9.2	2.64 U	0.94 U	2.64 U	0.93 U	0.92 U
Dibenzo(a,h)anthracene	10	0.0092	3.72 U	1 U	3.72 U	1 U	1 U
Dibenzofuran	10	12.2	1.96 U	1.5 U	1.96 U	1.5 U	1.5 U
Diethyl phthalate	-	-	-	1.1 U	-	1.1 U	1.1 U
Dimethyl phthalate	-	-	-	1.2 U	-	1.2 U	1.2 U
Di-n-butyl phthalate	10,000	3,650	5.26 U	1.1 U	5.26 U	1.1 U	1.1 U
Di-n-octyl phthalate	2,000	730	2.15 U	0.94 U	2.15 U	0.93 U	0.92 U
Fluoranthene	-	-	-	1.1 U	-	1.1 U	1.1 U
Fluorene	1,900	243	1.91 U	1.5 U	1.91 U	1.5 U	1.5 U
Hexachlorobenzene	1	0.042	2.8 U	1.2 U	2.8 U	1.2 U	1.2 U
Hexachlorobutadiene	1	0.86	2.47 U	1.5 U	2.47 U	1.4 U	1.4 U
Hexachlorocyclopentadiene	50	219	2.75 U	6.2 U	2.75 U	6.1 U	6.1 U
Hexachloroethane	1	4.8	2.89 U	1.4 U	2.89 U	1.3 U	1.3 U
Indeno(1,2,3-cd)pyrene	10 (g)	0.092	2.18 U	0.99 U	2.18 U	0.98 U	0.97 U
Isophorone	100	70.5	1.88 U	1.4 U	1.88 U	1.4 U	1.4 U
Naphthalene	100	6.5	2.94 U	1.5 U	2.94 U	1.5 U	1.5 U
Nitrobenzene	51	3.5	1.69 U	1.4 U	1.69 U	1.4 U	1.4 U
N-Nitroso-di-n-propylamine	10 (g)	0.0096	1.62 U	1.5 U	1.62 U	1.5 U	1.5 U
N-Nitrosodiphenylamine	530	14	4.49 U	4.1 U	4.49 U	4.1 U	4.1 U
Pentachlorophenol	1	0.56	1.79 U	0.81 U	1.79 U	0.8 U	0.79 U
Phenanthrene	1,100	-	1.85 U	1.1 U	1.85 U	1 U	1 U
Phenol	4,000	10,950	0.768 U	2 U	0.768 U	1.9 U	1.9 U
Pyrene	130	182.5	2.96 U	0.93 U	2.96 U	0.92 U	0.91 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 7 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 7
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-4		MW-7		
		Sample Date:	01/10/02	01/30/2003 (b)	01/10/02	02/05/03 (b,c)	02/05/03 (b,c)
Metals (mg/l)	ACT 2 MSC (d)	RBC (e)					
Aluminum, Dissolved	0.2	37	0.17	0.0591 B	0.0877 J	0.0446 B	0.0441 B
Aluminum, Total	-	-	189 K	21.4	6.79 K	3.78 K	1.67 K
Antimony, Dissolved	0.03 (g)	0.015	0.0035	0.0038 U	0.0024	0.0038 U	0.0038 U
Antimony, Total	-	-	0.0013 L	0.0038 U	0.00114 L	0.0038 U	0.0038 U
Arsenic, Dissolved	0.05	0.000045	0.00217 J	0.0058 J	0.00306 J	0.0024 UL	0.0024 L
Arsenic, Total	-	-	0.0268	0.009 J	0.00548	0.0039 L	0.0029 L
Barium, Dissolved	2	2.6	0.151 L	1.16	0.126 L	0.134 J	0.136 J
Barium, Total	-	-	2.86 L	1.45	0.327 L	0.206	0.163 J
Beryllium, Dissolved	0.004	0.073	0.00025 U	0.00047 U	0.00025 U	0.00071 B	0.00047 U
Beryllium, Total	-	-	0.0188 K	0.0022 B	0.000691 K	0.00053 B	0.00047 U
Boron, Dissolved	0.6	3.3	0.132 J	0.16 J	0.0378 J	0.0568 J	0.0567 J
Boron, Total	-	-	0.222 L	0.168 J	0.0601 L	0.0578 J	0.0566 J
Cadmium, Dissolved	0.005	0.018	0.0025 U	0.00024 U	0.0025 U	0.00024 U	0.00024 U
Cadmium, Total	-	-	0.0025 U	0.00024 U	0.0025 U	0.00024 U	0.00024 U
Chromium, Dissolved	0.1	0.11 (j)	0.0025 U	0.0011 U	0.0025 U	0.0014 L	0.0012 L
Chromium, Total	-	-	0.845 L	0.0412	0.0556 L	0.011 L	0.006 L
Cobalt, Dissolved	2	0.73	0.0025 U	0.0038 J	0.0025 U	0.0017 U	0.0017 U
Cobalt, Total	-	-	0.189	0.0201 J	0.00572 L	0.0023 J	0.0017 U
Copper, Dissolved	1	1.5	0.005 U	0.0013 J	0.005 U	0.0015 J	0.0012 J
Copper, Total	-	-	0.352	0.036	0.013 J	0.0087 J	0.0065 J
Iron, Dissolved	0.3	11	[redacted] L	[redacted]	0.0817 L	0.0326 UL	0.0326 UL
Iron, Total	-	-	364 K	30.6	8.36 K	4.3 L	2.13 L
Lead, Dissolved	0.005	-	0.0025 U	0.0023 U	0.00356 B	0.0023 U	0.0023 U
Lead, Total	-	-	0.22 L	0.0217	0.0114 L	0.0064	0.0032
Manganese, Dissolved	0.05	0.73 (k)	[redacted] L	[redacted]	0.00302 L	0.0107 J	0.0091 J
Manganese, Total	-	-	4.43 L	1.65	0.241 L	0.116	0.0975
Mercury, Dissolved	2	-	0.000052 U	0.093 U	0.000052 U	0.093 U	0.093 U
Mercury, Total	-	-	0.00023 B	0.093 U	0.000052 U	0.093 U	0.093 U
Nickel, Dissolved	0.1	0.73	0.0113 J	0.0056 J	0.005 U	0.0018 U	0.0018 U
Nickel, Total	-	-	0.789 L	0.0517	0.0414 L	0.0095 J	0.005 B
Selenium, Dissolved	0.05	0.18	0.005 U	0.0027 U	0.005 U	0.0027 UL	0.0027 UL
Selenium, Total	-	-	0.025 U	0.0027 U	0.005 U	0.0027 UL	0.0027 UL
Silver, Dissolved	0.1	0.18	0.002 U	0.00065 U	0.002 U	0.00065 U	0.00065 U
Silver, Total	-	-	0.002 U	0.00065 U	0.002 U	0.00065 U	0.00065 U
Thallium, Dissolved	0.04 (g)	0.0026	0.0001 U	0.0055 U	0.00023	0.0055 U	0.0055 U
Thallium, Total	-	-	0.00185	0.0055 U	0.000263	0.0055 U	0.0055 U
Tin, Dissolved	61	22	0.05 U	0.0037 U	0.05 U	0.0037 U	0.0037 U
Tin, Total	-	-	0.05 U	0.0105 J	0.05 U	0.0053 J	0.0084 J
Vanadium, Dissolved	0.72	0.26	0.005 U	0.0023 J	0.005 U	0.0022 U	0.0022 U
Vanadium, Total	-	-	0.271	0.0398	0.0128	0.0052 J	0.0022 U
Zinc, Dissolved	2	11	0.0255 L	0.0066 J	0.0247 L	0.0044 U	0.0044 U
Zinc, Total	-	-	0.835 L	0.13	0.0327 L	0.0461	0.0367
General Chemistry (mg/l)							
Total Dissolved Solids	-	-	-	614	-	1,130	1,110

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 7 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 7
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-8		MW-9		MW-10		MW-11	
		Sample Date:	01/10/02	02/05/03 (b)	01/10/02	01/30/03 (b)	01/10/02	01/30/03 (b)	01/10/02	04/10/03
Volatile Organic Compounds (µg/l)	ACT 2 MSC (d)	RBC (e)								
1,1,1-Trichloroethane	-	-	-	-	-	0.16 U	-	0.16 U	-	-
1,1,1,2-Tetrachloroethane	70	0.41	0.25 U	-	0.25 U	-	0.25 U	-	0.25 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.125 U	-	0.125 U	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.25 U	-	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
1,1-Dichloroethane	-	-	-	-	-	0.16 U	-	0.16 U	-	-
1,1-Dichloroethene	7	353	0.5 U	-	0.5 U	0.21 U	0.5 U	0.21 U	0.5 U	0.21 U
1,1-Dichloropropene	-	-	-	-	-	0.21 U	-	0.21 U	-	-
1,2,3-Trichlorobenzene	-	-	0.125 U	-	0.125 U	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.75 U	-	0.75 U	0.18 U	0.75 U	0.18 U	0.75 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.2 U	-	0.2 U	0.16 U	0.2 U	0.16 U	0.2 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.25 U	-	0.25 U	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (g)	0.047	1 U	-	1 U	0.82 U	1 U	0.82 U	1 U	0.82 U
1,2-Dibromoethane	0.2 (g)	0.00075	**0.25 U**	-	**0.25 U**	0.19 U	**0.25 U**	0.19 U	**0.25 U**	0.19 U
1,2-Dichlorobenzene	-	-	-	-	-	0.15 U	-	0.15 U	-	-
1,2-Dichloroethane	5	0.12	0.25 U	-	0.25 U	0.092 U	0.25 U	0.092 U	0.25 U	0.092 U
1,2-Dichloropropane	5	0.16	0.125 U	-	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.25 U	-	0.25 U	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
1,3-Dichlorobenzene	-	-	-	-	-	0.15 U	-	0.15 U	-	-
1,3-Dichloropropane	-	-	-	-	-	0.084 U	-	0.084 U	-	-
1,4-Dichlorobenzene	75	0.47	0.125 U	-	0.125 U	0.1 U	0.125 U	0.1 U	0.125 U	0.1 U
2,2-Dichloropropane	-	-	-	-	-	0.26 U	-	0.26 U	-	-
2-Butanone	5,800	1,906	2.5 UR	-	2.5 UR	1.2 U	2.5 UR	1.2 U	2.5 UR	1.2 U
2-Chlorotoluene	-	-	-	-	-	0.12 U	-	0.12 U	-	-
2-Hexanone	-	1,460	2.5 U	-	2.5 U	1.2 U	2.5 U	1.2 U	2.5 U	1.2 U
4-Chlorotoluene	-	-	-	-	-	0.11 U	-	0.11 U	-	-
4-Methyl-2-pentanone	410	2,000	2.5 UR	-	2.5 UR	1 U	2.5 UR	1 U	2.5 UR	1 U
Acetone	10,000	610	2.5 UR	-	2.5 UR	2.5 U	2.5 UR	2.5 U	4.9 L	2.5 U
Benzene	5	0.34	0.125 U	-	0.125 U	0.11 U	0.125 U	0.11 U	0.58 J	0.11 U
Bromobenzene	-	-	-	-	-	0.11 U	-	0.11 U	-	-
Bromochloromethane	-	-	-	-	-	0.18 U	-	0.18 U	-	-
Bromodichloromethane	100	0.17	0.25 U	-	0.25 U	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
Bromoform	100	8.5	0.54 U	-	0.54 U	0.18 U	0.54 U	0.18 U	0.54 U	0.18 U
Bromomethane	10	8.5	0.5 U	-	0.5 U	0.37 U	0.5 U	0.37 U	0.5 U	0.37 UJ
Carbon disulfide	4,100	1,043	0.5 U	-	0.5 U	0.16 U	0.5 U	0.16 U	0.5 U	0.16 U
Carbon tetrachloride	5	0.16	0.25 U	-	0.25 U	0.2 U	0.25 U	0.2 U	0.25 U	0.2 U
Chlorobenzene	100	106	0.125 U	-	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
Chloroethane	900	3.6	0.5 U	-	0.5 U	0.18 U	0.5 U	0.18 U	0.5 U	0.18 U
Chloroform	100	0.15	0.125 U	-	0.125 U	0.14 U	0.125 U	0.14 U	0.125 U	0.14 U
Chloromethane	3	190	0.25 U	-	0.25 U	0.075 U	0.25 U	0.075 U	0.25 U	0.075 U
cis-1,2-Dichloroethene	-	-	-	-	-	0.16 U	-	0.16 U	-	-
cis-1,3-Dichloropropene	-	0.44 (h)	0.25 U	-	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Dibromochloromethane	-	-	-	-	-	0.093 U	-	0.093 U	-	-
Dibromomethane	-	-	-	-	-	0.18 U	-	0.18 U	-	-
Dichlorodifluoromethane	1,000	347.6	0.25 U	-	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Ethylbenzene	700	1,340	0.25 U	-	0.25 U	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
Hexachlorobutadiene	1	0.86	0.25 U	-	0.25 U		0.25 U	-	0.25 U	-
Isopropylbenzene	2,300	658	0.25 U	-	0.25 U	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U
m-,p-Xylene	10,000	212.6 (i)	0.5 U	-	0.5 U	0.33 U	0.5 U	0.33 U	0.5 U	0.39 J
Methylene chloride	5	4.1	0.25 U	-	0.25 U	0.16 U	0.25 U	0.16 U	0.25 U	0.16 U
Naphthalene	100	6.5	0.2 U	-	0.2 U	-	0.2 U	-	0.2 U	-
n-Butylbenzene	4,100	243	0.25 U	-	0.25 U	0.21 U	0.25 U	0.21 U	0.25 U	0.21 U
n-Propylbenzene	4,100	243	0.125 U	-	0.125 U	0.15 U	0.125 U	0.15 U	0.125 U	0.15 U
o-Xylene	10,000	212.6 (i)	0.25 U	-	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
p-Isopropyltoluene	-	-	0.25 U	-	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
sec-Butylbenzene	4,100	243	0.25 U	-	0.25 U	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Styrene	100	1,624	0.125 U	-	0.125 U	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
tert-Butylbenzene	4,100	243	0.25 U	-	0.25 U	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
Tetrachloroethene	5	0.1	0.25 U	-	0.25 U	0.24 U	0.25 U	0.24 U	0.25 U	0.24 U
Toluene	1,000	747	0.25 U	-	0.25 U	0.14 U	0.25 U	0.14 U	0.4 J	0.63 J
trans-1,2-Dichloroethene	-	-	-	-	-	0.19 U	-	0.19 U	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	0.087 U	-	0.087 U	-	-
Trichloroethene	5	0.026	0.25 U	-	0.25 U	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Trichlorofluoromethane	-	-	-	-	-	0.38 U	-	0.38 U	-	-
Vinyl chloride	2	0.015	0.25 U	-	0.25 U	0.28 U	0.25 U	0.28 U	0.25 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 7 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 7
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MW-8		MW-9		MW-10		MW-11	
		Sample Date:	01/10/02	02/05/2003 (b)	01/10/02	01/30/2003 (b)	01/10/02	01/30/2003 (b)	01/10/02	04/10/03
Semivolatile Organic Compounds (µg/l)	ACT 2 MSC (d)	RBC (e)								
1,2,4-Trichlorobenzene	70	7.2	-	1.3 U	-	1.3 U	-	1.3 U	-	-
1,2-Dichlorobenzene	-	-	-	1.3 U	-	1.3 U	-	1.3 U	-	-
1,3-Dichlorobenzene	-	-	-	1.2 U	-	1.2 U	-	1.2 U	-	-
1,4-Dichlorobenzene	75	0.47	-	1.3 U	-	1.3 U	-	1.3 U	-	-
2,2'-oxybis(1-Chloropropane)	-	-	-	1.6 U	-	1.6 U	-	1.6 U	-	-
2,4,5-Trichlorophenol	-	-	-	1.3 U	-	1.3 U	-	1.3 U	-	-
2,4,6-Trichlorophenol	31	6.1	1.81 U	1.4 U	1.78 U	1.4 U	1.81 U	1.4 U	2.15 U	1.7 U
2,4-Dichlorophenol	20	109.5	1.98 U	1.3 U	1.95 U	1.3 U	1.98 U	1.3 U	2.35 U	1.5 U
2,4-Dimethylphenol	-	-	-	1.7 U	-	1.7 U	-	1.8 U	-	-
2,4-Dinitrophenol	50 (g)	73	9.49 U	1.5 U	9.35 U	1.5 U	9.49 U	1.5 U	11.3 U	1.9 U
2,4-Dinitrotoluene	10 (g)	73	1.49 U	1.2 U	1.47 U	1.2 U	1.49 U	1.2 U	1.78 U	1.5 U
2,6-Dinitrotoluene	-	-	-	1.3 U	-	1.3 U	-	1.3 U	-	-
2-Chloronaphthalene	-	-	-	1.4 U	-	1.4 U	-	1.4 U	-	-
2-Chlorophenol	40	30.4	1.77 U	1.3 U	1.74 U	1.3 U	1.77 U	1.3 U	2.1 U	1.6 U
2-Methylnaphthalene	2,000	-	2.17 U	1.5 U	2.13 U	1.5 U	2.17 U	1.5 U	2.58 U	1.8 U
2-Methylphenol	-	-	-	1.5 U	-	1.5 U	-	1.5 U	-	-
2-Nitroaniline	20 (g)	-	1.64 U	1 U	1.62 U	1 U	1.64 U	1 U	1.95 U	1.2 U
2-Nitrophenol	-		-	2.8 U	-	2.8 U	-	2.9 U	-	-
3,3'-Dichlorobenzidine	20	-	4.56 U	3.7 U	4.49 U	3.7 U	4.56 U	3.8 U	5.41 U	4.5 U
3-Nitroaniline	5.8	3.35	1.63 U	2.6 U	1.61 U	2.6 U	1.63 U	2.6 U	1.94 U	3.2 U
4,6-Dinitro-2-methylphenol	-	3.65	2.35 U	1.3 U	2.31 U	1.3 U	2.35 U	1.3 U	2.79 U	1.6 U
4-Bromophenyl phenyl ether	-	-	-	1.2 U	-	1.2 U	-	1.2 U	-	-
4-Chloro-3-methylphenol	-	-	1.86 U	1.2 U	1.83 U	1.2 U	1.86 U	1.3 U	2.21 U	1.5 U
4-Chloroaniline	-	-	-	3.5 U	-	3.5 U	-	3.6 U	-	-
4-Chlorophenyl phenyl ether	-	-	-	1.5 U	-	1.5 U	-	1.6 U	-	-
4-Methylphenol	-	-	-	3.3 U	-	3.3 U	-	3.4 U	-	-
4-Nitroaniline	5.8	3.35	1.91 U	1.1 U	1.88 U	1.1 U	1.91 U	1.1 U	2.26 U	1.3 U
4-Nitrophenol	60	292	1.73 U	1.7 U	1.7 U	1.7 U	1.73 U	1.7 U	2.05 U	2.1 U
Acenaphthene	3,800	365	1.99 U	1.5 U	1.96 U	1.5 U	1.99 U	1.5 U	2.36 U	1.8 U
Acenaphthylene	-	-	-	1.7 U	-	1.7 U	-	1.7 U	-	-
Anthracene	-	-	-	1.1 U	-	1.1 U	-	1.1 U	-	-
Benzo(a)anthracene	10 (g)	0.092	1.88 U	0.89 U	1.85 U	0.89 U	1.88 U	0.89 U	2.24 U	1.1 U
Benzo(a)pyrene	0.2	0.0092	1.87 U	2.4 U	1.84 U	2.4 U	1.87 U	2.4 U	2.23 U	2.9 U
Benzo(b)fluoranthene	10 (g)	0.092	2.31 U	0.81 U	2.27 U	0.81 U	2.31 U	0.82 U	2.74 U	0.99 U
Benzo(g,h,i)perylene	10 (g)	-	3.33 U	0.95 U	3.27 U	0.95 U	3.33 U	0.96 U	3.95 U	1.2 U
Benzo(k)fluoranthene	10 (g)	0.92	2.37 U	1 U	2.33 U	1 U	2.37 U	1.1 U	2.81 U	1.3 U
bis(2-Chloroethoxy)methane	-	-	-	3.3 U	-	3.3 U	-	3.3 U	-	-
bis(2-Chloroethyl)ether	10 (g)	0.0096	1.67 U	1.4 U	1.65 U	1.4 U	1.67 U	1.4 U	1.99 U	1.7 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.6 U	0.86 U	2.56 U	0.86 U	2.6 U	0.92 J	3.6 J	1.1 U
Butyl benzyl phthalate	-	-	-	0.96 U	-	0.96 U	-	0.97 U	-	-
Carbazole	130	3.35	0.466 U	3 U	0.459 U	3 U	0.466 U	3.1 U	0.554 U	3.7 U
Chrysene	10	9.2	2.64 U	0.91 U	2.6 U	0.91 U	2.64 U	0.91 U	3.14 U	1.1 U
Dibenzo(a,h)anthracene	10	0.0092	3.72 U	0.99 U	3.66 U	0.99 U	3.72 U	1 U	4.41 U	1.2 U
Dibenzofuran	10	12.2	1.96 U	1.4 U	1.93 U	1.4 U	1.96 U	1.5 U	2.33 U	1.8 U
Diethyl phthalate	-	-	-	1.1 U	-	1.1 U	-	1.1 U	-	-
Dimethyl phthalate	-	-	-	1.2 U	-	1.2 U	-	1.2 U	-	-
Di-n-butyl phthalate	10,000	3,650	5.26 U	1 U	5.18 U	1 U	5.26 U	1.1 U	6.25 U	1.3 U
Di-n-octyl phthalate	2,000	730	2.15 U	0.9 U	2.11 U	0.9 U	2.15 U	0.91 U	2.55 U	1.1 U
Fluoranthene	-	-	-	1.1 U	-	1.1 U	-	1.1 U	-	-
Fluorene	1,900	243	1.91 U	1.5 U	1.88 U	1.5 U	1.91 U	1.5 U	2.26 U	1.8 U
Hexachlorobenzene	1	0.042	2.8 U	1.2 U	2.76 U	1.2 U	2.8 U	1.2 U	3.33 U	1.5 U
Hexachlorobutadiene	1	0.86	2.47 U	1.4 U	2.44 U	1.4 U	2.47 U	1.4 U	2.94 U	1.7 U
Hexachlorocyclopentadiene	50	219	2.75 U	5.9 U	2.7 U	5.9 U	2.75 U	6 U	3.26 U	7.3 U
Hexachloroethane	1	4.8	2.09 U	1.3 U	2.06 U	1.3 U	2.09 U	1.3 U	2.49 U	1.6 U
Indeno(1,2,3-cd)pyrene	10 (g)	0.092	2.18 U	0.95 U	2.15 U	0.95 U	2.18 U	0.96 U	2.59 U	1.2 U
Isophorone	100	70.5	1.88 U	1.3 U	1.85 U	1.3 U	1.88 U	1.3 U	2.24 U	1.6 U
Naphthalene	100	6.5	2.94 U	1.4 U	2.89 U	1.4 U	2.94 U	1.4 U	3.49 U	1.7 U
Nitrobenzene	51	3.5	1.69 U	1.4 U	1.67 U	1.4 U	1.69 U	1.4 U	2.01 U	1.7 U
N-Nitroso-di-n-propylamine	10 (g)	0.0096	1.62 U	1.5 U	1.6 U	1.5 U	1.62 U	1.5 U	1.93 U	1.8 U
N-Nitrosodiphenylamine	530	14	4.49 U	4 U	4.42 U	4 U	4.49 U	4 U	5.34 U	4.9 U
Pentachlorophenol	1	0.56	1.79 U	0.78 U	1.76 U	0.78 U	1.79 U	0.78 U	2.13 U	0.95 U
Phenanthrene	1,100	-	1.85 U	1 U	1.82 U	1 U	1.85 U	1 U	2.2 U	1.2 U
Phenol	4,000	10,950	0.768 U	1.9 U	0.756 U	1.9 U	0.768 U	1.9 U	0.913 U	2.3 U
Pyrene	130	182.5	2.96 U	0.89 U	2.91 U	0.89 U	2.96 U	0.9 U	3.51 U	1.1 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 7 DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 7
Crompton Corporation
Petrolia, Pennsylvania

