

US EPA ARCHIVE DOCUMENT



SDMS DocID 553623

**REMEDIAL ACTION COMPLETION REPORT
DEBRIS, SLUDGE, AND MIXED-CONTAMINANT SOIL REMOVAL**

Appendices J-U

**Wildwood Property
Wells G & H Superfund Site
Woburn, MA**

Superfund Records Center
SITE: Wells G & H
BREAK: 76
OTHER: 553623

Prepared For:

BEATRICE COMPANY

Prepared By:

**REMEDIATION TECHNOLOGIES, INC.
9 Pond Lane
Concord, MA 01742**

RETEC Project No.: 3-0947-730

MARCH 1995



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SLUDGE TRANSPORTATION AND DISPOSAL

GROUP F

HAZARDOUS SLUDGE



COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF HAZARDOUS WASTE
 One Winter Street
 Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MP 6 1 7 9 3 5 5 5 2 3 00001		Manifest Document No. 00001		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.					
3. Generator's Name and Mailing Address Beatric Co. c/o Retec 9 Pond Lane, Concord, MA 01742						A. State Manifest Document Number MA H374868							
4. Generator's Phone (508) 371-1422						B. State Gen. ID same							
5. Transporter 1 Company Name Franklin Environmental Services Inc.				6. US EPA ID Number MAD08AB1A1B6		C. State Trans. ID 37976MA							
7. Transporter 2 Company Name						8. US EPA ID Number		D. Transporter's Phone (508) 384-6151					
9. Designated Facility Name and Site Address Envirosafe Services of Ohio 876 Otter Creek Road, P.O. Box 16751 Oregon, OH 43616-7571						10. US EPA ID Number DHDO45243706		E. State Trans. ID					
9. Designated Facility Name and Site Address						10. US EPA ID Number		F. Transporter's Phone ()					
9. Designated Facility Name and Site Address						10. US EPA ID Number		G. State Facility's ID Not Required					
9. Designated Facility Name and Site Address						10. US EPA ID Number		H. Facility's Phone (419) 255-5100					
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)						12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No	
a. Hazardous Waste Solid, n.o.s. 9, NA3077, PG III (marine pollutant) RQ (Chlordane, D008, D020), (ERG#31)						0010100015		YNS		0008		0020	
b.													
c.													
d.													
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) hazardous contaminated soil						K. Handling Codes for Wastes Listed Above							
a. 15698-001						a. DFC							
b.						b. SCF							
b.						b. ICM							
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 42440B102T													
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.													
Printed/Typed Name Carl A. Penter								Signature [Signature]		Date 090694			
17. Transporter 1 Acknowledgement of Receipt of Materials								Signature [Signature]		Date 090694			
Printed/Typed Name NORMAND L. BLAIS JR								Signature [Signature]		Date 090694			
18. Transporter 2 Acknowledgement of Receipt of Materials								Signature		Date			
Printed/Typed Name								Signature		Date			
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.													
Printed/Typed Name Dale M. Penter								Signature [Signature]		Date 0910784			

In case of emergency or spill, immediately call the National Response Center (800) 424-8802.

GENERATOR

TRANSPORTER

FACILITY

CERTIFICATE OF DISPOSAL

MP6179355523

PART A — Generator Information

Generator Name BEATRIC CO Generator USEPA ID# _____
 Manifest Document No. 00001

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698001	9 7 94	D81	1 TR	21.22T

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE Dale M. Partner
 TITLE SCALE MASTER

DATE 9-7-94

DISTRIBUTION OF COPIES
 WHITE — Office
 CANARY — Generator
 PINK — EPA

FEDERAL CHLORIDE LAND DISPOSAL RESTRICTION NOTIFICATION AND CERTIFICATION FORM

WSID 15698-001

TOR NAME Beatrice Company

I.D. NO. MP6179355523

Manifest Doc. No. MAH 374868

DESCRIPTION Contaminated Soil

EPA HW #s D008

28.2 Category: E [X] NON-WASTEWATER F [] WASTEWATER G [X] Subdivision: TC Toxic Only-Lead

Treatment Std Ref(s): X [] 40 CFR 268.41(a) Y [] 40 CFR 268.42(a) Z [] 40 CFR 268.43(a)