		Sample ID:	MW-9		MW-9		MW-10		MW-11	
		Sample Date:	01/10/02	02/06/2003 (fn)	01/10/02	01/30/2003 (fn)	01/10/02	01/30/2003 (fn)	01/10/02	04/10/03
Metals (mg/l)	ACT 2 MSC (d)	RBC (e)								
Aluminum, Dissolved	0.2	37	[redacted]	0.0394 B	0.05 U	0.0179 B	0.186	0.0824 B	[redacted]	0.0915 B
Aluminum, Total	-	-	36.5 K	1.95 K	28.5 K	0.0484 B	6.499 K	0.784	13.96 K	9.55 K
Antimony, Dissolved	0.03 (g)	0.015	0.0016	0.0038 U	0.0017	0.0038 U	0.0018	0.0038 U	0.033	0.00029 B
Antimony, Total			0.0005 UJ	0.0038 U	0.000785 J	0.0038 U	0.0005 UL	0.0038 U	0.00117 L	0.00035 B
Arsenic, Dissolved	0.05	0.000045	0.002 U	0.0024 UJ	0.002 U	0.0024 U	0.002 U	0.0024 U	0.02 U	0.0024 U
Arsenic, Total	-		0.00611	0.0024 UJ	0.0206	0.0024 U	0.002 U	0.0029 J	0.129	0.0024 U
Barium, Dissolved	2	2.6	0.0893 L	0.0779 J	0.02 L	0.0225 J	0.0219 L	0.0257 J	0.0642 L	0.0204 J
Barium, Total	-	-	0.514 L	0.1 J	0.341 L	0.0244 J	0.0245 L	0.0246 J	5.39 L	0.0864 J
Beryllium, Dissolved	0.004	0.073	0.000484 J	0.00088 B	0.00025 U	0.00047 U	0.00025 U	0.00047 U	[redacted]	0.0013 B
Beryllium, Total	-	-	0.0031 J	0.00049 B	0.00406	0.00047 U	0.00025 U	0.00047 U	0.143	0.002 B
Boron, Dissolved	0.6	3.3	0.033 U	0.0348 J	0.0832 J	0.0668 J	0.0476 J	0.0596 J	0.181	0.101 J
Boron, Total	-	-	0.0421 J	0.0339 J	0.0861 L	0.0684 J	0.0424 J	0.0624 J	0.0367 J	0.105 J
Cadmium, Dissolved	0.005	0.018	0.0025 U	0.00024 U	0.0025 U	0.00024 U	0.0025 U	0.00024 U	0.0025 U	0.0006 J
Cadmium, Total	-	-	0.0025 U	0.00024 U	0.0025 U	0.00024 U	0.0025 U	0.00024 U	0.00396 J	0.00079 U
Chromium, Dissolved	0.1	0.11 (j)	0.0078 J	0.0011 UL	0.0025 U	0.0011 U	0.0025 J	0.0011 U	[redacted]	0.00063 U
Chromium, Total	-	-	0.186 L	0.008 L	0.347 L	0.0011 U	0.00453 L	0.0024 J	5.6 L	0.0487
Cobalt, Dissolved	2	0.73	0.0034 J	0.0017 U	0.0025 U	0.0017 U	0.0025 U	0.0017 U	0.0499	0.0016 B
Cobalt, Total	-	-	0.0239 L	0.0017 U	0.0603 L	0.0017 U	0.0025 UL	0.0017 U	1.07 L	0.009 J
Copper, Dissolved	1	1.5	0.005 U	0.0011 U	0.005 U	0.0019 J	0.005 U	0.0011 J	0.0246	0.0011 U
Copper, Total	-	-	0.0679	0.0072 J	0.0576	0.0014 J	0.005 U	0.0051 J	2.82	0.0161 J
Iron, Dissolved	0.3	11	[redacted] L	[redacted] L	0.0727 L	0.0326 U	[redacted] L	[redacted]	[redacted] L	0.017 U
Iron, Total	-	-	34.2 K	2.85 L	52.8 K	0.0326 U	4.52 K	5.73	4.53 K	15.4
Lead, Dissolved	0.005	-	[redacted]	0.0023 U	0.0025 U	0.0023 U	0.0041 B	0.0023 U	[redacted]	0.0026 U
Lead, Total	-	-	0.0324 L	0.0046	0.0944 L	0.0023 U	0.00486 B	0.0038	1.31 L	0.0072
Manganese, Dissolved	0.05	0.73 (k)	[redacted] L	[redacted]	0.0267 L	0.0038 J	[redacted] L	[redacted]	[redacted] L	[redacted]
Manganese, Total	-	-	1.53 L	0.728	1.51 L	0.0051 J	2.74 L	2.66	71.5 L	1.19
Mercury, Dissolved	2	-	0.000052 U	0.093 U	0.000052 U	0.093 U	0.000052 U	0.093 U	0.000052 U	0.025 U
Mercury, Total	-	-	0.000052 U	0.093 U	0.000065 B	0.093 U	0.000052 U	0.093 U	0.0017	0.098 B
Nickel, Dissolved	0.1	0.73	0.0161 J	0.0018 U	0.0144 J	0.0026 J	0.005 U	0.0018 U	[redacted]	0.0136 J
Nickel, Total	-	-	0.131 L	0.0068 J	0.268 L	0.003 J	0.005 UL	0.0028 J	4.97 L	0.053
Selenium, Dissolved	0.05	0.18	0.005 U	0.0027 UL	0.005 U	0.0027 U	0.005 U	0.0027 U	0.005 U	0.0034 J
Selenium, Total	-	-	0.005 U	0.0027 UL	0.005 U	0.0027 U	0.005 U	0.0027 U	0.1 U	0.0023 U
Silver, Dissolved	0.1	0.18	0.002 U	0.00065 U	0.002 U	0.00065 U	0.002 U	0.00065 U	0.0027 J	0.00058 U
Silver, Total	-	-	0.002 U	0.00065 U	0.002 U	0.00065 U	0.002 U	0.00065 U	0.0051	0.00058 U
Thallium, Dissolved	0.04 (g)	0.0026	0.00017 J	0.0056 B	0.0001 U	0.0055 U	0.00016 J	0.0055 U	0.00026	0.000033 U
Thallium, Total	-	-	0.000476	0.0158 B	0.000379	0.0055 U	0.000165 J	0.0055 U	0.0136	0.000037 B
Tin, Dissolved	61	22	0.05 U	0.0037 U	0.05 U	0.0037 U	0.05 U	0.0037 U	0.05 U	0.0045 U
Tin, Total	-	-	0.05 U	0.0075 J	0.05 U	0.0037 U	0.05 U	0.0037 U	0.05 U	0.0057 J
Vanadium, Dissolved	0.72	0.26	0.005 U	0.0022 U	0.005 U	0.0022 U	0.005 U	0.003 J	0.0401	0.0035 B
Vanadium, Total	-	-	0.0497	0.0026 J	0.0419	0.0022 U	0.005 U	0.0045 J	0.909	0.0202 J
Zinc, Dissolved	2	11	0.0183 L	0.0044 U	0.0147 L	0.0088 J	0.00591 B	0.006 J	0.118 L	0.0013 U
Zinc, Total	-	-	0.102 L	0.0401	0.198 L	0.0129 J	0.005 UL	0.0424	4.79 L	0.0651
General Chemistry (mg/l)										
Total Dissolved Solids	-	-	-	390	-	329	-	1,050	-	-

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 7 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 7
Crompton Corporation
Petrolia, Pennsylvania

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a/ I.D. = identification; mg/l = micrograms per liter; '-' = indicates no criterion developed or constituent not analyzed; mg/l = milligrams per liter.
b/ Data not validated.
c/ Sample and duplicate.
d/ Act 2 non-residential medium-specific concentrations (MSCs) for used aquifers, where Total Dissolved Solids less than or equal to 2,500.
The secondary maximum contaminant level is listed for aluminum, iron, and manganese.
e/ U.S. Region III Risk Based Concentration (RBC) for tapwater (April 2003).
f/ Data Qualifiers:
U = concentrations not detected at listed method detection limit
J = constituent detected at an estimated concentration for organics; method blank contamination for inorganics
B = method blank contamination for organics; constituent detected at an estimated concentration for inorganics
L = reported value may be biased low; actual value expected to be higher
R = result rejected for data validation
K = reported value may be biased high; actual value expected to be lower
g/ Practical Quantitation Limits (PQLs) were substitued for the criterion, except where TDS > 2,500.
h/ Criterion for 1,3-Dichloropropene.
i/ Criterion for xylenes.
j/ Criterion for Chromium VI.
k/ Criterion for manganese, nonfood.

Table 8 - DRAFT

Groundwater Sampling Results Summary
Management Area 8
Crompton Corporation
Petrolia, Pennsylvania (a)

		Sample I.D.:	952		954		960
		Sample Date:	01/11/02	04/09/03	01/11/02	01/09/02	04/10/03
Volatile Organic Compounds (µg/l)	ACT 2 MSC (b)	RBC (c)					
1,1,1,2-Tetrachloroethane	70	0.41	0.25 U (d)	0.13 U	0.25 U	0.25 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.125 U	0.16 U	0.125 U	0.125 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.25 U	0.12 U	0.25 U	0.25 U	0.12 U
1,1-Dichloroethene	7	353	0.5 U	0.21 U	0.5 U	0.5 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.125 U	0.16 U	0.125 U	0.125 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.75 U	0.18 U	0.75 U	0.75 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.2 U	0.16 U	0.2 U	0.2 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.25 U	0.11 U	0.66 J	0.25 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (e)	0.047	1 U	0.82 U	1 U	1 U	0.82 U
1,2-Dibromoethane	0.2 (e)	0.00075	**0.25** U	0.19 U	**0.25** U	**0.25** U	0.19 U
1,2-Dichloroethane	5	0.12	0.25 U	0.092 U	0.25 U	0.25 U	0.092 U
1,2-Dichloropropane	5	0.16	0.125 U	0.11 U	0.125 U	0.125 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 U	0.25 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.125 U	0.1 U	0.125 U	0.125 U	0.1 U
2-Butanone	5,800	1,906	2.5 UR	1.2 U	2.5 UR	2.5 U	1.2 U
2-Hexanone	-	1,460	2.5 U	1.2 U	2.5 U	2.5 U	1.2 U
4-Methyl-2-pentanone	410	2,000	2.5 UR	1 U	2.5 UR	2.5 U	1 U
Acetone	10,000	610	2.5 UR	2.5 U	3 L	2.5 UR	2.5 U
Benzene	5	0.34	0.125 U	0.11 U	0.27 J	0.125 U	0.11 U
Bromodichloromethane	100	0.17	0.25 U	0.12 U	0.25 U	0.25 U	0.12 U
Bromoform	100	8.5	0.54 U	0.18 U	0.54 U	0.54 U	0.18 U
Bromomethane	10	8.5	0.5 U	0.37 UJ	0.5 U	0.5 U	0.37 U
Carbon disulfide	4,100	1,043	0.5 U	0.16 U	0.5 U	0.5 U	0.16 U
Carbon tetrachloride	5	0.16	0.25 U	0.2 U	0.25 U	0.25 U	0.2 U
Chlorobenzene	100	106	0.125 U	0.11 U	0.125 U	0.125 U	0.11 U
Chloroethane	900	3.6	0.5 U	0.18 U	0.5 U	0.5 U	0.18 U
Chloroform	100	0.15	0.125 U	0.14 U	0.125 U	0.125 U	0.14 U
Chloromethane	3	190	0.25 U	0.075 U	0.25 U	0.25 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (f)	0.25 U	0.18 U	0.25 U	0.25 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.25 U	0.095 U	0.25 U	0.25 U	0.095 U
Ethylbenzene	700	1,340	0.25 U	0.11 U	0.47 J	0.25 U	0.11 U
Hexachlorobutadiene	1	0.86	0.25 U	-	0.25 U	0.25 U	-
Isopropylbenzene	2,300	658	0.25 U	0.17 U	0.25 U	0.25 U	0.17 U
m-,p-Xylene	10,000	212.6 (g)	0.5 U	0.33 U	1.1	0.5 U	0.33 U
Methylene chloride	5	4.1	0.25 U	0.16 U	0.25 U	0.25 U	0.16 U
Naphthalene	100	6.5	0.2 UJ	-	0.2 UJ	0.2 U	-
n-Butylbenzene	4,100	243	0.25 U	0.21 U	0.25 U	0.25 U	0.21 U
n-Propylbenzene	4,100	243	0.125 U	0.15 U	0.125 U	0.125 U	0.15 U
o-Xylene	10,000	212.6 (g)	0.25 U	0.14 U	2	0.25 U	0.14 U
p-Isopropyltoluene	-	-	0.25 U	0.14 U	0.25 U	0.25 U	0.14 U
sec-Butylbenzene	4,100	243	0.25 U	0.18 U	0.25 U	0.25 U	0.18 U
Styrene	100	1,624	0.125 U	0.11 U	0.45 J	0.125 U	0.11 U
tert-Butylbenzene	4,100	243	0.25 U	0.14 U	0.25 U	0.25 U	0.14 U
Tetrachloroethene	5	0.1	0.25 U	0.24 U	0.25 U	0.25 U	0.24 U
Toluene	1,000	747	0.25 U	0.14 U	0.25 U	0.25 U	0.22 J
Trichloroethene	5	0.026	0.25 U	0.095 U	0.25 U	0.25 U	0.095 U
Vinyl chloride	2	0.015	0.25 U	0.17 U	0.25 U	0.25 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 8 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 8
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	952		954		960
		Sample Date:	01/11/02	04/09/03	01/11/02	01/09/02	04/10/03
Metals (mg/l)	ACT 2 MSC (b)	RBC (c)					
Aluminum, Dissolved	0.2	37	0.05 U	0.0189 B	[redacted]	0.05 U	0.0196 B
Aluminum, Total	-	-	4.8	0.623 K	5.89	0.05 U	0.0379 B
Antimony, Dissolved	0.03 (e)	0.015	0.0019	0.00012 U	0.0023	0.0014	0.00012 U
Antimony, Total	-	-	0.0005 U	0.00012 U	0.0005 U	0.0005 U	0.00012 UL
Arsenic, Dissolved	0.05	0.000045	0.002 U	0.0024 U	0.002 U	0.002 U	0.0024 U
Arsenic, Total	-	-	0.00454	0.0024 U	0.002 U	0.002 U	0.0024 U
Barium, Dissolved	2	2.6	0.147 L	0.28	0.0834 L	0.106	0.102 J
Barium, Total	-	-	0.213 L	0.309	0.172 L	0.106	0.103 J
Beryllium, Dissolved	0.004	0.073	0.00025 U	0.001 B	0.00025 U	0.00025 U	0.0011 B
Beryllium, Total	-	-	0.000704 J	0.0014 B	0.000565 J	0.00025 U	0.0015 B
Boron, Dissolved	0.6	3.3	0.0652 J	0.0417 J	0.0512 J	0.0681 J	0.0292 J
Boron, Total	-	-	0.0587 J	0.0422 J	0.0719 J	0.0875 J	0.0292 J
Cadmium, Dissolved	0.005	0.018	0.0025 U	0.00039 U	0.0025 U	0.0025 U	0.00039 U
Cadmium, Total	-	-	0.0025 U	0.00039 U	0.0025 U	0.0025 U	0.00039 U
Chromium, Dissolved	0.1	0.11 (h)	0.0025 U	0.00063 J	0.0025 U	0.0025 U	0.00063 U
Chromium, Total	-	-	0.0213	0.0038 J	0.0223	0.0025 U	0.00063 U
Cobalt, Dissolved	2	0.73	0.0025 U	0.00059 U	0.0025 U	0.0025 U	0.00059 U
Cobalt, Total	-	-	0.0103 J	0.00078 B	0.0109 J	0.0025 U	0.00059 U
Copper, Dissolved	1	1.5	0.005 U	0.0011 U	0.005 U	0.005 U	0.0011 U
Copper, Total	-	-	0.00856 J	0.0011 U	0.00637 J	0.005 U	0.0011 U
Iron, Dissolved	0.3	11	[redacted] L	[redacted]	[redacted] L	[redacted] L	[redacted]
Iron, Total	-	-	12.7 L	8.4	12.2 L	5.69 L	6.47
Lead, Dissolved	0.005	-	0.0025 U	0.0026 U	0.0025 U	0.0025 U	0.0026 U
Lead, Total	-	-	0.0233	0.0026 U	0.0123	0.0025 U	0.0026 U
Manganese, Dissolved	0.05	0.73 (i)	[redacted] L	[redacted]	[redacted] L	[redacted]	[redacted]
Manganese, Total	-	-	0.886 L	0.84	0.345 L	1.18	1.24
Mercury, Dissolved	2	-	0.000052 U	0.025 U	0.000052 U	0.000052 U	0.025 U
Mercury, Total	-	-	0.000052 U	0.025 UL	0.000052 U	0.000052 U	0.025 UL
Nickel, Dissolved	0.1	0.73	0.005 U	0.00083 U	0.005 U	0.005 U	0.00083 U
Nickel, Total	-	-	0.0108 J	0.00083 U	0.0113 J	0.005 U	0.00083 U
Selenium, Dissolved	0.05	0.18	0.005 UL	0.0023 U	0.005 UL	0.005 U	0.0023 U
Selenium, Total	-	-	0.005 UL	0.0023 U	0.005 UL	0.005 U	0.0023 U
Silver, Dissolved	0.1	0.18	0.002 U	0.00058 U	0.002 U	0.002 U	0.00058 U
Silver, Total	-	-	0.002 U	0.00058 U	0.002 U	0.002 U	0.00058 U
Thallium, Dissolved	0.04 (e)	0.0026	0.0001 U	0.000033 U	0.0001 U	0.0001 U	0.000033 U
Thallium, Total	-	-	0.000177 J	0.000033 U	0.000152 J	0.000218	0.000033 U
Tin, Dissolved	61	22	0.05 U	0.0045 U	0.05 U	0.05 U	0.0045 U
Tin, Total	-	-	0.05 U	0.0045 U	0.05 U	0.05 U	0.0045 U
Vanadium, Dissolved	0.72	0.26	0.005 U	0.0017 B	0.005 U	0.005 U	0.002 B
Vanadium, Total	-	-	0.0118	0.0064 B	0.0121	0.005 U	0.002 B
Zinc, Dissolved	2	11	0.00865 J	0.0013 U	0.00985 UJ	0.00657 J	0.0013 U
Zinc, Total	-	-	0.0314 J	0.0044 B	0.0342 UJ	0.005 U	0.0013 U
General Chemistry (mg/l)							
Total Dissolved Solids	-	-	-	441	-	-	280

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 8 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 8
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	952		954		960
		Sample Date:	01/11/02	04/09/03	01/11/02	01/09/02	04/10/03
Semivolatile Organic Compounds (µg/l)	**ACT 2 MSC (b)**	**RBC (c)**					
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-	-	-
2,4,6-Trichlorophenol	31	6.1	1.78 U	1.5 U	1.72 U	1.78 U	1.5 U
2,4-Dichlorophenol	20	109.5	1.95 U	1.3 U	1.88 U	1.95 U	1.3 U
2,4-Dinitrophenol	50 (e)	73	9.35 U	1.6 U	9.02 U	9.35 U	1.6 U
2,4-Dinitrotoluene	10 (e)	73	1.47 U	1.3 U	1.42 U	1.47 U	1.3 U
2-Chlorophenol	40	30.4	1.74 U	1.4 U	1.68 U	1.74 U	1.4 U
2-Methylnaphthalene	2,000	-	2.13 U	1.6 U	2.06 U	2.13 U	1.6 U
2-Nitroaniline	20 (e)	-	1.62 U	1.1 U	1.56 U	1.62 U	1.1 U
3,3'-Dichlorobenzidine	20	-	4.49 U	3.9 U	4.33 U	4.49 U	4 U
3-Nitroaniline	5.8	3.35	1.61 U	2.7 U	1.55 U	1.61 U	2.8 U
4,6-Dinitro-2-methylphenol	-	3.65	2.31 U	1.4 U	2.23 U	2.31 U	1.4 U
4-Chloro-3-methylphenol	-	-	1.83 U	1.3 U	1.77 U	1.83 U	1.3 U
4-Nitroaniline	5.8	3.35	1.88 U	1.1 U	1.81 U	1.88 U	1.2 U
4-Nitrophenol	60	292	1.7 U	1.8 U	1.64 U	1.7 U	1.8 U
Acenaphthene	3,800	365	1.96 U	1.6 U	1.89 U	1.96 U	1.6 U
Benzo(a)anthracene	10 (e)	0.092	1.85 U	0.93 U	1.79 U	1.85 U	0.94 U
Benzo(a)pyrene	0.2	0.0092	1.84 U	2.5 U	1.78 U	1.84 U	2.5 U
Benzo(b)fluoranthene	10 (e)	0.092	2.27 U	0.86 U	2.19 U	2.27 U	0.87 U
Benzo(g,h,i)perylene	10 (e)	-	3.27 U	1 U	3.16 U	3.27 U	1 U
Benzo(k)fluoranthene	10 (e)	0.92	2.33 U	1.1 U	2.25 U	2.33 U	1.1 U
bis(2-Chloroethyl)ether	10 (e)	0.0096	1.65 U	1.4 U	1.59 U	1.65 U	1.5 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.56 U	0.91 U	2.47 U	2.56 U	0.92 U
Carbazole	130	3.35	0.459 U	3.2 U	0.443 U	0.459 U	3.2 U
Chrysene	10	9.2	2.6 U	0.95 U	2.51 U	2.6 U	0.96 U
Dibenzo(a,h)anthracene	10	0.0092	3.66 U	1 U	3.53 U	3.66 U	1 U
Dibenzofuran	10	12.2	1.93 U	1.5 U	1.86 U	1.93 U	1.5 U
Di-n-butyl phthalate	10,000	3,650	5.18 U	1.1 U	5 U	5.18 U	1.1 U
Di-n-octyl phthalate	2,000	730	2.11 U	0.95 U	2.04 U	2.11 U	0.96 U
Fluorene	1,900	243	1.88 U	1.5 U	1.81 U	1.88 U	1.6 U
Hexachlorobenzene	1	0.042	2.76 U	1.3 U	2.66 U	2.76 U	1.3 U
Hexachlorobutadiene	1	0.86	2.44 U	1.5 U	2.35 U	2.44 U	1.5 U
Hexachlorocyclopentadiene	50	219	2.7 U	6.3 U	2.61 U	2.7 U	6.3 U
Hexachloroethane	1	4.8	2.06 U	1.4 U	1.99 U	2.06 U	1.4 U
Indeno(1,2,3-cd)pyrene	10 (e)	0.092	2.15 U	1 U	2.07 U	2.15 U	1 U
Isophorone	100	70.5	1.85 U	1.4 U	1.79 U	1.85 U	1.4 U
Naphthalene	100	6.5	2.89 U	1.5 U	2.79 U	2.89 U	1.5 U
Nitrobenzene	51	3.5	1.67 U	1.5 U	1.61 U	1.67 U	1.5 U
N-Nitroso-di-n-propylamine	10 (e)	0.0096	1.6 U	1.5 U	1.54 U	1.6 U	1.6 U
N-Nitrosodiphenylamine	530	14	4.42 U	4.2 U	4.27 U	4.42 U	4.2 U
Pentachlorophenol	1	0.56	1.76 U	0.82 U	1.7 U	1.76 U	0.82 U
Phenanthrene	1,100	-	1.82 U	1.1 U	1.76 U	1.82 U	1.1 U
Phenol	4,000	10,950	0.756 U	2 U	0.73 U	0.756 U	2 U
Pyrene	130	182.5	2.91 U	0.94 U	2.81 U	2.91 U	0.95 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

a/ I.D. = identification, mg/l = micrograms per liter; '-' = indicates no criterion developed or constituent not analyzed, mg/l = milligrams per liter.
b/ Act 2 non-residential medium-specific concentrations (MSC's) for used aquifers, where Total Dissolved Solids less than or equal to 2,500.
The secondary maximum contaminant level is listed for aluminum, iron, and manganese.
c/ U.S. EPA Region III Risk Based Concentration (RBC) for tapwater (April 2003).
d/ Data Qualifiers:
U = concentrations not detected at listed method detection limit
J = constituent detected at an estimated concentration for organics; method blank contamination for inorganics
B = method blank contamination for organics; constituent detected at an estimated concentration for inorganics
L = reported value may be biased low; actual value expected to be higher
R = result rejected for data validation
e/ Practical Quantitation Limits (PQLs) were substitued for the criterion.
f/ Criterion for 1,3-Dichloropropene.
g/ Criterion for xylenes.
h/ Criterion for Chromium VI.
i/ Criterion for manganese, nonfood.

Table 9 - DRAFT

Groundwater Sampling Results Summary
Management Area 9
Crompton Corporation
Petrolia, Pennsylvania (a)

		Sample I.D.:	MB-30		MW-29		GW-1			GW-2		GW-3
		Sample Date:	01/11/02	04/02/03	01/08/02	04/08/03	1/11/2002 (b)	1/11/2002 (b)	04/02/03	01/10/02	04/01/03	04/02/03
Volatile Organic Compounds	ACT 2 MSC (c)	RBC (d)										
1,1,1,2-Tetrachloroethane	70	0.41	0.25 U (e)	0.13 U	0.25 UJ	0.13 U	0.25 U	0.25 U	0.13 U	0.25 U	0.13 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.125 U	0.16 U	0.125 UJ	0.16 U	0.125 U	0.125 U	0.16 U	0.125 U	0.16 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.25 U	0.12 U	0.25 UJ	0.12 U	0.25 U	0.25 U	0.12 U	0.25 U	0.12 U	0.12 U
1,1-Dichloroethane	7	353	0.5 U	0.21 U	0.5 UJ	0.21 U	0.5 U	0.5 U	0.21 U	0.5 U	0.21 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.125 U	0.16 U	0.125 UJ	0.16 U	0.125 U	0.125 U	0.16 U	0.125 U	0.16 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.75 U	0.18 U	0.75 UJ	0.18 U	0.75 U	0.75 U	0.18 U	0.75 U	0.18 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.2 U	0.16 U	0.2 UJ	0.16 U	0.2 U	0.2 U	0.16 U	0.2 U	0.16 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 UJ	0.11 U	0.25 U	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (f)	0.047	1 U	0.82 U	1 UJ	0.82 U	1 U	1 U	0.82 U	1 U	0.82 U	0.82 U
1,2-Dibromoethane	0.2 (f)	0.00075	0.25 U	0.19 U	0.25 UJ	0.19 U	0.25 U	0.25 U	0.19 U	0.25 U	0.19 U	0.19 U
1,2-Dichloroethane	5	0.12	0.25 U	0.092 U	0.25 UJ	0.092 U	0.25 U	0.25 U	0.092 U	0.25 U	0.092 U	0.092 U
1,2-Dichloropropane	5	0.16	0.125 U	0.11 U	0.125 UJ	0.11 U	0.125 U	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.25 U	0.11 U	0.25 UJ	0.11 U	0.25 U	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.125 U	0.1 U	0.125 UJ	0.1 U	0.125 U	0.125 U	0.1 U	0.125 U	0.1 U	0.1 U
2-Butanone	5,800	1,906	2.5 UR	1.2 U	2.5 UR	1.2 U	2.5 UR	2.5 UR	1.2 U	2.5 UR	1.2 U	1.2 U
2-Hexanone	-	1,460	2.5 U	1.2 U	2.5 UJ	1.2 U	2.5 U	2.5 U	1.2 U	2.5 U	1.2 U	1.2 U
4-Methyl-2-pentanone	410	2,000	2.5 UR	1 U	2.5 UJ	1 U	2.5 UR	2.5 UR	1 U	2.5 U	1 U	1 U
Acetone	10,000	610	2.5 UR	2.5 U	2.6 L	2.5 U	4.2 L	5.4 L	2.5 U	2.5 UR	2.5 U	2.5 U
Benzene	5	0.34	0.125 U	0.11 U	0.17 J	0.11 U	0.125 U	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
Bromodichloromethane	100	0.17	0.25 U	0.12 U	0.25 UJ	0.12 U	0.25 U	0.25 U	0.12 U	0.25 U	0.12 U	0.12 U
Bromoform	100	8.5	0.54 U	0.18 U	0.54 UJ	0.18 U	0.54 U	0.54 U	0.18 U	0.54 U	0.18 U	0.18 U
Bromomethane	10	8.5	0.5 U	0.37 UJ	0.5 UJ	0.37 UJ	0.5 U	0.5 U	0.37 UJ	0.5 U	0.37 UJ	0.37 UJ
Carbon disulfide	4,100	1,043	0.5 U	0.16 U	0.5 UJ	0.16 U	0.5 U	0.5 U	0.16 U	0.5 U	0.16 U	0.16 U
Carbon tetrachloride	5	0.16	0.25 U	0.2 U	0.25 UJ	0.2 U	0.25 U	0.25 U	0.2 U	0.25 U	0.2 U	0.2 U
Chlorobenzene	100	106	0.125 U	0.11 U	0.125 UJ	0.11 U	0.125 U	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
Chloroethane	900	3.6	0.5 U	0.18 U	0.5 UJ	0.18 U	0.5 U	0.5 U	0.18 U	0.5 U	0.18 U	0.18 U
Chloroform	100	0.15	0.125 U	0.14 U	0.125 UJ	0.14 U	0.125 U	0.125 U	0.14 U	0.125 U	0.14 U	0.14 U
Chloromethane	3	190	0.25 U	0.075 U	0.25 UJ	0.075 U	0.25 U	0.25 U	0.075 U	0.25 U	0.075 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.25 U	0.18 U	0.25 UJ	0.18 U	0.25 U	0.25 U	0.18 U	0.25 U	0.18 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.25 U	0.095 U	0.25 UJ	0.095 U	0.25 U	0.25 U	0.095 U	0.26 J	0.095 U	0.095 U
Ethylbenzene	700	1,340	0.25 U	0.11 U	0.25 UJ	0.11 U	0.25 U	0.25 U	0.11 U	0.25 U	0.11 U	0.11 U
Hexachlorobutadiene	1	0.86	0.25 U	-	0.25 UJ	-	0.25 U	0.25 U	-	0.25 U	-	-
Isopropylbenzene	2,300	658	0.25 U	0.17 U	0.25 UJ	0.17 U	0.25 U	0.25 U	0.17 U	0.25 U	0.17 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	0.5 U	0.33 U	0.5 UJ	0.33 U	0.5 U	0.5 U	0.33 U	0.5 U	0.33 U	0.33 U
Methylene chloride	5	4.1	0.25 U	0.16 U	0.25 UJ	0.16 U	0.25 U	0.25 U	0.16 U	0.25 U	0.16 U	0.16 U
Naphthalene	100	6.5	0.2 UJ	-	0.2 UJ	-	0.2 UJ	0.2 UJ	-	0.2 U	-	-
n-Butylbenzene	4,100	243	0.25 U	0.21 U	0.25 UJ	0.21 U	0.25 U	0.25 U	0.21 U	0.25 U	0.21 U	0.21 U
n-Propylbenzene	4,100	243	0.125 U	0.15 U	0.125 UJ	0.15 U	0.125 U	0.125 U	0.15 U	0.125 U	0.15 U	0.15 U
o-Xylene	10,000	212.6 (h)	0.25 U	0.14 U	0.25 UJ	0.14 U	0.25 U	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
p-Isopropyltoluene	-	-	0.25 U	0.14 U	0.25 UJ	0.14 U	0.25 U	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
sec-Butylbenzene	4,100	243	0.25 U	0.18 U	0.25 UJ	0.18 U	0.25 U	0.25 U	0.18 U	0.25 U	0.18 U	0.18 U
Styrene	100	1,624	0.125 U	0.11 U	0.125 UJ	0.11 U	0.125 U	0.125 U	0.11 U	0.125 U	0.11 U	0.11 U
tert-Butylbenzene	4,100	243	0.25 U	0.14 U	0.25 UJ	0.14 U	0.25 U	0.25 U	0.14 U	0.25 U	0.14 U	0.14 U
Tetrachloroethene	5	0.1	0.25 U	0.24 U	0.25 UJ	0.24 U	0.25 U	0.25 U	0.24 U	0.25 U	0.24 U	0.24 U
Toluene	1,000	747	0.25 U	0.14 U	0.38 J	0.23 J	0.25 U	0.25 U	0.26 J	0.25 U	0.14 U	0.14 U
Trichloroethene	5	0.026	0.25 U	0.095 U	0.25 UJ	0.095 U	0.25 U	0.25 U	0.095 U	0.25 U	0.095 U	0.095 U
Vinyl chloride	2	0.015	0.25 U	0.17 U	0.25 UJ	0.17 U	0.25 U	0.25 U	0.17 U	0.25 U	0.17 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 9 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 9
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MR-20		MW-29		OW-1			OW-2		OW-3
		Sample Date:	01/11/02	04/02/03	01/06/02	04/08/03	1/11/2002 (b)	1/11/2002 (b)	04/02/03	01/10/02	04/01/03	04/02/03
Semivolatile Organic Compounds	ACT 2 MSC (c)	RBC (d)										
1,2,4-Trichlorobenzene	70	7.2	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	75	0.47	-	-	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	31	6.1	1.72 U	1.5 U	1.79 UR	1.5 U	1.81 U	1.72 U	1.4 U	1.72 U	1.4 U	1.4 U
2,4-Dichlorophenol	20	109.5	1.88 U	1.3 U	1.96 UR	1.3 U	1.98 U	1.88 U	1.3 U	1.88 U	1.3 U	1.3 U
2,4-Dinitrophenol	50 (f)	73	9.02 U	1.6 U	9.4 UR	1.6 U	9.49 U	9.02 U	1.5 U	9.02 U	1.5 U	1.5 U
2,4-Dinitrotoluene	10 (f)	73	1.42 U	1.3 U	1.48 UR	1.3 U	1.49 U	1.42 U	1.2 U	1.42 U	1.2 U	1.2 U
2-Chlorophenol	40	30.4	1.68 U	1.4 U	1.75 UR	1.4 U	1.77 U	1.68 U	1.3 U	1.68 U	1.3 U	1.3 U
2-Methylnaphthalene	2,000	-	2.06 U	1.5 U	23 R	1.5 U	2.17 U	2.06 U	1.5 U	2.06 U	1.5 U	1.5 U
2-Nitroaniline	20 (f)	-	1.56 U	1.1 U	1.63 UR	1.1 U	1.64 U	1.56 U	1 U	1.56 U	1 U	1 U
3,3'-Dichlorobenzidine	20	-	4.33 U	3.9 U	4.51 UR	3.9 U	4.56 U	4.33 U	3.7 U	4.33 U	3.7 U	3.7 U
3-Nitroaniline	5.8	3.35	1.55 U	2.7 U	1.61 UR	2.7 U	1.63 U	1.55 U	2.6 U	1.55 U	2.6 U	2.6 U
4,6-Dinitro-2-methylphenol	-	3.65	2.23 U	1.4 U	2.32 UR	1.4 U	2.35 U	2.23 U	1.3 U	2.23 U	1.3 U	1.3 U
4-Chloro-3-methylphenol	-	-	1.77 U	1.3 U	1.84 UR	1.3 U	1.86 U	1.77 U	1.2 U	1.77 U	1.2 U	1.2 U
4-Nitroaniline	5.8	3.35	1.81 U	1.1 U	1.89 UR	1.1 U	1.91 U	1.81 U	1.1 U	1.81 U	1.1 U	1.1 U
4-Nitrophenol	60	292	1.64 U	1.8 U	1.71 UR	1.8 U	1.73 U	1.64 U	1.7 U	1.64 U	1.7 U	1.7 U
Acenaphthene	3,800	365	1.89 U	1.5 U	1.97 UR	1.5 U	1.99 U	1.89 U	1.5 U	1.89 U	1.5 U	1.5 U
Benzo(a)anthracene	10 (f)	0.092	1.79 U	0.92 U	1.86 UR	0.92 U	1.88 U	1.79 U	0.89 U	1.79 U	0.88 U	0.88 U
Benzo(a)pyrene	0.2	0.0092	1.78 U	2.5 U	1.85 UR	2.5 U	1.87 U	1.78 U	2.4 U	1.78 U	2.4 U	2.4 U
Benzo(b)fluoranthene	10 (f)	0.092	2.19 U	0.85 U	2.28 UR	0.85 U	2.31 U	2.19 U	0.81 U	2.19 U	0.81 U	0.81 U
Benzo(g,h,i)perylene	10 (f)	-	3.16 U	0.99 U	3.29 UR	0.99 U	3.33 U	3.16 U	0.95 U	3.16 U	0.94 U	0.94 U
Benzo(k)fluoranthene	10 (f)	0.92	2.25 U	1.1 U	2.34 UR	1.1 U	2.37 U	2.25 U	1 U	2.25 U	1 U	1 U
bis(2-Chloroethyl)ether	10 (f)	0.0096	1.59 U	1.4 U	1.66 UR	1.4 U	1.67 U	1.59 U	1.4 U	1.59 U	1.4 U	1.4 U
bis(2-Ethylhexyl)phthalate	6	4.8	2.47 U	0.9 U	**21.0** R	0.9 U	2.6 U	2.47 U	**7.6**	2.47 U	0.85 U	2.4 J
Carbazole	130	3.35	0.443 U	3.2 U	0.461 UR	3.2 U	0.466 U	0.443 U	3 U	0.443 U	3 U	3 U
Chrysene	10	9.2	2.51 U	0.94 U	2.61 UR	0.94 U	2.64 U	2.51 U	0.91 U	2.51 U	0.9 U	0.9 U
Dibenzo(a,h)anthracene	10	0.0092	3.53 U	1 U	3.68 UR	1 U	3.72 U	3.53 U	0.99 U	3.53 U	0.98 U	0.98 U
Dibenzofuran	10	12.2	1.86 U	1.5 U	3 R	1.5 U	1.96 U	1.86 U	1.4 U	1.86 U	1.4 U	1.4 U
Di-n-butyl phthalate	10,000	3,650	5 U	1.1 U	5.21 UR	1.1 U	5.26 U	5 U	1 U	5 U	1 U	1 U
Di-n-octyl phthalate	2,000	730	2.04 U	0.94 U	2.13 UR	0.94 U	2.15 U	2.04 U	0.9 U	2.8 J	0.89 U	0.89 U
Fluorene	1,900	243	1.81 U	1.5 U	1.89 UR	1.5 U	1.91 U	1.81 U	1.5 U	1.81 U	1.5 U	1.5 U
Hexachlorobenzene	1	0.042	2.66 U	1.2 U	2.77 UR	1.2 U	2.8 U	2.66 U	1.2 U	2.66 U	1.2 U	1.2 U
Hexachlorobutadiene	1	0.86	2.35 U	1.5 U	2.45 UR	1.5 U	2.47 U	2.35 U	1.4 U	2.35 U	1.4 U	1.4 U
Hexachlorocyclopentadiene	50	219	2.61 U	6.2 U	2.72 UR	6.2 U	2.75 U	2.61 U	5.9 U	2.61 U	5.9 U	5.9 U
Hexachloroethane	1	4.8	1.99 U	1.4 U	2.07 UR	1.4 U	2.09 U	1.99 U	1.3 U	1.99 U	1.3 U	1.3 U
Indeno(1,2,3-cd)pyrene	10 (f)	0.092	2.07 U	0.99 U	2.16 UR	0.99 U	2.18 U	2.07 U	0.95 U	2.07 U	0.94 U	0.94 U
Isophorone	100	70.5	1.79 U	1.4 U	1.86 UR	1.4 U	1.88 U	1.79 U	1.3 U	1.79 U	1.3 U	1.3 U
Naphthalene	100	6.5	2.79 U	1.5 U	18 R	1.5 U	2.94 U	2.79 U	1.4 U	2.79 U	1.4 U	1.4 U
Nitrobenzene	51	3.5	1.61 U	1.4 U	1.68 UR	1.4 U	1.69 U	1.61 U	1.4 U	1.61 U	1.4 U	1.4 U
N-Nitroso-di-n-propylamine	10 (f)	0.0096	1.54 U	1.5 U	1.6 UR	1.5 U	1.62 U	1.54 U	1.5 U	1.54 U	1.4 U	1.4 U
N-Nitrosodiphenylamine	530	14	4.27 U	4.1 U	4.45 UR	4.1 U	4.49 U	4.27 U	4 U	4.27 U	3.9 U	3.9 U
Pentachlorophenol	1	0.56	1.7 U	0.81 U	1.77 UR	0.81 U	1.79 U	1.7 U	0.78 U	1.7 U	0.77 U	0.77 U
Phenanthrene	1,100	-	1.76 U	1.1 U	9 R	1.1 U	1.85 U	1.76 U	1 U	1.76 U	1 U	1 U
Phenol	4,000	10,950	0.73 U	2 U	0.76 UR	2 U	0.768 U	0.73 U	1.9 U	0.73 U	1.9 U	1.9 U
Pyrene	130	182.5	2.81 U	0.93 U	2.93 UR	0.93 U	2.96 U	2.81 U	0.89 U	2.81 U	0.88 U	0.88 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 9 - DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 9
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	MB-29		MW-29		OW-1			OW-2		OW-3
		Sample Date:	01/11/02	04/02/03	01/08/02	04/08/03	1/11/2002 (b)	1/11/2002 (b)	04/02/03	01/10/02	04/01/03	04/02/03
Metals	**ACT 2 MSC (a)**	**RBC (d)**										
Aluminum, Dissolved	0.2	37	0.05 U	0.0156 U	0.0844 K	0.0315 B	[redacted]	[redacted]	[redacted]	0.05 U	0.0156 U	0.0156 U
Aluminum, Total		-	0.05 U	0.0156 U	49.6 K	9.06 K	14.1	13	13.1	4.03	0.0722 B	0.0648 B
Antimony, Dissolved	0.03 (f)	0.015	0.0021	0.00048 B	0.0019	0.00043 B	0.0015	0.0004 U	0.00022 B	0.0019	0.00012 UL	0.00023 B
Antimony, Total	-	-	0.0005 U	0.0018 B	0.000588 B	0.00012 UL	0.0005 U	0.0005 U	0.00031 B	0.0005 U	0.00012 UL	0.00012 B
Arsenic, Dissolved	0.05	0.000045	0.002 U	0.0024 U	0.00444	0.0056 J	[redacted]	[redacted]	[redacted]	0.002 U	0.0024 U	0.0024 B
Arsenic, Total	-	-	0.002 U	0.0074 U	0.0465	0.0109	0.204	0.173	0.19	0.002 U	0.0024 U	0.0024 U
Barium, Dissolved	2	2.6	0.0559 L	0.0837 J	0.111	0.186 J	0.00742 L	0.00834 L	0.012 J	0.0177 L	0.0237 J	0.0404 J
Barium, Total	-	-	0.0636 L	0.0868 J	0.515	0.275	0.0152 L	0.0088 L	0.0133 J	0.12	0.0257 J	0.0726 J
Beryllium, Dissolved	0.004	0.073	0.00025 U	0.00029 U	0.00025 U	0.0011 B	[redacted]	[redacted]	[redacted]	0.00025 U	0.00029 U	0.00029 U
Beryllium, Total	-	-	0.00025 U	0.00029 U	0.00542	0.0025 B	0.0183	0.0181	0.0152	0.000451 J	0.00029 U	0.00029 U
Boron, Dissolved	0.6	3.3	0.0515 J	0.0326 B	0.033 U	0.0204 J	0.0633 J	0.0468 J	0.0499 J	0.0342 J	0.0362 B	0.322
Boron, Total	-	-	0.0385 J	0.0336 B	0.25	0.0267 J	0.0525 J	0.0532 J	0.0522 J	0.0427 J	0.037 B	0.232
Cadmium, Dissolved	0.005	0.018	0.0075 U	0.00039 U	0.0025 U	0.00039 U	0.0025 U	0.0025 U	0.00039 U	0.0025 U	0.00039 U	0.00039 U
Cadmium, Total	-	-	0.0025 U	0.00039 U	0.0025 U	0.00039 U	0.0025 U	0.0025 U	0.00039 U	0.0025 U	0.00045 J	0.00039 U
Chromium, Dissolved	0.1	0.11 (i)	0.0025 U	0.00063 U	0.0025 U	0.00063 U	0.012 J	0.0126 J	0.0046 J	0.0025 U	0.00063 U	0.0018 J
Chromium, Total	-	-	0.0025 U	0.00063 U	0.162	0.0144	0.0168 J	0.0141 J	0.0053	0.0334	0.00066 J	0.0015 J
Cobalt, Dissolved	2	0.73	0.0025 U	0.00059 U	0.0025 U	0.00059 U	0.0732	0.0762	0.0841	0.0025 U	0.0011 B	0.008 B
Cobalt, Total	-	-	0.0025 U	0.00059 U	0.0459	0.0064 J	0.0757	0.0728	0.0898	0.00427 J	0.0013 B	0.0059 B
Copper, Dissolved	1	1.5	0.005 U	0.0014 B	0.005 U	0.0011 U	0.005 U	0.005 U	0.0032 B	0.005 U	0.0018 B	0.0031 B
Copper, Total	-	-	0.005 U	0.0028 B	0.0619	0.0108 J	0.00835 J	0.005 U	0.0053 B	0.00844 J	0.0036 B	0.0052 B
Iron, Dissolved	0.3	11	0.0509 L	0.017 U	0.147 K	[redacted]	[redacted] L	[redacted] L	[redacted]	[redacted] L	[redacted]	[redacted]
Iron, Total	-	-	0.138 L	0.017 U	81.9 K	15.2	77.3 L	74.2 L	97.7	4.49	2.24	2.34
Lead, Dissolved	0.005	-	0.0025 U	0.0026 U	0.0025 U	0.0026 U	[redacted]	[redacted]	0.0039 K	0.00442 J	0.0026 U	0.0026 U
Lead, Total	-	-	0.0025 U	0.0026 U	0.064	0.0093	0.0177	0.0143	0.0032 K	0.00841	0.0026 U	0.0026 U
Manganese, Dissolved	0.05	0.73 (j)	0.0153	0.00016 U	[redacted]	[redacted]	[redacted] L	[redacted] L	[redacted]	[redacted] L	[redacted]	[redacted]
Manganese, Total	-	-	0.0759 L	0.0509 B	2.36	0.977	1.5 L	1.46 L	1.76	0.992	0.942	4.13
Mercury, Dissolved	2	-	0.005 U	0.025 U	0.000052 U	0.025 U	0.000052 U	0.000052 U	0.025 U	0.000052 U	0.049 B	0.025 U
Mercury, Total	-	-	0.005 U	0.025 U	0.000059 J	0.025 UL	0.000052 U	0.000052 U	0.025 U	0.000052 U	0.048 B	0.025 U
Nickel, Dissolved	0.1	0.73	0.005 UL	0.00083 U	0.005 U	0.00083 U	[redacted]	[redacted]	[redacted]	0.00528 J	0.00089 J	0.004 J
Nickel, Total	-	-	0.005 UL	0.00083 U	0.144	0.0144 J	0.199	0.188	0.223	0.0243 J	0.0022 J	0.0025 J
Selenium, Dissolved	0.05	0.18	0.002 U	0.0023 U	0.005 U	0.0023 U	0.01 UL	0.005 UL	0.0025 K	0.005 UL	0.0023 U	0.0023 U
Selenium, Total	-	-	0.002 U	0.0041 K	0.005 U	0.0023 U	0.01 UL	0.005 UL	0.0058 K	0.00811 B	0.0023 U	0.0023 U
Silver, Dissolved	0.1	0.18	0.0001 U	0.00058 U	0.002 U	0.00058 U	0.002 U	0.002 U	0.00058 U	0.002 U	0.00058 U	0.00058 U
Silver, Total	-	-	0.000102 J	0.00058 U	0.002 U	0.00058 U	0.002 U	0.002 U	0.00058 U	0.00206 J	0.00058 U	0.00058 U
Thallium, Dissolved	0.04 (f)	0.0026	0.05 U	0.000033 U	0.0001 U	0.000033 U	0.0031	0.0031	0.0028	0.00015 J	0.000033 U	0.000033 U
Thallium, Total	-	-	0.05 U	0.000033 U	0.000412 B	0.000033 U	0.00337	0.00325	0.0027	0.000204	0.000033 U	0.000033 U
Tin, Dissolved	61	22	0.005 U	0.0045 U	0.05 U	0.0045 U	0.05 U	0.05 U	0.0137 J	0.05 U	0.0045 U	0.0045 U
Tin, Total	-	-	0.005 U	0.0058 J	0.05 U	0.0045 U	0.05 U	0.05 U	0.012 J	0.05 U	0.0045 U	0.0045 U
Vanadium, Dissolved	0.72	0.26	0.005 UJ	0.0031 J	0.005 U	0.001 U	0.00581 J	0.0058 J	0.0105 J	0.005 U	0.0014 J	0.001 U
Vanadium, Total	-	-	0.005 UJ	0.0034 J	0.0819	0.0162 J	0.007 J	0.00599 J	0.0104 J	0.00598 J	0.003 J	0.001 U
Zinc, Dissolved	2	11	0.000052 U	0.0013 U	0.00757 J	0.0047 B	0.307 UJ	0.313 UJ	0.361	0.00733 J	0.0013 U	0.0047 J
Zinc, Total	-	-	0.000052 U	0.0013 U	0.226	0.0557	0.317 UJ	0.301 UJ	0.377	0.0196 J	0.0013 U	0.005 J
General Chemistry		-										
Total Dissolved Solids	-		-	375	-	131	-	-	1,220	-	1,260	900