OAC 3745-59-41-A OAC 3745-59-42-A OAC 3745-59-43-A [] DC01 [] DC02 [] CWA [] NCR-CWA

The generator named above hereby provides the following NOTIFICATION as required by 40 CFR 268.7 / CAC 3745-59-07 that the waste material being shipped under the above Manifest Document Number is subject to land disposal restrictions:

- A [] § 268.7(a)(1) / OAC 3745-59-07-A-1: The waste does not meet the applicable treatment standards in 40 CFR 268 Subpart D / CAC 3745-59 and/or exceeds the applicable prohibition levels in 40 CFR 268.32 / OAC 3745-59-32 or RCRA § 3004(d) and may not be land disposed until it meets the standards referenced above or on the attached sheet.
B [] § 268.7(a)(2) / OAC 3745-59-07-A-2: The waste meets the applicable treatment standards in 40 CFR 268 Subpart D / OAC 3745-59 and/or the applicable prohibition levels in 40 CFR 268.32 / OAC 3745-59-32, RCRA § 3004(d) (California List) or the treatment standards for hazardous debris in 40 CFR 268.45 and may be land disposed without additional treatment.
C [] § 268.7(a)(3) / OAC 3745-59-07-A-3: The waste is subject to a § 268 granted petition, § 268.5 / OAC 3745-59-05 exemption, a § 268.6 / OAC 3745-59-06 extension or a Nationwide Variance under 40 CFR 268, Subpart C or Variance under rules CAC 3745-59-30 to 3745-59-33 and may be land disposed without additional treatment. The Petition, Exemption, Extension or Variance will remain in effect until the date indicated in this Notification.

The generator named above hereby provides the following NOTIFICATION and/or CERTIFICATION as required by 40 CFR 268 / CAC 3745-59 that is applicable to the waste material being shipped under the above Manifest Document Number:

- 4 [] This waste is exempt from land disposal restrictions per 40 CFR 268.1 / OAC 3745-59-01 until 40 CFR 268.5 OAC 3745-59-05 Exemption, 268.5 3745-59-06 Extension or Other Extension/Variance as Detailed in 40 CFR 268.1 3745-59-01;
5 [] This waste is exempt from land disposal restrictions until per the applicable alternate standards established in a petition granted pursuant to 40 CFR 268.44 / OAC 3745-59-44 (Alternate treatment standards Petition);
6 [] This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45. [§268.7(a)(1)(iv) or 268.7(a)(3)(v) Debris]. List contaminants subject to treatment per 40 CFR 268.45(b) or circle on page 2: [Arsenic [] Barium [] Cadmium [] Chromium [] Lead [] Mercury [] Selenium [] Silver [] Nickel [] Antimony [] Beryllium [] Thallium [] Zinc [] Cyanide-A [] Cyanide-T [] OTHER:

7 [] I certify under penalty of law that the debris has been treated in accordance with the requirements of 40 CFR 268.45. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. [§268.7(d)(2)(iii) made non-appz]. Mark only: m [] EXTRACTION n [] DESTRUCTION (Identify method(s) of treatment):

9 [] § 268.7(b)(5)(iii): I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by incineration in units operated in accordance with 40 CFR Part 268, subpart O, or by 40 CFR part 268, subpart O, or by combustion in fuel substitution units operating in accordance with applicable technical requirements, and I have been unable to detect the nonwastewater organic constituents despite having used best good faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. (Incineration "good faith" detection limit alternative for NYW with 40 CFR 268.43 treatment standards)

10 [] § 268.7(a)(2)(ii): I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

OAC 3745-59-07-A-2-(b): I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in rules 3745-59-40 to 3745-59-44 of the Administrative Code and all applicable prohibitions set forth in rule 3745-59-32 of the Administrative Code or section RCRA 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment. (Meets Calif. and §268 Subpart D standards in present form w/o additional treatment)

11 [] § 268.7(b)(5)(i): I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in 40 CFR Part 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d) without impermissible dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

OAC 3745-59-07-B-5-(a): I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in rules 3745-59-40 to 3745-59-44 of the Administrative Code and all applicable prohibitions set forth in rule 3745-59-32 of the Administrative Code or RCRA section 3004(d) without dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. (Treatment has been performed; waste meets California, §268 Subpart D standards; TCLP, CONCENTRATION or §268.45 Table 1 IMMOBILIZATION). o [] IMMOBILIZATION: [] Microencapsulation [] Macroencapsulation [] Sealing

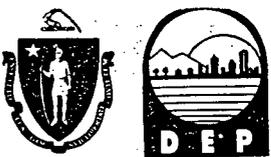
12 [] § 268.7(b)(5)(ii): I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.42. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. (Mark applicable standard on w): p [] DEACT q [] INCIN r [] FSUBS s [] MERC t [] IMERC u [] RLEAD v [] RTHRM w [] RORGS [] OAC 3745-59-07-B-5-(b): I certify under penalty of law that the waste has been treated in accordance with the requirements of rule 3745-59-42 of the Administrative Code. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. (Waste has been treated by the required 40 CFR 268.42(a) Technology)

13 [] § 268.7(a)(7): I certify under penalty of law that I have personally examined and am familiar with the waste and that the lab pack contains only wastes specified in Appendix IV to part 268 or solid wastes not subject to regulation under 40 CFR part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment. (Organometallic labpack)

14 [] § 268.7(a)(8): I certify under penalty of law that I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste and that the lab pack contains only organic waste specified in Appendix V to part 268 or solid wastes not subject to regulation under 40 CFR part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment. (Organic labpack)

94-2 Signature Date Sept 6 1994

This notification/certification is provided for your convenience as an example, and is based on the information provided to us in the approved Waste Product Questionnaire for the wastewater referenced above by Waste Stream Identification Number (WSID). It is the generator's responsibility under 40 CFR 268.7 to ensure that appropriate notifications and/or certifications accompany each shipment of waste as required. ESI makes no representations as to the accuracy of this example, and recommends that the generator independently verify notification/certification requirements for this waste stream.



COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF HAZARDOUS WASTE
 One Winter Street
 Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MP61793555236000R		Manifest Document No. 6000R		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.			
3. Generator's Name and Mailing Address Beatric Co. c/o Retec 9 Pond Lane, Concord, MA 01742				6. US EPA ID Number		A. State Manifest Document Number MA H374867		B. State Gen. ID same			
4. Generator's Phone (508) 371-1422				5. Transporter 1 Company Name Franklin Environmental Services Inc.		C. State Trans. ID 37978 MA		D. Transporter's Phone (508) 384-6151			
5. Transporter 1 Company Name				6. US EPA ID Number MAD084814136		E. State Trans. ID		F. Transporter's Phone			
7. Transporter 2 Company Name				8. US EPA ID Number		G. State Facility's ID Not Required		H. Facility's Phone (419) 255-5100			
9. Designated Facility Name and Site Address Envirosafe Services of Ohio 876 Otter Creek Road, P.O. Box 16751 Oregon, OH 43616-7571				10. US EPA ID Number DHDD045243706		12. Containers No. Type		13. Total Quantity			
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				14. Unit Wt/Vol		15. Waste No.					
a. Hazardous Waste Solid, n.o.s. 9, NA3077, PG III (marine pollutant) RQ (Chlordane, D009, D020), (ERG#31)				001		0015		D008 D020			
b.											
c.											
d.											
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) hazardous contaminated soil						K. Handling Codes for Wastes Listed Above DR Self clean					
a. 15698-001						a.					
b.						b.					
c.						c.					
d.						d.					
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 44540P 2027T											
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.											
Printed/Typed Name Carl Laquidara (Agent for Provest)								Signature <i>Carl Laquidara</i>		Date 08 06 94	
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Philip Provost								Signature <i>Philip Provost</i>		Date 09 06 94	
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name								Signature		Date	
19. Discrepancy Indication Space											
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.								Signature <i>Dale M. Pertner</i>		Date 09 07 94	
Printed/Typed Name Dale M. Pertner								Signature		Date	

In case of emergency or spill, immediately call the National Response Center (800) 424-8802.