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Groundwater Sampling Results Summary
Management Area 9
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	GW-4	GW-4		GW-4	
		Sample Date:	04/02/03	01/08/02	04/02/2002 (b)	01/09/02	04/03/03
Volatile Organic Compounds	ACT 2 MSC (c)	RBC (d)					
1,1,1,2-Tetrachloroethane	70	0.41	0.13 U	0.25 U	0.13 U	0.25 U	0.13 U
1,1,2,2-Tetrachloroethane	0.3	0.053	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,1,2-Trichloroethane	5	0.19	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
1,1-Dichloroethane	7	353	0.21 U	0.5 U	0.21 U	0.5 U	0.21 U
1,2,3-Trichlorobenzene	-	-	0.16 U	0.125 U	0.16 U	0.125 U	0.16 U
1,2,3-Trichloropropane	40	0.0053	0.18 U	0.75 U	0.18 U	0.75 U	0.18 U
1,2,4-Trichlorobenzene	70	7.2	0.16 U	0.2 U	0.16 U	0.2 U	0.16 U
1,2,4-Trimethylbenzene	35	12	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
1,2-Dibromo-3-chloropropane	5 (f)	0.047	0.82 U	1 U	0.82 U	1 U	0.82 U
1,2-Dibromoethane	0.2 (f)	0.00075	0.19 U	0.25 U	0.19 U	0.25 U	0.19 U
1,2-Dichloroethane	5	0.12	0.092 U	0.25 U	0.092 U	0.25 U	0.092 U
1,2-Dichloropropane	5	0.16	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
1,3,5-Trimethylbenzene	35	12	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
1,4-Dichlorobenzene	75	0.47	0.1 U	0.125 U	0.1 U	0.125 U	0.1 U
2-Butanone	5,800	1,906	1.2 U	2.5 UR	1.3 J	2.5 UR	1.2 U
2-Hexanone	-	1,460	1.2 U	2.5 U	1.2 U	2.5 U	1.2 U
4-Methyl-2-pentanone	410	2,000	1 U	2.5 U	1 U	2.5 U	1 U
Acetone	10,000	610	2.5 U	6.9 L	6.9 B	14 L	5 B
Benzene	5	0.34	0.11 U	0.125 U	0.11 U	[redacted]	2
Bromodichloromethane	100	0.17	0.12 U	0.25 U	0.12 U	0.25 U	0.12 U
Bromoform	100	8.5	0.18 U	0.54 U	0.18 U	0.54 U	0.18 U
Bromomethane	10	8.5	0.37 UJ	0.5 U	0.37 UJ	0.5 U	0.37 UJ
Carbon disulfide	4,100	1,043	0.16 U	0.5 U	0.16 U	0.5 U	0.16 U
Carbon tetrachloride	5	0.16	0.2 U	0.25 U	0.2 U	0.25 U	0.2 U
Chlorobenzene	100	106	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
Chloroethane	900	3.6	0.18 U	0.5 U	0.27 J	0.5 U	0.18 U
Chloroform	100	0.15	0.14 U	0.125 U	0.14 U	0.125 U	0.14 U
Chloromethane	3	190	0.075 U	0.25 U	0.48 J	0.25 U	0.075 U
cis-1,3-Dichloropropene	-	0.44 (g)	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Dichlorodifluoromethane	1,000	347.6	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Ethylbenzene	700	1,340	0.11 U	0.25 U	0.11 U	0.25 U	0.11 U
Hexachlorobutadiene	1	0.86	-	0.25 U	-	0.25 U	-
Isopropylbenzene	2,300	658	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U
m-,p-Xylene	10,000	212.6 (h)	0.33 U	0.5 U	0.33 U	0.5 U	0.33 U
Methylene chloride	5	4.1	0.16 U	0.25 U	0.16 U	0.25 U	0.16 U
Naphthalene	100	6.5	-	0.2 U	-	0.2 U	-
n-Butylbenzene	4,100	243	0.21 U	0.25 U	0.21 U	0.25 U	0.21 U
n-Propylbenzene	4,100	243	0.15 U	0.125 U	0.15 U	0.125 U	0.15 U
o-Xylene	10,000	212.6 (h)	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
p-Isopropyltoluene	-	-	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
sec-Butylbenzene	4,100	243	0.18 U	0.25 U	0.18 U	0.25 U	0.18 U
Styrene	100	1,624	0.11 U	0.125 U	0.11 U	0.125 U	0.11 U
tert-Butylbenzene	4,100	243	0.14 U	0.25 U	0.14 U	0.25 U	0.14 U
Tetrachloroethene	5	0.1	0.24 U	0.25 U	0.24 U	0.25 U	0.24 U
Toluene	1,000	747	0.27 J	0.25 U	0.14 U	0.25 U	0.37 J
Trichloroethene	5	0.026	0.095 U	0.25 U	0.095 U	0.25 U	0.095 U
Vinyl chloride	2	0.015	0.17 U	0.25 U	0.17 U	0.25 U	0.17 U

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Table 9 DRAFT (continued)

Groundwater Sampling Results Summary
Management Area 9
Crompton Corporation
Petrolia, Pennsylvania

		Sample I.D.:	OW-4	OW-4		OW-4	
		Sample Date:	04/02/03	01/08/02	04/02/03	01/09/02	04/03/03
Metals	ACT 2 MSC (c)	RBC (d)					
Aluminum, Dissolved	0.2	37	0.0156 U	0.5 UL	0.0278 B	[redacted] L	[redacted]
Aluminum, Total	-	-	0.0156 U	56.2 L	0.253	13 L	9.94
Antimony, Dissolved	0.05 (f)	0.015	0.0017 B	0.0063	0.0011 B	0.0018	0.00012 UL
Antimony, Total	-	-	0.0017 B	0.00441	0.00097 B	0.0005 U	0.00012 UL
Arsenic, Dissolved	0.05	0.000045	0.0024 U	0.0374 L	0.016	0.0432 L	0.0025 B
Arsenic, Total	-	-	0.0024 U	0.243 L	0.0139	0.0608 L	0.0053 B
Barium, Dissolved	2	2.6	0.0276 J	0.025 UL	0.0269 J	0.0092 L	0.0102 J
Barium, Total	-	-	0.0295 J	1.88 L	0.0322 J	0.0717 L	0.0118 J
Beryllium, Dissolved	0.004	0.073	0.00029 U	0.0025 UL	0.00029 U	[redacted] L	[redacted]
Beryllium, Total	-	-	0.00029 U	0.00968 L	0.00029 U	0.00539 L	0.005 B
Boron, Dissolved	0.6	3.3	0.0209 B	[redacted]	[redacted]	0.12	0.11 J
Boron, Total	-	-	0.0228 B	1.98	2.8	0.12	0.117 J
Cadmium, Dissolved	0.005	0.018	0.00039 U	0.025 UL	0.00039 U	0.0025 UL	0.001 J
Cadmium, Total	-	-	0.00039 U	0.025 UL	0.00039 U	0.0025 UL	0.0012 J
Chromium, Dissolved	0.1	0.11 (i)	0.00063 U	0.025 UL	0.0014 J	0.0196 L	0.0051
Chromium, Total	-	-	0.00063 U	0.098 L	0.0017 J	0.0346 L	0.0059
Cobalt, Dissolved	2	0.73	0.00059 U	0.025 UL	0.0013 B	0.333 L	0.479
Cobalt, Total	-	-	0.00059 U	0.0504 L	0.0016 B	0.327 L	0.516
Copper, Dissolved	1	1.5	0.0015 B	0.05 UL	0.0061 B	0.005 UL	0.0012 B
Copper, Total	-	-	0.003 B	0.181 L	0.012 B	0.0334 L	0.0029 B
Iron, Dissolved	0.3	11	0.017 U	[redacted] B	0.017 U	[redacted] L	[redacted]
Iron, Total	-	-	0.153 B	107 L	0.311 B	46.2 L	24.1
Lead, Dissolved	0.005	-	0.0026 U	0.025 UL	0.0026 U	[redacted] L	0.0035 K
Lead, Total	-	-	0.0026 U	0.099 L	0.0026 U	0.0218 L	0.0034 K
Manganese, Dissolved	0.05	0.73 (j)	0.0043 B	[redacted] L	[redacted]	[redacted] L	[redacted]
Manganese, Total	-	-	0.01 B	3.18 L	0.106	27.2 L	37.8
Mercury, Dissolved	2	-	0.025 U	0.000052 U	0.088 B	0.000052 U	0.025 U
Mercury, Total	-	-	0.025 U	0.00057	0.13 B	0.000072 B	0.028 B
Nickel, Dissolved	0.1	0.73	0.007 J	0.05 UL	0.0025 J	[redacted] L	[redacted]
Nickel, Total	-	-	0.0039 J	0.114 L	0.0043 J	0.194 L	0.239
Selenium, Dissolved	0.05	0.18	0.0047 K	0.05 UL	0.0023 U	0.0118 L	0.0046 UL
Selenium, Total	-	-	0.0043 K	0.05 UL	0.0024 K	0.0119 L	0.0046 UL
Silver, Dissolved	0.1	0.18	0.00058 U	0.02 UL	0.00058 U	0.00875 L	0.0031 J
Silver, Total	-	-	0.00058 U	0.02 UL	0.00058 U	0.00902 L	0.0036 J
Thallium, Dissolved	0.04 (f)	0.0026	0.000033 U	0.0001 B	0.00081 J	0.00047	0.00014 B
Thallium, Total	-	-	0.000033 U	0.00815	0.00071 J	0.00117	0.00016 J
Tin, Dissolved	61	22	0.0045 U	0.0957 J	0.0362 J	0.05 U	0.0045 U
Tin, Total	-	-	0.0045 U	0.458 J	0.0345 J	0.05 U	0.0069 J
Vanadium, Dissolved	0.72	0.26	0.001 U	0.05 UL	0.009 J	0.005 UL	0.001 U
Vanadium, Total	-	-	0.0013 B	0.177 L	0.0089 J	0.005 UL	0.0015 J
Zinc, Dissolved	2	11	0.0266	0.05 UL	0.0013 U	0.385 L	0.449
Zinc, Total	-	-	0.0162 J	0.276 L	0.0231	0.383 L	0.475
General Chemistry		-					
Total Dissolved Solids	-		767	-	5,620	-	1,660

Bolded and shaded concentrations indicate a constituent concentration is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

Bolded concentrations indicate a detection limit is greater than the Act 2 MSC or the RBC where an Act 2 MSC value is not available.

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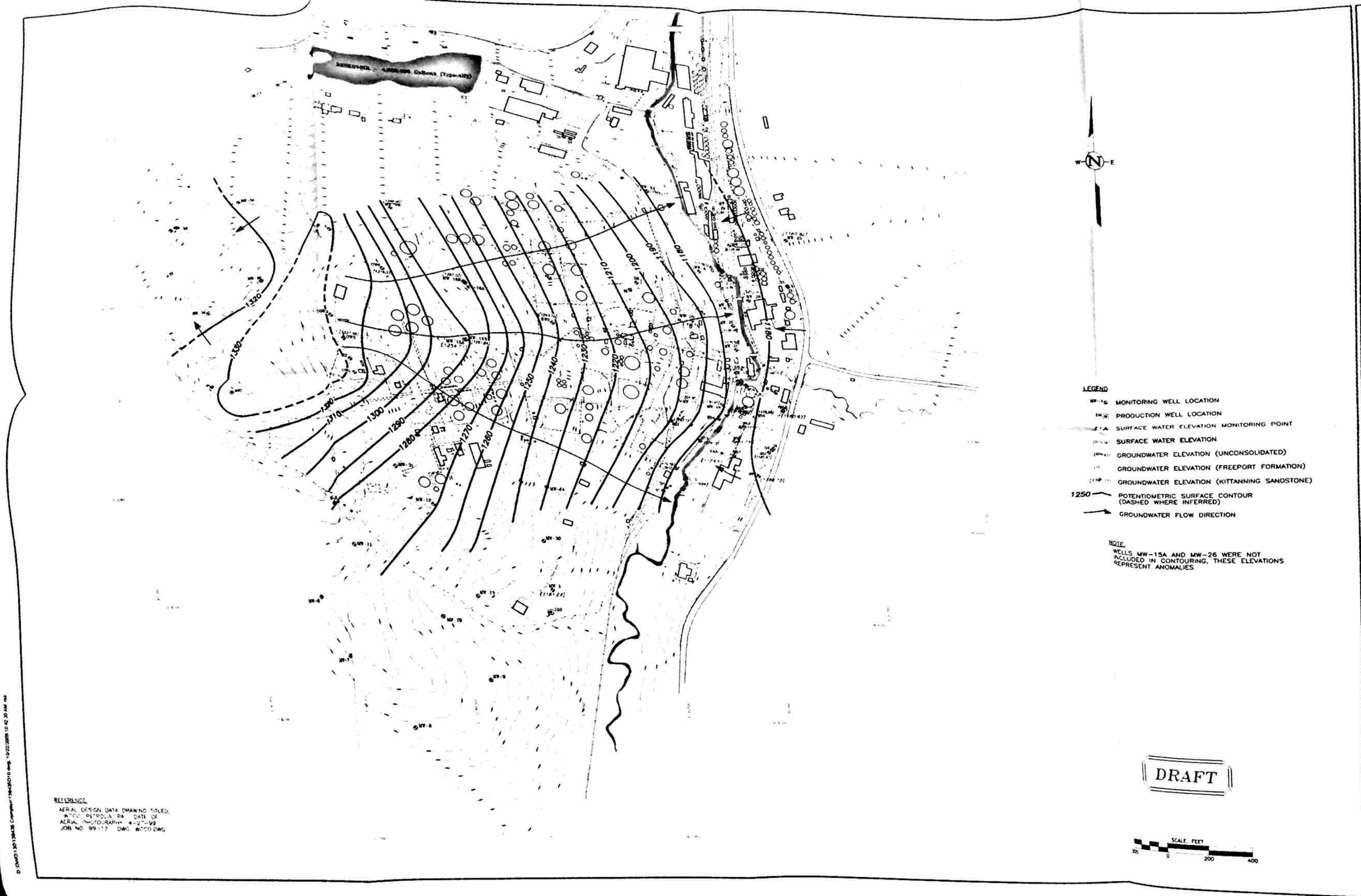
a/ I.D. = identification; mg/l = micrograms per liter; '-' = indicates no criterion developed or constituent not analyzed; mg/l = milligrams per liter.
b/ Sample and duplicate.
c/ Act 2 medium-specific concentrations (MSCs) for used aquifers, where Total Dissolved Solids (TDS) less than or equal to 2,500.
The secondary maximum contaminant level is listed for aluminum, iron, and manganese.
d/ Act 2 Risk Based Criteria (RBC) for tapwater (April 2003).
e/ Data Qualifiers:
U = concentrations not detected at listed method detection limit
J = constituent detected at an estimated concentration for organics, method blank contamination for inorganics
B = method blank contamination for organics; constituent detected at an estimated concentration for inorganics
L = reported value may be biased low, actual value expected to be higher
R = result rejected for data validation
K = reported value may be based high, actual value expected to be higher.
f/ Practical Quantitation Limits (PQLs) were substituted for the criterion, except where TDS > 2,500.
g/ TDS value greater than 2,500 Act 2 MSCs for used aquifers, where TDS > 2,500 used for comparison.
h/ Criterion for 1,3-Dichloropropene.
i/ Criterion for xylenes.
j/ Criterion for Chromium VI.
k/ Criterion for manganese, nonfood.



REVISIONS

REV	DESCRIPTION
B	
B	
C	

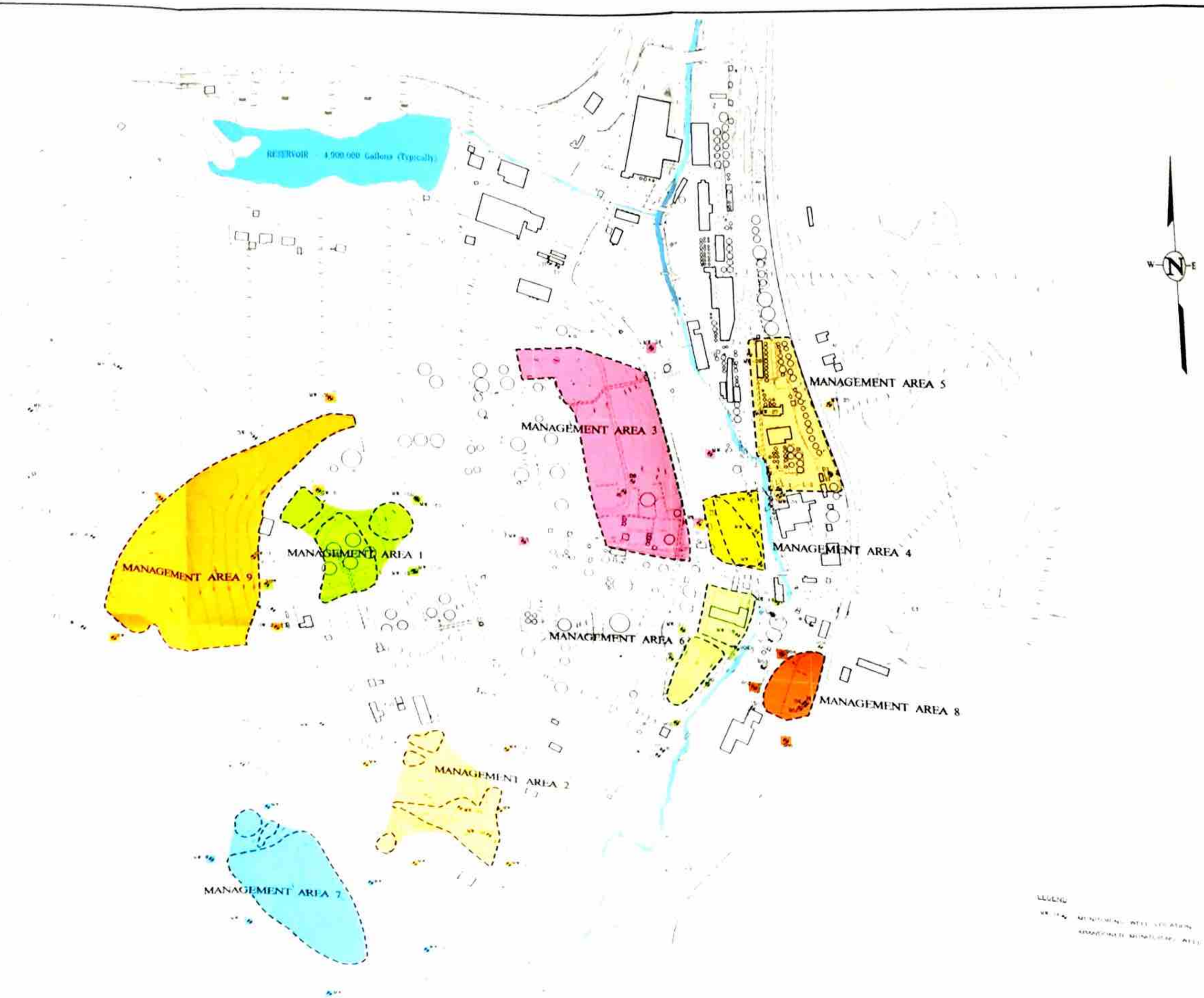
DRAWN BY 07/01/03
CHECKED
APPROVED

POTENTIOMETRIC SURFACE MAP
UNCONSOLIDATED ZONE, FREEPORT FORMATION,
AND KITTANNING SANDSTONE – MARCH 2003
CROMPTON CORPORATION
PETROLIA, PENNSYLVANIA
PREPARED FOR
CROMPTON CORPORATION
GREENWICH, CONNECTICUT

ENVIRONMENTAL STRATEGIES CORPORATION
300 CORPORATE CENTER DRIVE, SUITE 200
MOON TOWNSHIP PENNSYLVANIA 15108
412-604-1040

Figure 1

139435-D10



REVISIONS

REV	DESCRIPTION

MANAGEMENT AREA AND MONITORING WELL LOCATIONS AS OF AUGUST 2003

CROMPTON CORPORATION
PETROLIA, PENNSYLVANIA

CROMPTON CORPORATION
GREENWICH, CONNECTICUT

ENVIRONMENTAL STRATEGIES CORPORATION

Figure 1

139435-D14

ENVIRONMENTAL STRATEGIES CORPORATION

300 CORPORATE CENTER DRIVE SUITE 200
MOON TOWNSHIP PENNSYLVANIA 15108
412-604-1040

POTENTIOMETRIC SURFACE MAP
UPPER KITTANNING COAL, WORTHINGTON SANDSTONE, AND LOWER KITTAINNING COAL
MARCH 2003

CROMPTON CORPORATION
PETROLIA, PENNSYLVANIA

PREPARED FOR
CROMPTON CORPORATION – GREENWICH, CONNECTICUT

REVISIONS

Figure 1

139435-D11

Darius Ostrauskas
08/20/03 09:29 AM

To: raman_iyer@cromptoncorp.com
cc: fleegdi@cromptoncorp.com, tbiksey@escpa.com, Jeff Hassen <jhassen@escpa.com>
Subject: Re: Crompton - Petrolia, PA Draft HH EI

Raman,

I received your voicemail message of yesterday regarding the email message below. I agree that what we are looking for is relatively self-explanatory. However, we'd like to elaborate with regard information needs for surface water.

If possible, please record the observations of several knowledgeable individuals regarding the use of Bear Creek within a mile downstream of the facility. For example, are children ever observed to be wading/playing in the creek, etc. Also of interest, if applicable, would be information/data which would 1) indicate the creek is degraded in a manner which limit use before it flows onto Crompton property (as you appear to have suggested) or 2) indicate that downstream fishing is not impaired due to the facility. Overall, more info is needed to make the case that either that surface water is either not used and/or that use is not impaired by the facility.

Please let me know if have any questions. Otherwise, per you message, we look forward to receiving the information of interest the week of Sept 1.

Thanks,
Darius Ostrauskas
215-814-3360

----- Forwarded by Darius Ostrauskas/R3/USEPA/US on 08/20/03 08:56 AM -----

Darius Ostrauskas
08/19/03 02:57 PM

To: raman_iyer@cromptoncorp.com
cc: fleegdi@cromptoncorp.com, tbiksey@escpa.com, Jeff Hassen <jhassen@escpa.com>
Subject: Re: Crompton - Petrolia, PA Draft HH EI

Raman,

We have reviewed the draft Environmental Indicator Determination for Human Health submitted by ESC on August 8 and have a couple questions based on our review. Generally, these are not technical questions but regard the current use of the property and the South Branch of Bear Creek. Personnel at the facility may be in the best position to answer these questions. Can you / Crompton respond to these questions by the end of the month if possible.

Thanks,
Darius Ostrauskas
215-814-3360

cromptonhhei818.doc

CROMPTON / WITCO - Review of 6/13/01 report

"Closure" Status per Crompton

- AOCs 1,2,3,4,5,6,7 and 8 "closed under the direction and with the approval of PADEP
- AOCs 1,2,4,5,6 and 7 "closed under Consent Orders"
- AOC 3 "closed in accordance with a PADEP-approved closure plan"
- AOC 8 "closed with PADEP oversight"
-need to confirm that "EPA and PADEP have agreed that no further characterization or evaluation of these 8 areas is necessary"
-need to confirm that EPA commented on RI workplan and that these comments were addressed
-AOC 17 "closed as a residual waste landfill in 2000 with approval of PADEP "
-state that AOC 8, Area 5 and Area 15 are not subject to RCRA Corrective Action because they are not SWMUs...confirm...if so, are they being addressed for Act 2 purposes ?
-does an RFA exist? ie what was basis for SWMUs / AOCs
-what portions of the facility are subject to corrective action ? e.g., are

General comments:

-Aerial photo imagery?
-does an RFA report exist ? (none is referenced in the report)
-basis for sample locations ?
-basis for MWs sampled ?
-don't appear to have RI workplan; can't confirm workplan was followed
-limits of AOCs often don't seem to correspond to units per topo maps (e.g., depressions); is this by design?
-no soil boring or sample logs; can't tell if waste was sampled (OBTAIN ?)
–less VOCs appear to have been analyzed in surf soils than subsurf ?
-in some cases, no benzene results are reported for subsurface soils
-was QA/QC ok by EPA eg for SPLP analyses ?
-should current production areas be assessed ?
-resolve significance of many detection/quanititation limits in many cases being below Act 2 and EPA health-based standards (note PADEP letter of 4/23 toESC), e.g., soil dl/ql for thallium
-what is PADEPs position on detection limit issue ?

GW Related Comments:

-what was basis for selection of wells sampled on 11/29/00 and 3/15/01 ? (see Table 30) (also, only analysis for limited VOCs ?)
-basis for wells sampled 12/98 (included dissolved metals...VOCs did not include PCE and CCL4, which were detected in soils)
-could not find MW-3 (MW-333?),MW-5 *
-elevated As in 904 (133 ug/l diss) and OW-3 (140 ug/l diss)
-904 monitors Mgmt Area 6 (AOC 3 and AOC 8)

-appears to be a group of MWs around Mgmt Area 8 which are not part of

OW-3 monitors Mgmt Area 9 (AOCs 4,5,6,7)
-Sec.3.2 identifies only benzene and Pb as problemes in gw, but As also appears to be
-is there a useable groundwater resource threatened by onsite groundwater contamination? (this appears to be a key question, i.e., are only un-useable aquifers impacted and/or threatened ?); are there any investigations needed to answer this question ?

-what post-closure monitoring is being done at closed AOCs (Mgmt Areas 7, 8 and 9, part of Mgmt Area 6)
-this post-closure monitoring would be part of Statement of Basis ?

SW Related Comments:
-what are surface drainage pathways, seep locations, and/or other pathways to surf water
-only benzene was considered a potential problem; what about As ?
-only 2 sw sample locations, analysis only for BTEX (?), no sediment samples
-unclear where the surface water samples were collected; were they collected from Bear Creek ?
-could not decipher discussion re: sw classification; impacts by mine drainage ?

MGMT AREA 1

-cross section shows the area has a substantial amount of coke fines and black silty waste, some black silty waste (oily); some of black silty oily waste is exposed at surface

AOC 9

-former landfill area; free liquids removed and backfilled with ash
-benzene elevated (0.4 to 0.6 mg/kg) in several subsurf soil samples (SB-1,3,4) in potentially downgradient subsurf soils; **level of 0.6 mg/kg benzene (above PADEP Act 2(b) of 0.5) not bounded - sample further or no per negative SPLP results ? (note:vinyl chloride detected at level of conern in SPLP test)**
- As elevated(27 mg/kg) in 1 out of 3 surface soils (bounded ?); subsoils SB 1,2,4 (NOTE: Talk to EPA tox re: policy on As, e.g., EPA RBC vs. PA Act 2)
- 3 reported downgradient wells
-only MW-15 reported sampled and only for organics (note: MW-15 is proposed...)
-should sample proposed MW-15 and MW-16 for As, benzene, vinyl chloride

AOC 11

-former impoundment No.5 closed by backfilling with soil
-only one surface soil sample
- no borings within AOC as marked on map or within apparent former impoundment; why is this the case ? was impoundment itself characterized previously ?
-benzene elevated in subsoils SB-1,2,7; elevated As in SB-2,3
-should sample subsoil further at SB-1, where 1.6 ppm benzene was detected by 2 separate sampling events (?) or no per negative SPLP results, GW monitor instead (?)
-downgradient well OW-6; no reported results (should sample OW-6 (other proposed

wells?) for benzene and As ?

AOC 12

-former lagoon area closed by removal of liquids and backfilling with soil and ash
-as with AOC 11, **unclear whether contents of former lagoon characterized** given depth and location of samples (most outside or on fringe of AOC as marked)
- proposed downgrad well MW15 is needed (?)
-no sample results of concern

MGMT AREA 2

-cross section shows black silty waste up to over 40' thick

AOC 10

-spray irrigation area
-11 surfsoils , 6 subsoils collected
-no detections of interest
-proposed downgrad well MW-12 needed (?)

AOC 13

-former landfill which was backfilled with material during construction of hydrogenation plant
-elevated Be (70 mg/kg in the 1 surf soil collected; **further sampling needed to determine extent of Be**; (PADEP industrial direct contact criteria is 18 mg/kg) **(NOTE: Report said no constituents of interest in surface soil...)**
-high carbon tet (2.8 ppm)in subsoil collected at 19'-20'; **sample further for carbon tetrachloride or no perSPLP result**
-elev As in one subsoil
-only 2 subsoil boring locations
-may not be any downgrad wells

AOC 14

-former landfill closed at same time and manner as AOC 13
- one surf soil collected;had elevated benzene and PCE
-carb tet detected at 1.9 ppm at 10'-12' in SB-2 (3 soil boring locations); **sample further for carbon tetrachloride ?** (no SPLP analyis performed...rationale was that AOC 14 conditons were the same as AOC 13)
-proposed MW-14 needed (?); **need to sample MW-14 for carbon tet**

AOC 18(and 18A)

-Lagoons 1 and 2 sludge disposal area
-6 surfsoils and 8 subsoils
-0.3 ppm benzene in one surf soil
- MW-1 appears downgrad and was ok

MGMT AREA 3

AREA 15

-former acidified oil storage area; some clayey waste in x-section (confirm this waste was sampled ?)
-9 surfsoils; one had 2700 mg/kg Pb which was subsequently bounded
-multiple subsoils ok
-downgrad(?) MW-4 ok; downgrad(?) MW-24 proposed
- Hg detected at 31 and 18 mg/kg in boring A15-SB-6 at 0'-2' and 2'-4' (Act 2 direct contact ind. use standard is 240 mg/kg)(sample gw for mercury ?)