GENERATOR

TRANSPORTER

FACILITY

CERTIFICATE OF DISPOSAL

MP6179355523

PART A — Generator Information

Generator Name *Beatrice* Generator USEPA ID# _____

Manifest Document No. *00002*

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
<i>15698001</i>	<i>9 7 94</i>	<i>D81</i>	<i>1 TR</i>	<i>22.27 T</i>

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE *Dale M. Partner* DATE *9.7.94*
TITLE _____
SCALE MASTER

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WHITE — Office
CANARY — Generator
PINK — EPA

FEDERAL CHLORLAND DISPOSAL RESTRICTION NOTIFICATION AND CERTIFICATION FORM

WSID 15698-001

TOR NAME Beatrice Company

I.D. NO. MP6179355523

Manifest Doc. No. MAH 374867

DESCRIPTION Contaminated Soil

EPA HW # D008

Category: E [NON-WASTEWATER] F [WASTEWATER] G [Subdivision: TC Toxic Only-Lead]

Treatment Std. Ref(s): X [40 CFR 268.41(a)] Y [40 CFR 268.42(a)] Z [40 CFR 268.43(a)]
 OAC 3745-59-41-A OAC 3745-59-42-A OAC 3745-59-43-A DC01 DC02 CWA Non-CWA

The generator named above hereby provides the following NOTIFICATION as required by 40 CFR 268.7 / CAC 3745-59-07 that the waste material being shipped under the above Manifest Document Number is subject to land disposal restrictions:

- A [] § 268.7(a)(1) / OAC 3745-59-07-A-1: The waste does not meet the applicable treatment standards in 40 CFR 268 Subpart D / OAC 3745-59 and/or exceeds the applicable prohibition levels in 40 CFR 268.32 / OAC 3745-59-32 or RCRA § 3004(d) and may not be land disposed until it meets the standards referenced above or on the attached sheet.
- B [] § 268.7(a)(2) / OAC 3745-59-07-A-2: The waste meets the applicable treatment standards in 40 CFR 268 Subpart D / OAC 3745-59 and/or the applicable prohibition levels in 40 CFR 268.32 / OAC 3745-59-32, RCRA § 3004(d) (California List) or the treatment standards for hazardous debris in 40 CFR 268.45 and may be land disposed without additional treatment.
- C [] § 268.7(a)(3) / OAC 3745-59-07-A-3: The waste is subject to a § 268 granted petition, § 268.5 / OAC 3745-59-05 exemption, a § 268.6 / OAC 3745-59-06 extension or a Nationwide Variance under 40 CFR 268, Subpart C or Variance under rules OAC 3745-59-30 to 3745-59-33 and may be land disposed without additional treatment. The Petition, Exemption, Extension or Variance will remain in effect until the date indicated in this Notification.

The generator named above hereby provides the following NOTIFICATION and/or CERTIFICATION as required by 40 CFR 268 / CAC 3745-59 that is applicable to the waste material being shipped under the above Manifest Document Number:

- 4 [] This waste is exempt from land disposal restrictions per 40 CFR 268.1 / OAC 3745-59-01 until 1/1/94 / OAC 3745-59-01 until 1/1/94
[40 CFR 268.5 OAC 3745-59-05 Exemption, 268.5 3745-59-06 Extension or Other Extension/Variance as Detailed in 40 CFR 268.1 3745-59-01]
- 5 [] This waste is exempt from land disposal restrictions until 1/1/94 per the applicable alternate standards established in a petition granted pursuant to 40 CFR 268.44 / OAC 3745-59-44 *[Alternate treatment standards Petition]*
- 6 [] This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45. *[§268.7(a)(1)(iv) or 268.7(a)(2)(v) Debris]* List contaminants subject to treatment per 40 CFR 268.45(b) or circle on page 2: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Nickel Antimony Beryllium Thallium Zinc Cyanide-A Cyanide-T OTHER: _____

7 [] I certify under penalty of law that the debris has been treated in accordance with the requirements of 40 CFR 268.45. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. *[§268.7(d)(2)(iii) made non-appz.]* Mark mn: m EXTRACTION DESTRUCTION (Identify method(s) of treatment): _____

9 [] § 268.7(b)(5)(iii): I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by incineration in units operated in accordance with 40 CFR Part 264, subpart O, or by 40 CFR part 265, subpart O, or by combustion in fuel substitution units operating in accordance with applicable technical requirements, and I have been unable to detect the nonwastewater organic constituents despite having used best good faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. *[Incineration "good faith" detection limit alternative for NWW with 40 CFR 268.43 treatment standards]*