MGMT AREA 4

AOC 15/Area 5

-AOC 15 is acidified oil lagoon closed in '34 when acid plant constructed over lagoon
-Area 5 is location of former acid plant
-some black silty waste in x section of Area 5/AOC15 (SB-4; SB-10 and SB-3)(confirm this waste was sampled
-elev benzene (SB-1) and PCE (SB-9) in diff. surfsoils; total of 5 surfsoil samps
-elev benzene and PCE at SB-2 subsoil (2'-4'); none in sample at 6'-8'
-As elev in SB-5 at 6'-8'
-proposed wells MW-22 and 23 are needed (?)
-Pb detected above PADEP MSC and SPLP levels in soil at 2'-4' but no action proposed based on "Act 2 buffer" and no detections of concern below (appears ok...)

MGMT AREA 5

AOC 16

-waste area located under present sulfonate plant; x section shows no apparent waste
-out of 12 surfsoils, one elev. As (110mg/kg) (report says no constituents of interest identified); As not well bounded but sample at 4'-6' in same boring was ok; **consider additional As surf soil sampling in this area**

- 10 subsoils all ok (metal analysis only)

MGMT AREA 6

-this area also includes reported closed AOC 3
-some blacksilty waste in x-section
-MW 903 downgrad of AOC 3 (?) has 140 ug/l benzene

AOC 8

- former Lagoon No. 3 closed by waste stabilization and removal with PADEP oversight
-process building currently located over this AOC (?)
–x-section shows some black silty waste under this area
- only detections of interest in 4 surf soil and 7subsurf soil samples were in SB-5 at 9'-11', where benzene and As were slightly elevated; this was the deepest sample collected at this AOC
- high levels of benzene (1.1 ppm), As (133 ug/l dissolved) detected in reported downgrad well 904-GW
~~-other apparent downgrad wells, upgrad well not sampled~~ AWQC for As?

MGMT AREA 7

-AOC 17 (and 17A)
-black silty waste in x-section

MGMT AREA 8
-AOC 1 and 2

MGMT AREA 9
-AOC 4,5,6 and 7

PROPOSED GROUNDWATER INVESTIGATION PLAN

-indicated that sampling will discontinue if results indicate "no constituents of interest at concentrations above Act 2 Statewide Health Standard, nonresidential, MSCs." Is this ok?

-according to Mark Gold (per telecon of 12/5), some of proposed MWs could not be installed as located so there have been some changes in the network to be installed; installation is scheduled to proceed shortly

Documents needed
-none identified at this time

Crompton - 5/28/03 Mtg. in Phila. - R. Iyer
D. Darragh
J. Hassen

HH EI

- add. rd. of gw samples in April
- low flow method
- metals levels decreased (roughly half)
- TDS sampling as well
  (for PA Act 2 2500 mg/l cutoff)
- attribute most of metals to natural conditions
- benzene in gw - 3 wells w/ exceedances of 5 ug/l
- 904 replacement well
- MW-27 - dropped from 780 ug/l to ~2.5 ug/l

- Area 16 - As sampling

Admin Approach
- in '99, state-lead approach agreed to, e.g., Act 2 standards
- Paul → RCRA Completion Guidance (2/03) *review*
  - complete vs. complete w/ controls (institutional)
- Crompton facility in W.V.
- MOU suggested by D. Darragh
  - go thru Act 2 process and copy EPA
- Crompton will submit draft MOU
- Paul → need to discuss any case where non-use aquifer envisioned
- no residential well abandonment required by PADEP under HSCA?
- status of local authorities and ordinance requiring hookup
- point of compliance is site boundary... depends on??

Darius Ostrauskas

04/04/03 03:29 PM

To: raman_iyer@cromptoncorp.com
cc: stoth@state.pa.us, mansell@state.pa.us
Subject: Crompton Corp. - Petrolia, PA

Raman,

Thank you for discussing RCRA Corrective Action Environmental Indicators for Crompton's facility in Petrolia on March 19, 2003, via telecon. This message briefly summarizes my understanding of our telecon. I apologize for not sending this message sooner, but I mistakenly thought I had already sent it.

To confirm the Enviromental Indicator of "human exposure is under control" at the facility, EPA believes three tasks should be performed - 1) a use survey for water potentially impacted by the facility, 2) additional investigation of surface soil in or near AOC 16, and 3) an evaluation of the vapor intrusion to indoor air pathway.

A use survey for water potentially impacted by the facility apparently is already underway as part of the "Bear Creek Project" being undertaken by PADEP's Hazardous Site Cleanup Act program. In this case, it appears Crompton will not need to perform this task.

The surface soil of interest is that characterized by sample 16-SB3-0-2D, which was collected on the perimeter of AOC 16 and contained 110 mg/kg arsenic (As). The EPA Region III risk-based screeing concentration for As in industrial surface soil at a 10-5 carcinogenic risk level is 38 mg/kg. While the balance of surface soil samples within AOC 16 did not have similar elevated levels, 16-SB3-0-2D was on the perimeter of the sample population in this area and the areal extent of elevated As levels is therefore unclear. Additional sampling should be performed to confirm there is not a substantial area of surface soil with elevated As. We understand you may believe this As level may be within background levels. If this is the case, please consult with us with regard to demonstrating this. If you plan to sample, please consult with us regarding the work scope. Otherwise, during our telecon, I also referenced a detection of elevated beryllium in surface soil as being of interest.. However, further review found this not to be the case.

A vapor intrusion evalulation should be performed based on the detection of elevated benzene in groundwater in monitoring well MW-27 (780 ug//l) and Well 904 (1000 ug/l). The evaluation should consider draft "EPA Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils". Per the subject guidance, it is understood that "OSHA and EPA have agreed that OSHA generally takes the lead role in addressing occupational exposures." The evaluation should consider, but not necessarily be limited to, the following - 1) identification of buildings where benzene vapors may intrude, 2) OSHA requirements with regard to benzene in these buildings and 3) presence of any administrative or office space in these buildings which is not subject to OSHA.

We understand you would like to prepare a draft Envrionmental Indicator Evaluation for human exposure control once you have addressed the above comments and have information regarding water use in the vicinity of the facility (which we can provide you). As discussed, Congress evaluates RCRA Corrective Action program progress at the end of the each federal fiscal year, which concludes in September, In this case, if possible, it would benefit both Crompton and EPA to have a final, positive Environmental Indicator Evaluation for Human Health by September 2003. To facilitate this, if possible, we would like to have your draft evaluation by the end of July.

Please let me know if there is anything above which is inconsistent with our telecon, if theres is anything I overlooked, or if there is anything you would like to add at this time. I look forward to working with you and Crompton with regard to confirming that human exposure at your facility is under control and meeting other RCRA Corrective Action goals in the future.

Thanks,

COPY

ENVIRONMENTAL STRATEGIES CORPORATION
300 Corporate Center Drive, Suite 200 ▪ Moon Township, PA 15108 ▪ (412) 604-1040 ▪ Fax (412) 604-1055

February 20, 2003

Mr. Mark Ansell
Environmental Cleanup Program
Pennsylvania Department of Environmental Protection
230 Chestnut Street
Meadville, PA 16335-3481

Re: Site Meeting
Crompton Corporation – Petrolia Facility
Petrolia, Butler County, Pennsylvania

2003

Dear Mark:

On behalf of Crompton Corporation, Environmental Strategies Corporation would like to thank you and Randy Kresge for agreeing to meet at the Crompton - Petrolia, Pennsylvania, facility on February 25, 2003, as a follow up to our meeting on January 22, 2003, at your office in Meadville, Pennsylvania. Per your request, below is a summary of the items we wish to cover during the meeting.

- PADEP expressed an interest in having additional monitoring well(s) installed at Management Area (MA) 2. During the meeting, we would like to evaluate site conditions and select possible well locations.

- USEPA expressed an interest in having monitoring well 904 abandoned, modified, or replaced at MA 6 due to its construction in waste material and to improve the accuracy of groundwater quality data at MA 6. During the meeting, we would like to review this area of the site and determine whether an alternate location is feasible. We would also like to discuss and resolve any possible Waste Management post-closure monitoring items associated with relocation or elimination of this well.

Enclosed is a table summarizing the monitoring well network at MAs 1 through 9 to assist you in preparing for our meeting. If you have any questions or require additional information, please contact me at (412) 604-1040 or Raman Iyer with Crompton Corporation at (203) 573-2353. We look forward to meeting with you on February 25, 2003, at 11:00 am.

Sincerely yours,

Jeffrey A. Hassen, P.G.
Senior Project Director

JAH:lmk
docs/Crompton/139435/Site Meeting.doc

Enclosure

cc: Mr. Randy Kresge, Pennsylvania Department of Environmental Protection
Mr. Darius Ostrauskas, United States Environmental Protection Agency
Mr. Raman Iyer, Crompton Corporation
Mr. Dick Fleeger, Crompton Corporation
Mr. John Simon, Environmental Strategies Corporation

Summary of Monitoring Well Construction and Groundwater Elevation Measurements
Crompton Corporation
Petrolia, Pennsylvania
February 20, 2003

Management Area	Monitoring Well	Measuring Point Elevation (ft. AMSL) (a)	Depth to Water (ft. below TOC) Oct. 3-4, 2001	Depth to Water (ft. below TOC) Jan. 7, 2002	Potentiometric Surface (ft. AMSL) (a) Oct. 3-4, 2001	Potentiometric Surface (ft. AMSL) (a) Jan. 7, 2002	Screened Interval (ft. AMSL) (a)	Unit	Geologic Formation	Placement Rationale
1	OW-5	1349.31	23.45	23.32	1325.86	1325.99	NA	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	OW-6	1333.55	15.42	14.91	1318.13	1318.64	NA	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-15A	1312.75	NA	85.73	NA	1227.02	1227.72-1207.72	Worthington Sandstone	Kittanning	downgradient
	MW-15B	1314.29	Dry	24.41	NA	1289.88	1300.29 - 1276.29	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-16A	1294.84	88.48	81.91	1206.36	1212.93	1199.84 - 1179.84	Worthington Sandstone	Kittanning	downgradient
	MW-16B	1295.42	4.59	6.93	1290.83	1288.49	1289.42 - 1279.42	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
2	MW-1	1251.14	73.35	68.24	1177.79	1182.90	1153 09-1173.09	Worthington Sandstone	Kittanning	downgradient
	MW-12	1336.56	65.58	65.24	1270.98	1271.32	1276.56 - 1256.56	Freeport Sandstone	Freeport	upgradient
	MW-13	1265.46	60.67	56.62	1204.79	1208.84	1212.46 - 1192.46	Worthington Sandstone	Kittanning	downgradient
	MW-14	1270.81	41.68	41.38	1229.13	1229.43	1238.81 - 1218.81	Freeport/Worthington Sandstone	Kittanning	downgradient
	MW-30	1265.18	NA	45.65	NA	1219.53	1227.09-1207.09	Worthington Sandstone	Kittanning	downgradient
	MW-31	NA	NA	NA	NA	NA	NA	Freeport Sandstone	Freeport	upgradient
3	MW-2	1254.39	11.50	11.41	1242.89	1242.98	1234.43-1244.43	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	MW-20	1196.75	3.26	0.86	1193.49	1195.89	1184.75 - 1174.75	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-4	1188.70	NA	10.88	NA	1177.82	1174.15-1164.15	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-24	1206.97	33.98	29.52	1172.99	1177.45	1181.97 - 1161.97	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
4	MW-20	1196.75	3.26	0.86	1193.49	1195.89	1184.75 - 1174.75	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	MW-21	1183.16	11.63	7.36	1171.53	1175.80	1179.49 - 1169.49	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-22	1184.73	NA	8.53	NA	1176.20	1177.57-1167.57	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-23	1182.16	8.02	6.00	1174.14	1176.16	1177.16 - 1167.16	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
5	MW-25	1211.30	NA	31.01	NA	1180.29	1181.16-1161.16	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	MW-26	1209.93	7.58	5.66	1202.35	1204.27	1204.93 - 1194.93	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-27	1179.78	6.78	5.06	1173.00	1174.72	1174.78 - 1164.78	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-28	1181.21	NA	8.62/9.20 (c)	NA	1172.42 (d)	1173.71-1163.71	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
6	901	1211.12	8.41	10.03	1202.71	1201.09	1190 - 1195	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	902	1190.30	12.60	9.29	1177.70	1181.01	1169.2 - 1174.2	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	903	1194.99	Dry	15.43	NA	1179.56	1159.7 - 1169.7	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	904	1191.99	15.28	12.52	1176.71	1179.47	1158.3 - 1168.3	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-17	1205.23	2.77	4.26	1202.46	1200.97	1203.73 - 1193.73	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	MW-18	1188.83	NA	7.85	NA	1180.98	1184.48-1174.48	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-19	1184.37	9.56	7.30	1174.81	1177.07	1179.87 - 1169.87	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
7	MW-6	1335.77	123.01	119.31	1212.76	1216.46	1204.18 - 1184.18	Worthington Sandstone	Kittanning	downgradient
	MW-7	1323.25	109.21	106.70	1214.04	1216.55	1206.84 - 1186.84	Worthington Sandstone	Kittanning	downgradient
	MW-8	1300.42	98.15	93.68	1202.27	1206.74	1213.89 - 1193.89	Worthington Sandstone	Kittanning	downgradient
	MW-9	1292.83	80.46	79.74	1212.37	1213.09	1217.98 - 1197.98	Worthington Sandstone	Kittanning	downgradient
	MW-10	1285.88	80.77	76.33	1205.11	1209.55	1206.23 - 1186.23	Worthington Sandstone	Kittanning	downgradient
	MW-11	1357.15	80.71	87.50	1276.44	1269.65	1292.15 - 1272.15	Freeport Sandstone	Freeport	downgradient

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Crompton Corporation
Petrolia, Pennsylvania
February 20, 2003

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8	960	1214.93	37.77	33.43	1177.16	1181.50	NA	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	952	1197.27	21.57	16.13	1175.70	1181.14	1157.92 - 1162.92	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	954	1202.10	25.89	20.55	1176.21	1181.55	1159.04 - 1164.04	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
9	MR-30	1389.64	74.62	73.84	1315.02	1315.80	1318.09 -1298.09	Butler Sandstone	Freeport	downgradient
	OW-1	1449.36	114.68	114.40	1334.68	1334.96	1304 - 1325.5	Butler Sandstone	Freeport	upgradient
	OW-2	1353.14	27.53	26.94	1325.61	1326.20	1314.77 - 1319.77	Butler Sandstone	Freeport	downgradient
	OW-5	1349.31	23.45	23.32	1325.86	1325.99	NA	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	OW-6	1333.55	15.42	14.91	1318.13	1318.64	NA	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-29	1347.32	60.29	58.96	1287.03	1288.36	1287.32 - 1267.32	Butler Sandstone	Freeport	downgradient

Bold indicates newly installed wells.
ft. below TOC = feet below top of casing.
ft. AMSL= feet above mean sea level.
a/ NA = Not available.
b/ ft. bgs= feet below ground surface.
c/ Depth to Product/Depth to Water.
d/ Potentiometric surface elevation adjusted for product thickness.

ENVIRONMENTAL STRATEGIES CORPORATION
300 Corporate Center Drive, Suite 200 • Moon Township, Pennsylvania 15108 • (412) 604-1040 • Fax (412) 604-1055

February 20, 2003

Mr. Mark Ansell
Environmental Cleanup Program
Pennsylvania Department of Environmental Protection
230 Chestnut Street
Meadville, PA 16335-3481

Re: Site Meeting
Crompton Corporation – Petrolia Facility
Petrolia, Butler County, Pennsylvania

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- USEPA expressed an interest in having monitoring well 904 abandoned, modified, or replaced at MA 6 due to its construction in waste material and to improve the accuracy of groundwater quality data at MA 6. During the meeting, we would like to review this area of the site and determine whether an alternate location is feasible. We would also like to discuss and resolve any possible Waste Management post-closure monitoring items associated with relocation or elimination of this well.

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Sincerely yours,

Jeffrey A. Hassen

Jeffrey A. Hassen, P.G.
Senior Project Director

JAH:lmk
docs/Crompton/139435/Site Meeting.doc

Enclosure

cc: Mr. Randy Kresge, Pennsylvania Department of Environmental Protection
Mr. Darius Ostrauskas, United States Environmental Protection Agency
Mr. Raman Iyer, Crompton Corporation
Mr. Dick Fleeger, Crompton Corporation
Mr. John Simon, Environmental Strategies Corporation

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	OW-6	1333.55	15.42	14.91	1318.13	1318.64	NA	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-15A	1312.75	NA	85.73	NA	1227.02	1227.72-1207.72	Worthington Sandstone	Kittanning	downgradient
	MW-15B	1314.29	Dry	24.41	NA	1289.88	1300.29 - 1276.29	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-16A	1294.84	88.48	81.91	1206.36	1212.93	1199.84 - 1179.84	Worthington Sandstone	Kittanning	downgradient
	MW-16B	1295.42	4.59	6.93	1290.83	1288.49	1289.42 - 1279.42	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
2	MW-1	1251.14	73.35	68.24	1177.79	1182.90	1153.09-1173.09	Worthington Sandstone	Kittanning	downgradient
	MW-12	1336.56	65.58	65.24	1270.98	1271.32	1276.56 - 1256.56	Freeport Sandstone	Freeport	upgradient
	MW-13	1265.46	60.67	56.62	1204.79	1208.84	1212.46 - 1192.46	Worthington Sandstone	Kittanning	downgradient
	MW-14	1270.81	41.68	41.38	1229.13	1229.43	1238.81 - 1218.81	Freeport/Worthington Sandstone	Kittanning	downgradient
	MW-30	1265.18	NA	45.65	NA	1219.53	1227.09-1207.09	Worthington Sandstone	Kittanning	downgradient
	MW-31	NA	NA	NA	NA	NA	NA	Freeport Sandstone	Freeport	upgradient
3	MW-2	1254.39	11.50	11.41	1242.89	1242.98	1234.43-1244.43	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	MW-20	1196.75	3.26	0.86	1193.49	1195.89	1184.75 - 1174.75	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-4	1188.70	NA	10.88	NA	1177.82	1174.15-1164.15	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-24	1206.97	33.98	29.52	1172.99	1177.45	1181.97 - 1161.97	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
4	MW-20	1196.75	3.26	0.86	1193.49	1195.89	1184.75 - 1174.75	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	MW-21	1183.16	11.63	7.36	1171.53	1175.80	1179.49 - 1169.49	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-22	1184.73	NA	8.53	NA	1176.20	1177 57-1167.57	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-23	1182.16	8.02	6.00	1174.14	1176.16	1177.16 - 1167.16	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
5	MW-25	1211.30	NA	31.01	NA	1180.29	1181.16-1161.16	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	MW-26	1209.93	7.58	5.66	1202.35	1204.27	1204.93 - 1194.93	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-27	1179.78	6.78	5.06	1173.00	1174.72	1174.78 - 1164.78	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-28	1181.21	NA	8.62/9.20 (c)	NA	1172.42 (d)	1173.71-1163.71	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
6	901	1211.12	8.41	10.03	1202.71	1201.09	1190 - 1195	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	902	1190.30	12.60	9.29	1177.70	1181.01	1169.2 - 1174.2	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	903	1194.99	Dry	15.43	NA	1179.56	1159.7 - 1169.7	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	904	1191.99	15.28	12.52	1176.71	1179.47	1158.3 - 1168.3	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-17	1205.23	2.77	4.26	1202.46	1200.97	1203.73 - 1193.73	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	MW-18	1188.83	NA	7.85	NA	1180.98	1184.48-1174.48	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-19	1184.37	9.56	7.30	1174.81	1177.07	1179.87 - 1169.87	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
7	MW-6	1335.77	123.01	119.31	1212.76	1216.46	1204.18 - 1184.18	Worthington Sandstone	Kittanning	downgradient
	MW-7	1323.25	109.21	106.70	1214.04	1216.55	1206.84 - 1186.84	Worthington Sandstone	Kittanning	downgradient
	MW-8	1300.42	98.15	93.68	1202.27	1206.74	1213.89 - 1193.89	Worthington Sandstone	Kittanning	downgradient
	MW-9	1292.83	80.46	79.74	1212.37	1213.09	1217.98 - 1197.98	Worthington Sandstone	Kittanning	downgradient
	MW-10	1285.88	80.77	76.33	1205.11	1209.55	1206.23 - 1186.23	Worthington Sandstone	Kittanning	downgradient
	MW-11	1357.15	80.71	87.50	1276.44	1269.65	1292.15 - 1272.15	Freeport Sandstone	Freeport	downgradient

Summary of Monitoring Well Construction and Groundwater Elevation Measurements
Crompton Corporation
Petrolia, Pennsylvania
February 20, 2003

	Monitoring Well	Measuring Point Elevation (ft. AMSL) (a)	Depth to Water (ft. below TOC) Oct. 3-4, 2001	Depth to Water (ft. below TOC) Jan. 7, 2002	Potentiometric Surface (ft. AMSL) (a) Oct. 3-4, 2001	Potentiometric Surface (ft. AMSL) (a) Jan. 7, 2002	Screened Interval (ft. AMSL) (a)	Unit	Geologic Formation	Placement Rationale
8	960	1214.93	37.77	33.43	1177.16	1181.50	NA	Unconsolidated Deposits	Unconsolidated Deposits	upgradient
	952	1197.27	21.57	16.13	1175.70	1181.14	1157.92 - 1162.92	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	954	1202.10	25.89	20.55	1176.21	1181.55	1159.04 - 1164.04	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
9	MR-30	1389.64	74.62	73.84	1315.02	1315.80	1318.09 -1298.09	Butler Sandstone	Freeport	downgradient
	OW-1	1449.36	114.68	114.40	1334.68	1334.96	1304 - 1325.5	Butler Sandstone	Freeport	upgradient
	OW-2	1353.14	27.53	26.94	1325.61	1326.20	1314.77 - 1319.77	Butler Sandstone	Freeport	downgradient
	OW-5	1349.31	23.45	23.32	1325.86	1325.99	NA	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	OW-6	1333.55	15.42	14.91	1318.13	1318.64	NA	Unconsolidated Deposits	Unconsolidated Deposits	downgradient
	MW-29	1347.32	60.29	58.96	1287.03	1288.36	1287.32 - 1267.32	Butler Sandstone	Freeport	downgradient

Bold indicates newly installed wells.
ft. below TOC = feet below top of casing.
ft. AMSL= feet above mean sea level.
a/ NA = Not available.
b/ ft. bgs= feet below ground surface.
c/ Depth to Product/Depth to Water.
d/ Potentiometric surface elevation adjusted for product thickness.

ENVIRONMENTAL STRATEGIES CORPORATION
300 Corporate Center Drive, Suite 200 ▪ Moon Township, PA 15108 ▪ (412) 604-1040 ▪ Fax (412) 604-1055

February 3, 2003

Mr. Mark Ansell
Environmental Cleanup Program
Pennsylvania Department of Environmental Protection
230 Chestnut Street
Meadville, PA 16335-3481

Mr. Darius Ostrauskas
United States Environmental Protection Agency, Region III
1650 Arch Street (3WC22)
Philadelphia, PA 19103-2029

Re: Project Meeting Summary
Crompton Corporation – Petrolia Facility
Petrolia, Butler County, Pennsylvania

Dear Mark and Darius:

On behalf of Crompton Corporation, Environmental Strategies Corporation would like to thank you for meeting with us to discuss the Crompton - Petrolia, Pennsylvania, facility on January 22, 2003, at the Pennsylvania Department of Environmental Protection (PADEP) Northwest Regional Office in Meadville, Pennsylvania. This letter provides a summary of the meeting's key points, follow up discussions with PADEP on January 24, 2003, and our planned project activities.

Meeting Summary

The meeting was attended by Anita Stainbrook, Sigma Toth, and Mark Ansell of the PADEP, Paul Gotthold, Darius Ostrauskas, and Michael Cramer of the United States Environmental Protection Agency (USEPA), Raman Iyer of Crompton, Dan Darragh of Buchanan Ingersoll, and John Simon and Jeff Hassen of Environmental Strategies. During the meeting, Environmental Strategies and Crompton representatives reviewed the progress of remedial investigation (RI) and Area of Concern (AOC) closure activities from 1998 through 2002, presented the RI findings to date, and discussed planned activities at the facility. At the request of PADEP and USEPA, a copy of the meeting presentation was emailed to both agencies following the meeting.

The agencies were provided with a description of the facility, environmental setting, available soil, surface water, waste, preliminary groundwater data, and Crompton's groundwater investigation plan in the Preliminary Conceptual Site Model and Proposed Groundwater Investigation Plan report in June 2001. In addition, the results of the January 2002 groundwater

investigation activities were provided to PADEP and USEPA under separate cover before the meeting. During the meeting, PADEP and USEPA were provided with copies of facility maps showing 20 AOCs, 2 former operations areas under investigation (Areas 5 and 15), and the consolidated groundwater Management Areas (MAs). A summary of the key points discussed during the meeting is provided below.

- AOC 17 cap certification by PADEP is pending final inspection by their soil scientist (Regena Schweinsberg); Environmental Strategies will contact Ms. Schweinsberg in Spring 2003 to schedule the inspection.
- AOC 17 post-closure monitoring program will conclude with the final monitoring event in January 2003; Crompton will demonstrate attainment of the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2) groundwater remediation standards based on eight quarters of monitoring data.
- PADEP requested that total dissolved solids (TDS) be added to the January 2003 groundwater monitoring sampling and analysis program at AOC 17; Environmental Strategies will collect samples for TDS analysis during the January 2003 sampling event.
- Based on the soil and waste sample analytical results, Crompton and Environmental Strategies indicated that no additional soil or waste evaluation is planned for the 20 AOCs (AOCs 1 through 18A), Area 5, and Area 15.
- PADEP requested that the applicability of Synthetic Precipitation Leaching Procedure (SPLP) results to waste material be discussed with Tony Talak of PADEP; Crompton and Environmental Strategies representatives discussed this issue with Mr. Talak on January 24, 2003, a summary of this discussion is provided below.
- PADEP expressed an interest in having additional monitoring wells installed at MA 2; representatives of Environmental Strategies and PADEP will evaluate and resolve this issue at a future site meeting.
- USEPA expressed an interest in having monitoring well 904 at MA 6 replaced or modified due to its construction in waste material and to improve the accuracy of groundwater quality data at MA 6; representatives of Environmental Strategies and PADEP will evaluate and resolve this issue at a future site meeting.
- Environmental Strategies indicated that a second round of groundwater characterization samples will be collected at the nine MAs using low flow sampling procedures; PADEP and USEPA agreed with the use of this procedure; however, PADEP indicated a third sampling event may be necessary to further compare the results from samples collected using conventional sampling and low flow sampling procedures. Crompton and Environmental Strategies will consider this request pending the second round sampling results.
- Environmental Strategies reported that a light non-aqueous phase liquid (LNAPL) was found within monitoring well MW-28 (MA 5) during the January 2002 groundwater sampling event; initial evaluation suggests the LNAPL is likely a facility product and not a fuel oil, further evaluation is planned.

- PADEP requested that a solute transport model more sophisticated than the Quick Domenico model be used to evaluate the flow and transport of constituents of interest (COIs) to the South Branch of Bear Creek; Environmental Strategies will consider other available models during the surface water quality evaluation.
- USEPA suggested that a human health environmental indicator evaluation be completed in 2003 using available onsite and offsite receptor information; it was agreed that a draft of this document will be provided to USEPA.

Applicability of Waste Material SPLP Results

Raman Iyer of Crompton and Jeff Hassen of Environmental Strategies participated in a conference call with Tony Talak of PADEP on January 24, 2003, to discuss the applicability of SPLP results to waste material for demonstrating the leachability of waste in place at AOCs. Mr. Talak indicated that PADEP's evaluation of the leachability of the waste would be primarily based on groundwater monitoring results. Mr. Talak added that AOCs [with waste in place] where waste disposal ceased before 1980 [September 7, 1980] may be closed, under the provisions of Act 2, by leaving the waste in place and covering the area with a suitable soil cover and vegetation consistent with best management practices. Environmental Strategies indicated that AOCs at the facility with waste in place are presently covered with soil and in most cases vegetated.

In accordance with the Act 2 Technical Guidance Manual (Section III. A. 2.), closing areas containing non-media solids (i.e., waste material) may be accomplished by demonstrating pathway elimination under the Act 2 site-specific remediation standard for the non-media solids. The soil and groundwater media, outside the perimeter of an area containing non-media solids, may be addressed by any combination of Act 2 remediation standards (i.e., background, statewide health, or site-specific). Liability protection afforded under Section 501 of Act 2 will be provided after approval of the Act 2 Remedial Investigation and Final Report by the Department. In summary, Crompton intends to close the AOCs with non-media solids in place in accordance with these guidelines.

Planned Activities

Crompton and Environmental Strategies presented a list of planned activities during the meeting. The list was revised based on discussions with PADEP and USEPA. These activities and a tentative schedule are as follows:

2003

- second round of groundwater samples will be collected at all MAs (using low flow sampling procedures)
- LNAPL evaluation at monitoring well MW-28
- supplemental investigation activities, as appropriate
- indoor air quality evaluation
- PENTOXSD modeling to evaluate diffuse groundwater discharge to surface water
- human health environmental indicator evaluation

2004

- ecological screening
- groundwater environmental indicator evaluation
- Remedial Investigation and Risk Assessment Report submittal
- proposed remedial strategy (Cleanup Plan)

If you have any questions or comments concerning this letter, please do not hesitate to contact me at (412) 604-1040 or Raman Iyer at (203) 573-2353. We look forward to the continued cooperation with both the PADEP and USEPA through the completion of this project.

Sincerely yours,

Jeffrey A. Hassen

Jeffrey A. Hassen, P.G.
Senior Project Director

JAH:hsm

cc: Mr. Paul Gotthold, United States Environmental Protection Agency, Region III
Ms. Anita Stainbrook, Pennsylvania Department of Environmental Protection
Ms. Sigma Toth, Pennsylvania Department of Environmental Protection
Mr. Raman Iyer, Crompton Corporation
Mr. Dick Fleeger, Crompton Corporation
Mr. Dan Darragh, Esquire, Buchanan Ingersoll
Mr. John Simon, Environmental Strategies Corporation

Crompton Meeting - 1/22/03
DA-DEP - Meadville

- AOC 1-7 - PADEP closure
- AOC8 - PADEP oversight only; no closure

- sampling of AOC 17 for "sulfonic acids"?
- PADEP will decide whether needed for WM closure

- Act NIR submitted to PADEP and acknowledged by PADEP
  - did this just address a certain area?

- Conceptual Site Model
  - how does it address deep bedrock; SW?

- confirm well OW-1 is downgradient of Mgmt Area?

- all soil/waste samples analyzed for SVOC? ~~said this~~ yes... confirm

- Act 2 analysis → assumed MSC for non-residential gw use

- check benzene results for soils and followup in Prel. Concept. Model report, especially w/ regard to locations where benzene is in gw

- phthalate detection in gw above MSC (Mgmt Area 9)

- soils not sampled at AOC3 (wells 903/904) since it is a closed unit

abandon well 904? "pack it off"?

Crompton

Mr. Darius Ostrauskas, Project Manager
RCRA Corrective Action Program
Mail Code 3WC22
USEPA- Region III
1650 Arch Street
Philadelphia, PA 19103

NOV 6 2002

RE: Status Report
Crompton Corporation (Crompton)
Petrolia, Pennsylvania (Site)

Dear Mr. Ostrauskas:

As per your request during our telephone conversation of August 28, 2002 and the several follow-up e-mails and phone discussions, Crompton has prepared this letter to summarize activities at the above-referenced Site related to environmental investigation and remediation. These activities have been conducted to address the 20 Areas of Concern (AOCs) and two additional Areas identified at the Site [March 15, 1999 letter to the United States Environmental Protection Agency (USEPA) and the Pennsylvania Department of Environmental Protection (PADEP) (the Agencies)]. USEPA conducted the most recent RCRA Facility Assessments (RFAs) at the Site in 1998. In October 1999, USEPA, and PADEP with assistance from the US Army Corps of Engineers (COE) conducted an Environmental Indicator Inspection of the Site. Crompton has worked closely with the Agencies to obtain input and keep the Agencies informed of the significant progress made at the Site regarding these activities. A copy of this Status Report has also been sent to the PADEP.

As we discussed, I have been recently appointed as the Crompton Project Manager for the Site remediation activities. I have reviewed the key documents related to Site remediation activities but I am still completing a review of the relatively large amount of detailed information and environmental data for this Site.

This letter provides descriptions of the activities that have been completed to date, as well as our on-going activities at the Site. Once our review is completed, we will provide the Agencies with a work plan describing the activities to be implemented. Crompton strongly desires to expeditiously move forward with Site remediation activities and we want to conduct these activities in a prudent manner in consultation with both PADEP and USEPA.

Crompton Manufacturing Company, Inc.
Benson Road, Middlebury, CT 06749 (203) 573-2000

In 1999, Crompton presented and discussed with the Agencies a draft Act 2 Closure for the 20 AOCs and two additional Areas. A tabulated summary of each AOC and its current status is provided in Table 1. In 2001, Crompton grouped the AOCs in nine Management Areas for the purpose of groundwater investigations.

Since 1998, the following activities have been conducted at the Site and are described herein:

- Agency meetings/correspondence;
- Site investigations;
- Conceptual Site Model;
- Groundwater monitoring/operation and maintenance (O&M); and
- Closure activities.

AGENCY MEETINGS/CORRESPONDENCE

Crompton has previously met with the Agencies to discuss Site remediation and proposed activities. We have also submitted scopes of work and proposals to the Agencies for comment and input prior to the work being implemented. We expect to schedule a meeting with the Agencies in the near future to present our refined closure approach and more details of planned activities so that we can coordinate activities with and receive the Agencies' approval for the work contemplated.

SITE INVESTIGATIONS

Crompton completed a Preliminary Remedial Investigation (RI) in 1998 to verify historical on-Site disposal activities, AOC locations, and their current status. The investigation included sampling of groundwater from eight monitoring wells, soil and sludge sampling, and chemical analyses. The preliminary groundwater sampling results indicated that the majority of the constituents were below the Pennsylvania Statewide Health Standards (SHSs). The exceedance of lead and arsenic SHSs in soil and groundwater were believed to be due to natural background concentrations.

In the summer of 1999, an investigation of AOC 17 was conducted. The investigation included the excavation of test pits, drilling of soil borings, installation of groundwater monitoring wells, and soil and groundwater sampling and chemical analyses. The results of the investigation were used to prepare a closure plan for and subsequent closure of this AOC. The closure plan

activities included the construction of a geosynthetic clay liner/soil cap over the area and the installation of a groundwater monitoring well network and a post-closure monitoring program.

On October 21, 1999, a draft RI Work Plan was submitted to PADEP and USEPA for the investigation of soils in AOCs 8 through 18, and Areas 5 and 15. The main purpose of the investigation was to characterize the nature and delineate the extent of soil contamination with respect to applicable clean-up criteria. The RI Work Plan was revised based on comments received from the PADEP, and the investigation was conducted between May 2000 and March 2001. The results of the RI were reported to the Agencies in a meeting held on June 21, 2001. In general, the concentrations of constituents in soil were below the Pennsylvania SHSs. Benzene was detected in concentrations above the Soil-to-Groundwater SHS, however, subsequent data obtained using the Synthetic Precipitation Leachate Procedure (SPLP) indicated compliance with the applicable SHSs. Arsenic was detected in concentrations above the USEPA Region III Risk-Based Concentration (RBC) criteria (the RBC is referenced here as a screening criteria), however, the concentrations were generally found to be similar to natural background concentrations.

The results of the soil RI were used to develop a groundwater investigation work plan. In June 2001, a Groundwater Investigation Plan was submitted to the Agencies and subsequently revised based on comments received from the Agencies. The plan proposed that a groundwater monitoring well network be established to monitor and investigate nine Management Areas, with each Management Area covering from one to four AOCs (see Table 1). In the second half of 2001, 30 new monitoring wells were installed to supplement the 33 existing monitoring wells. In January 2002, samples were collected from the monitoring well network and submitted for chemical analyses. Benzene was detected in concentrations above the applicable Use-Aquifer Pennsylvania SHS in groundwater samples collected in certain Management Areas. The concentration of 4-nitrophenol detected in groundwater samples from Management Area 1 also exceeded the Use-Aquifer SHS. The concentrations of several metals (lead, beryllium, chromium, nickel, and zinc) also exceeded the applicable SHSs. The results of this groundwater monitoring event were submitted to the Agencies in May 2002.

GROUNDWATER MONITORING/OPERATION & MAINTENANCE (O&M)

The inactive (old) landfill (AOC 4) and former lagoons 1 through 4 (AOCs 1, 2, 3 and 8) were closed in the 1980s in accordance with a consent order, closure plans, or under PADEP oversight. As part of closure activities for these AOCs, groundwater monitoring well networks were installed. The monitoring wells at AOCs 1, 2, 4 through 7, and 17 are sampled and analyzed on a quarterly basis for selected parameters, and water level measurements also are conducted. For AOCs 1, 2 and 4 through 7, leachate samples are also collected and analyzed for

selected parameters and leachate generation rates are measured, both on a quarterly basis. The closure area caps (AOCs 4 through 7 and 17) are regularly inspected and cap repairs, if necessary such as soil erosion, are performed. Crompton has documented and reported all of the AOC 1, 2, 4 through 7, and 17 monitoring and O&M activities to PADEP in accordance with the closure plan requirements. A summary of these activities is provided in Table 2.

CONCEPTUAL SITE MODEL

In June 2001, a Conceptual Site Model (CSM) was developed for the Site and submitted to the Agencies. The main conclusion of the CSM was that the majority of affected soil and groundwater contamination was present in the shallow fill soils and upper groundwater bearing zones.

CLOSURE ACTIVITIES

In March 1999, Crompton presented a draft Act 2 Closure Strategy to the Agencies for AOCs 1 through 18 and Areas 5 and 15. After several follow-up discussions and correspondence with the Agencies, it was agreed that AOCs 1 through 7 and AOC 17 would continue to be handled under the PADEP Waste Management Program (WMP). AOCs 8 through 16, AOC 17A, AOC 18, AOC 18A, Area 5, and Area 15 would be closed under the PADEP Environmental Cleanup Program (ECP) in accordance with Act 2. It was also agreed that PADEP would take the lead in the oversight of the investigation and closure of the AOCs/Areas, and that USEPA would participate in the review process.

In July and August 1999, proof of closure of AOCs 1 through 7 was submitted to the Agencies. Other than the monitoring and O&M activities previously described for AOC's 1, 2, and 4 through 7, no further remedial actions are required for these AOCs.

AOC 17 was closed in 2000 after submittal and PADEP approval of the closure plan. An engineered soil cap was constructed over the area and a groundwater monitoring network was installed. In December 2000, PADEP provided concurrence with the closure certification submitted by Crompton, pending establishment of substantial vegetation of the cap. In the spring of 2001, the establishment of substantial vegetation was confirmed. As previously discussed, groundwater monitoring, inspection, and reporting activities for AOC 17 have been conducted by Crompton in accordance with the closure plan requirements.

ONGOING AND PROPOSED ACTIVITIES

Crompton has conducted significant investigation and remediation activities to investigate the AOCs and Areas and close certain AOCs at the Site. The quarterly programs for groundwater/leachate monitoring, inspections, O&M and reporting will continue for the following AOCs:

- AOC 1 (Lagoon 1);
- AOC 2 (Lagoon 2);
- AOCs 4 through 7 (Inactive Old Landfill, temporary landfill, inert material storage and fire training pit); and
- AOC 17 (WEMCO Float Disposal Area).

The additional investigation and remediation activities that will be implemented over the short term are to:

- collect and compile the required information to prepare draft Human Health and Groundwater Migration Control Environmental Indicator (EI) forms for USEPA review and use;
- develop a proposal for a more detailed program (i.e., scope and schedule) for supplemental investigation and remediation activities at the Site, as necessary. The proposal would include Site-specific lists of soil and groundwater chemicals of concern (COCs). This proposal will be submitted to the Agencies. Crompton will revise the proposal based on the Agencies comments, as appropriate.

Crompton will continue to provide status reports of remedial investigation and remedial activities to the Agencies. We look forward to working with you and to obtain your input so that Site closure activities can move forward in an expeditious and effective manner. If you have any questions on the above or other issues, please do not hesitate to contact me at (203) 573-2353.

Sincerely,

Raman S. Iyer
Director
Environmental Remediation

cc: Anita M. Stainbrook, PADEP

TABLE 1

11/1/02

SUMMARY OF AOCs AREAS
CROMPTON CORPORATION, PETROLIA PENNSYLVANIA

AOC No.	Groundwater Management Area	Description	Historical Summary	Previous Closure Activities	Current Status
1	8	Lagoon 1	Used from 1950s - 1985 as settling basins for wastewater treatment solids Closed in 1989 per 1987 PADEP Consent Order Wastes placed in AOC 4	Waste removed Backfilled Leachate Collection System (LCS) Groundwater Monitoring Network (GMN)	Post-Closure Monitoring LCS O & M
2	8	Lagoon 2	Same as Lagoon 1	Waste removed Backfilled LCS GMN	Post-Closure Monitoring LCS O & M
3	6	Lagoon 4	Used to store oily waxes & sludges until 1961 1980 Partial closure Closure approved by PADEP in 1988	Solidification Cap GMN	Cap O & M
4	9	Inactive (Old) Landfill	Used until 1985 for Plant waste disposal Closed in 1991 per 1987 PADEP Consent Order	Cap LCS GMN	Post-Closure Monitoring (PCM) LCS / Cap O & M
5	9	Temporary Landfill	Used 1985 to 1990 for temporary waste storage Closure per PADEP	Wastes removed & placed in Residual Waste Landfill in 1991	No Further Action PCM
6	9	Inert Materials Storage Area	Used until 1987 for storage of scrap metal tanks retorts drums Closed per 1991 PADEP Consent Order	Wastes removed	No Further Action PCM
7	9	Fire Training Pit	Used until 1987 Stop Oil Naphtha burned Closed under 1991 PADEP Consent Order	Backfilled Cap	Cap O & M PCM

TABLE 1

SUMMARY OF AOCs/AREAS
CROMPTON CORPORATION, PETROLIA PENNSYLVANIA

AOC No.	Groundwater Management Area	Description	Historical Summary	Previous Closure Activities	Current Status
8	4	Lagoon No. 3	Possibly connected to SWMU 15 in 1930s Unknown use mid-1930s to 1968 Used 1968-1978 for WWTP alum sludge Closed in 1984/1985 with PADEP	Sludge stabilized & disposed in AOC 4.	No Further Action
9	1	Former Landfill	Possible lagoon in 1950s/1960s May have been closed in 1968 Used for WWTP alum-lime sludge after 1968 Hydrogenation Plant now present.	Waste removed and placed in AOC 11 Backfilled with soil and ash	Address under Act 2
10	N/A	Spray Irrigation Field	Used from 1967 to 1970 for neutralized WWTP supernatant.	None	Address under Act 2
11	1	Impoundment No. 5	Used for process wastewater sludge before 1967. Closed in 1974	Backfilled with excavated material from Hydrogenation Plant.	Address under Act 2
12	1	Former Lagoon Area	Used from 1935 to 1969 for wax spill cleanups, lab chemicals, tank cleanings, tires.	Liquids removed; disposed in AOC 11. Backfilled with soil and ash	Address under Act 2
13/14	2	Former Landfill Areas	Constructed in 1950s and used until late 1960s Dry solid wastes disposed: coke, activated carbon, fly ash, fiber drums. Closed in early 1970s	Filled with Hydrogenation Plant excavation soils.	Address under Act 2

TABLE 1

11/1/02

SUMMARY OF AOCs/AREAS
CROMPTON CORPORATION, PETROLIA PENNSYLVANIA

AOC No	Groundwater Management Area	Description	Historical Summary	Previous Closure Activities	Current Status
15	4	Acidified Oil Sludge Lagoon	Used from 1928 - 1934 for acidified oil sludge Beneath former Acid Plant Closed in 1934 when Acid Plant built.	Unknown	Address under Act 2
16	5	Waste Area	Beneath Sulfonate Plant (Built in 1941) 1982 drilling foundation drilling found chromium-contaminated fill	Unknown	Address under Act 2
17	7	Wemco Float Disposal Area	Disposal in 5 trenches pre-1980. Wemco float waste, tank cleanings, and lagoon dredgings Closed in 2000 per Closure Plan submitted to PADEP	Cap GMN	PADEP provided closure concurrence Established vegetation in Spring 2001 Post-Closure Monitoring Cap O&M
17 A	7	Wemco Float Disposal Area	Disposal in 3 trenches post-1980 Wemco float waste, tank cleanings, and lagoon dredgings	None	Address under Act 2
18 18A	2	Lagoons 1 and 2 Sludge Disposal Area	Three pits used 1974 to 1979 for sludge from Lagoons 1 & 2	None	Address under Act 2
Area 5	4	Former Acid Plant Location	Approximately 1.2 acres. AOC-15 located w/in it.	Unknown	Address under Act 2
Area 15	3	Former Acidified Oil Storage	Location of former acidified oil storage area	Unknown	Address under Act 2

TABLE 2

SUMMARY OF REGULAR MONITORING / O&M ACTIVITIES
CROMPTON CORPORATION, PETROLIA PENNSYLVANIA

AOC	No. of Monitoring Wells	Frequency of Monitoring / Reporting	Leachate Monitoring	Hydraulic Monitoring	Analytical Parameter	Cap Inspection
1	11	Quarterly	Yes	Yes	General Chemistry, Metals, VOCs	No
2	11	Quarterly	Yes	Yes	General Chemistry, Metals, VOCs	No
4 - 7	23	Quarterly	Yes	Yes	General Chemistry, Metals, VOCs	Yes
17	6	Quarterly	No	Yes	General Chemistry, Metals, VOCs	Yes

Quarterly = January, April, July, September

Crompton

Mr. Darius Ostrauskas, Project Manager
RCRA Corrective Action Program
Mail Code 3WC22
USEPA- Region III
1650 Arch Street
Philadelphia, PA 19103

RE: Status Report
Crompton Corporation (Crompton)
Petrolia, Pennsylvania (Site)

Dear Mr. Ostrauskas:

As per your request during our telephone conversation of August 28, 2002 and the several follow-up e-mails and phone discussions, Crompton has prepared this letter to summarize activities at the above-referenced Site related to environmental investigation and remediation. These activities have been conducted to address the 20 Areas of Concern (AOCs) and two additional Areas identified at the Site [March 15, 1999 letter to the United States Environmental Protection Agency (USEPA) and the Pennsylvania Department of Environmental Protection (PADEP) (the Agencies)]. USEPA conducted the most recent RCRA Facility Assessments (RFAs) at the Site in 1998. In October 1999, USEPA, and PADEP with assistance from the US Army Corps of Engineers (COE) conducted an Environmental Indicator Inspection of the Site. Crompton has worked closely with the Agencies to obtain input and keep the Agencies informed of the significant progress made at the Site regarding these activities. A copy of this Status Report has also been sent to the PADEP.

-1998 RFA report?

-1999 EI Inspection Report

As we discussed, I have been recently appointed as the Crompton Project Manager for the Site remediation activities. I have reviewed the key documents related to Site remediation activities but I am still completing a review of the relatively large amount of detailed information and environmental data for this Site.

This letter provides descriptions of the activities that have been completed to date, as well as our on-going activities at the Site. Once our review is completed, we will provide the Agencies with a work plan describing the activities to be implemented. Crompton strongly desires to expeditiously move forward with Site remediation activities and we want to conduct these activities in a prudent manner in consultation with both PADEP and USEPA.

Crompton Manufacturing Company, Inc.
Benson Road, Middlebury, CT 06749 (203) 573-2000

In 1999, Crompton presented and discussed with the Agencies a draft Act 2 Closure for the 20 AOCs and two additional Areas. A tabulated summary of each AOC and its current status is provided in Table 1. In 2001, Crompton grouped the AOCs in nine Management Areas for the purpose of groundwater investigations.

Since 1998, the following activities have been conducted at the Site and are described herein:

- Agency meetings/correspondence;
- Site investigations;
- Conceptual Site Model;
- Groundwater monitoring/operation and maintenance (O&M); and
- Closure activities.

AGENCY MEETINGS/CORRESPONDENCE

Crompton has previously met with the Agencies to discuss Site remediation and proposed activities. We have also submitted scopes of work and proposals to the Agencies for comment and input prior to the work being implemented. We expect to schedule a meeting with the Agencies in the near future to present our refined closure approach and more details of planned activities so that we can coordinate activities with and receive the Agencies' approval for the work contemplated.

SITE INVESTIGATIONS

Crompton completed a Preliminary Remedial Investigation (RI) in 1998 to verify historical on-Site disposal activities, AOC locations, and their current status. The investigation included sampling of groundwater from eight monitoring wells, soil and sludge sampling, and chemical analyses. The preliminary groundwater sampling results indicated that the majority of the constituents were below the Pennsylvania Statewide Health Standards (SHSs). The exceedance of lead and arsenic SHSs in soil and groundwater were believed to be due to natural background concentrations.

In the summer of 1999, an investigation of AOC 17 was conducted. The investigation included the excavation of test pits, drilling of soil borings, installation of groundwater monitoring wells, and soil and groundwater sampling and chemical analyses. The results of the investigation were used to prepare a closure plan for and subsequent closure of this AOC. The closure plan

activities included the construction of a geosynthetic clay liner/soil cap over the area and the installation of a groundwater monitoring well network and a post-closure monitoring program.

On October 21, 1999, a draft RI Work Plan was submitted to PADEP and USEPA for the investigation of soils in AOCs 8 through 18, and Areas 5 and 15. The main purpose of the investigation was to characterize the nature and delineate the extent of soil contamination with respect to applicable clean-up criteria. The RI Work Plan was revised based on comments received from the PADEP, and the investigation was conducted between May 2000 and March 2001. The results of the RI were reported to the Agencies in a meeting held on June 21, 2001. In general, the concentrations of constituents in soil were below the Pennsylvania SHSs. Benzene was detected in concentrations above the Soil-to-Groundwater SHS, however, subsequent data obtained using the Synthetic Precipitation Leachate Procedure (SPLP) indicated compliance with the applicable SHSs. Arsenic was detected in concentrations above the USEPA Region III Risk-Based Concentration (RBC) criteria (the RBC is referenced here as a screening criteria), however, the concentrations were generally found to be similar to natural background concentrations.

The results of the soil RI were used to develop a groundwater investigation work plan. In June 2001, a Groundwater Investigation Plan was submitted to the Agencies and subsequently revised based on comments received from the Agencies. The plan proposed that a groundwater monitoring well network be established to monitor and investigate nine Management Areas, with each Management Area covering from one to four AOCs (see Table 1). In the second half of 2001, 30 new monitoring wells were installed to supplement the 33 existing monitoring wells. In January 2002, samples were collected from the monitoring well network and submitted for chemical analyses. Benzene was detected in concentrations above the applicable Use-Aquifer Pennsylvania SHS in groundwater samples collected in certain Management Areas. The concentration of 4-nitrophenol detected in groundwater samples from Management Area 1 also exceeded the Use-Aquifer SHS. The concentrations of several metals (lead, beryllium, chromium, nickel, and zinc) also exceeded the applicable SHSs. The results of this groundwater monitoring event were submitted to the Agencies in May 2002.

gw
- no monitoring for AOC3 ? for benzene

GROUNDWATER MONITORING/OPERATION & MAINTENANCE (O&M)

?

The inactive (old) landfill (AOC 4) and former lagoons 1 through 4 (AOCs 1, 2, 3 and 8) were closed in the 1980s in accordance with a consent order, closure plans, or under PADEP oversight. As part of closure activities for these AOCs, groundwater monitoring well networks were installed. The monitoring wells at AOCs 1, 2, 4 through 7, and 17 are sampled and analyzed on a quarterly basis for selected parameters, and water level measurements also are conducted. For AOCs 1, 2 and 4 through 7, leachate samples are also collected and analyzed for

selected parameters and leachate generation rates are measured, both on a quarterly basis. The closure area caps (AOCs 4 through 7 and 17) are regularly inspected and cap repairs, if necessary such as soil erosion, are performed. Crompton has documented and reported all of the AOC 1, 2, 4 through 7, and 17 monitoring and O&M activities to PADEP in accordance with the closure plan requirements. A summary of these activities is provided in Table 2.

CONCEPTUAL SITE MODEL

In June 2001, a Conceptual Site Model (CSM) was developed for the Site and submitted to the Agencies. The main conclusion of the CSM was that the majority of affected soil and groundwater contamination was present in the shallow fill soils and upper groundwater bearing zones.

CLOSURE ACTIVITIES

In March 1999, Crompton presented a draft Act 2 Closure Strategy to the Agencies for AOCs 1 through 18 and Areas 5 and 15. After several follow-up discussions and correspondence with the Agencies, it was agreed that AOCs 1 through 7 and AOC 17 would continue to be handled under the PADEP Waste Management Program (WMP). AOCs 8 through 16, AOC 17A, AOC 18, AOC 18A, Area 5, and Area 15 would be closed under the PADEP Environmental Cleanup Program (ECP) in accordance with Act 2. It was also agreed that PADEP would take the lead in the oversight of the investigation and closure of the AOCs/Areas, and that USEPA would participate in the review process.

In July and August 1999, proof of closure of AOCs 1 through 7 was submitted to the Agencies. Other than the monitoring and O&M activities previously described for AOC's 1, 2, and 4 through 7, no further remedial actions are required for these AOCs.

AOC 17 was closed in 2000 after submittal and PADEP approval of the closure plan. An engineered soil cap was constructed over the area and a groundwater monitoring network was installed. In December 2000, PADEP provided concurrence with the closure certification submitted by Crompton, pending establishment of substantial vegetation of the cap. In the spring of 2001, the establishment of substantial vegetation was confirmed. As previously discussed, groundwater monitoring, inspection, and reporting activities for AOC 17 have been conducted by Crompton in accordance with the closure plan requirements.

ONGOING AND PROPOSED ACTIVITIES

Crompton has conducted significant investigation and remediation activities to investigate the AOCs and Areas and close certain AOCs at the Site. The quarterly programs for groundwater/leachate monitoring, inspections, O&M and reporting will continue for the following AOCs:

- AOC 1 (Lagoon 1);
- AOC 2 (Lagoon 2);
- AOCs 4 through 7 (Inactive Old Landfill, temporary landfill, inert material storage and fire training pit); and
- AOC 17 (WEMCO Float Disposal Area).

The additional investigation and remediation activities that will be implemented over the short term are to:

- collect and compile the required information to prepare draft Human Health and Groundwater Migration Control Environmental Indicator (EI) forms for USEPA review and use;
- develop a proposal for a more detailed program (i.e., scope and schedule) for supplemental investigation and remediation activities at the Site, as necessary. The proposal would include Site-specific lists of soil and groundwater chemicals of concern (COCs). This proposal will be submitted to the Agencies. Crompton will revise the proposal based on the Agencies comments, as appropriate.

Crompton will continue to provide status reports of remedial investigation and remedial activities to the Agencies. We look forward to working with you and to obtain your input so that Site closure activities can move forward in an expeditious and effective manner. If you have any questions on the above or other issues, please do not hesitate to contact me at (203) 573-2353.

Sincerely,

Raman S. Iyer
Director
Environmental Remediation

cc: Anita M. Stainbrook, PADEP

TABLE 1

SUMMARY OF AOCs/AREAS
CROMPTON CORPORATION, PETROLIA PENNSYLVANIA

AOC No.	Groundwater Management Area	Description	Historical Summary	Previous Closure Activities	Current Status
1	8	Lagoon 1	Used from 1950s - 1985 as settling basins for wastewater treatment solids Closed in 1989 per 1987 PADEP Consent Order Wastes placed in AOC 4	Waste removed Backfilled Leachate Collection System (LCS) Groundwater Monitoring Network (GMN)	Post-Closure Monitoring LCS O & M
2	8	Lagoon 2	Same as Lagoon 1	Waste removed Backfilled LCS GMN	Post-Closure Monitoring LCS O & M
3	6	Lagoon 4	Used to store oily waxes & sludges until 1961 1980 Partial closure Closure approved by PADEP in 1988	Solidification Cap GMN	Cap O & M
4	9	Inactive (Old) Landfill	Used until 1985 for Plant waste disposal Closed in 1991 per 1987 PADEP Consent Order	Cap LCS GMN	Post-Closure Monitoring (PCM) LCS / Cap O & M
5	9	Temporary Landfill	Used 1985 to 1990 for temporary waste storage Closure per PADEP	Wastes removed & placed in Residual Waste Landfill in 1991.	No Further Action PCM
6	9	Inert Materials Storage Area	Used until 1987 for storage of scrap metal, tanks, retorts, drums. Closed per 1991 PADEP Consent Order	Wastes removed	No Further Action PCM
7	9	Fire Training Pit	Used until 1987 Slop Oil / Naphtha burned Closed under 1991 PADEP Consent Order	Backfilled Cap	Cap O & M PCM

TABLE 1

SUMMARY OF AOCs/AREAS
CROMPTON CORPORATION, PETROLIA PENNSYLVANIA

AOC No.	Groundwater Management Area	Description	Historical Summary	Previous Closure Activities	Current Status
8	4	Lagoon No 3	Possibly connected to SWMU 15 in 1930s Unknown use mid-1930s to 1968 Used 1968-1978 for WWTP alum sludge Closed in 1984/1985 with PADEP	Sludge stabilized & disposed in AOC 4.	No Further Action
9	1	Former Landfill	Possible lagoon in 1950s/1960s May have been closed in 1968 Used for WWTP alum-lime sludge after 1968 Hydrogenation Plant now present.	Waste removed and placed in AOC 11 Backfilled with soil and ash	Address under Act 2
10	N/A	Spray Irrigation Field	Used from 1967 to 1970 for neutralized WWTP supernatant.	None	Address under Act 2
11	1	Impoundment No. 5	Used for process wastewater sludge before 1967. Closed in 1974.	Backfilled with excavated material from Hydrogenation Plant.	Address under Act 2
12	1	Former Lagoon Area	Used from 1935 to 1969 for wax spill cleanups, lab chemicals, tank cleanings, tires.	Liquids removed; disposed in AOC 11. Backfilled with soil and ash	Address under Act 2
13/14	2	Former Landfill Areas	Constructed in 1950s and used until late 1960s Dry solid wastes disposed: coke, activated carbon, fly ash, fiber drums. Closed in early 1970s.	Filled with Hydrogenation Plant excavation soils.	Address under Act 2

TABLE 1

11/1/02

SUMMARY OF AOCs/AREAS
CROMPTON CORPORATION, PETROLIA PENNSYLVANIA

AOC No.	Groundwater Management Area	Description	Historical Summary	Previous Closure Activities	Current Status
15	4	Acidified Oil Sludge Lagoon	Used from 1928 - 1934 for acidified oil sludge. Beneath former Acid Plant Closed in 1934 when Acid Plant built.	Unknown	Address under Act 2
16	5	Waste Area	Beneath Sulfonate Plant (Built in 1941) 1982 drilling foundation drilling found chromium-contaminated fill	Unknown	Address under Act 2
17	7	Wemco Float Disposal Area	Disposal in 5 trenches pre-1980. Wemco float waste, tank cleanings, and lagoon dredgings. Closed in 2000 per Closure Plan submitted to PADEP	Cap GMN	PADEP provided closure concurrence Established vegetation in Spring 2001 Post-Closure Monitoring Cap O&M
17 A	7	Wemco Float Disposal Area	Disposal in 3 trenches post-1980. Wemco float waste, tank cleanings, and lagoon dredgings.	None	Address under Act 2
18/18A	2	Lagoons 1 and 2 Sludge Disposal Area	Three pits used 1974 to 1979 for sludge from Lagoons 1 & 2.	None	Address under Act 2
Area 5	4	Former Acid Plant Location	Approximately 1.2 acres; AOC-15 located w/in it.	Unknown	Address under Act 2
Area 15	3	Former Acidified Oil Storage	Location of former acidified oil storage area.	Unknown	Address under Act 2

TABLE 2

SUMMARY OF REGULAR MONITORING / O&M ACTIVITIES
CROMPTON CORPORATION, PETROLIA PENNSYLVANIA

AOC	No. of Monitoring Wells	Frequency of Monitoring / Reporting	Leachate Monitoring	Hydraulic Monitoring	Analytical Parameter	Cap Inspection
1	11	Quarterly	Yes	Yes	General Chemistry, Metals, VOCs	No
2	11	Quarterly	Yes	Yes	General Chemistry, Metals, VOCs	No
4 - 7	23	Quarterly	Yes	Yes	General Chemistry, Metals, VOCs	Yes
17	6	Quarterly	No	Yes	General Chemistry, Metals, VOCs	Yes

Quarterly = January, April, July, September

Darius Ostrauskas
10/22/02 09 38 AM

To mansell@state pa us
cc stoth@state pa us
Subject Cromption Petrolia

Hi Mark,

Per a conversation I had with Crompton legal counsel several months ago I understand that this summer your water program collected some water samples at Crompton He implied that your water program may be analyzing these water samples for resourcinol and sulfonic acids, etc Do you know anything about this ? If not can you check with your water program if any of this is true ? We are interested in the results if there are any.

Thanks,

Darius Ostrauskas
215-814-3360

Darius Ostrauskas
09/30/02 08 38 AM

To Raman Iyer <raman_iyer@cromptoncorp com>
cc Paul Gotthold/R3/USEPA/US@EPA, mansell@state pa us
Subject Re Petrolia, PA

Raman:

Thanks for your message. We look forward to receiving your status report on October 15

Thanks,
Darius Ostrauskas

Raman Iyer <raman_iyer@cromptoncorp.com>

Raman Iyer <raman_iyer@cromptoncorp.com>
09/27/02 06:02 PM

To: Darius Ostrauskas/R3/USEPA/US@EPA
cc:
Subject: Petrolia, PA

David:

Just wanted to give you an update on the status of the Crompton Petrolia Site Status report.

Our engineering consultant CRA has prepared a draft report for our review. We will be receiving this report from CRA early next week and I expect to submit the report to you and PADEP by October 15, 2002.

If you have any questions, please call me at 203-573-2353. Thank You.

Raman