10 [] § 268.7(a)(2)(ii): I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

OAC-3745-59-07-A-2-(b): I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in rules 3745-59-40 to 3745-59-44 of the Administrative Code and all applicable prohibitions set forth in rule 3745-59-32 of the Administrative Code or section RCRA 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment. *[Meets Calif. and §268 Subpart D standards in present form w/o additional treatment]*

11 [] § 268.7(b)(5)(i): I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in 40 CFR Part 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d) without impermissible dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

OAC 3745-59-07-8-5-(a): I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in rules 3745-59-40 to 3745-59-44 of the Administrative Code and all applicable prohibitions set forth in rule 3745-59-32 of the Administrative Code or RCRA section 3004(d) without dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. *[Treatment has been performed; waste meets California, §268 Subpart D standards: TCLP, CONCENTRATION or §268.45 Table 1 IMMOBILIZATION]* IMMOBILIZATION: Microencapsulation Macroencapsulation Sealing

12 [] § 268.7(b)(5)(ii): I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.42. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. *[Mark applicable standard on:]* p DEACT q INCIN r FSUBS s MERC l MERC u RLEAD v RTHRM w RORGS OAC 3745-59-07-8-5-(b): I certify under penalty of law that the waste has been treated in accordance with the requirements of rule 3745-59-42 of the Administrative Code. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. *[Waste has been treated by the required 40 CFR 268.42(a) Technology]*

13 [] § 268.7(a)(7): I certify under penalty of law that I have personally examined and am familiar with the waste and that the lab pack contains only wastes specified in Appendix IV to part 268 or solid wastes not subject to regulation under 40 CFR part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment. *[Organometallic labpack]*

14 [] § 268.7(a)(8): I certify under penalty of law that I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste and that the lab pack contains only organic waste specified in Appendix V to part 268 or solid wastes not subject to regulation under 40 CFR part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment. *[Organic labpack]*

94-2 Signature [Signature] Date Sept 6 1984
 This notification/certification is provided for your convenience as an example, and is based on the information provided to EPA in the approved Waste Product Questionnaire for the waste stream referenced above by Waste Stream Identification Number (WSID). It is the generator's responsibility under 40 CFR 268.7 to ensure that appropriate notifications and/or certifications accompany each shipment of waste as required. EPA makes no representations as to the accuracy of this example and recommends that the generator independently verify notification/certification requirements for this waste stream.



COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF HAZARDOUS WASTE
 One Winter Street
 Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MP 6 1 1 7 9 3 5 5 5 2 3		Manifest Document No. BB 0 0 3		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address Beatrice Co. c/o Retec 9 Pond Lane, Concord, MA 01742 4. Generator's Phone (508) 371-1422				6. US EPA ID Number MA 10 18 14 18 11 14 11 13 16		A. State Manifest Document Number MA H374870		B. State Gen. ID same	
5. Transporter 1 Company Name Franklin Environmental Services Inc.				8. US EPA ID Number MA 10 18 14 18 11 14 11 13 16		C. State Trans. ID 37978 MA		D. Transporter's Phone (508) 384-6151	
7. Transporter 2 Company Name				10. US EPA ID Number OH 10 14 15 12 14 13 17 10 16		E. State Trans. ID		F. Transporter's Phone ()	
9. Designated Facility Name and Site Address Envirosafe Services of Ohio 875 Otter Creek Road, P.O. Box 16751 Oregon, OH 43616-7571				12. Containers		13. Total Quantity		14. Unit Wt/Vol	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				No.		Type		Waste No.	
a. Hazardous Waste Solid, n.o.s. 9, NA3077, PG III (marine pollutant) RQ (Chlordane, D008, D020), (ERG#31)				001		D008		0008	
b.									
c.									
d.									
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) hazardous contaminated soil a. 15698-001				c.		K. Handling Codes for Wastes Listed Above a. b. c. d.			
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 23 OST 46100P									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.									
17. Transporter 1 Acknowledgement of Receipt of Materials				Printed/Typed Name Philip Provost		Signature Philip Provost		Date 09/09/94	
18. Transporter 2 Acknowledgement of Receipt of Materials				Printed/Typed Name		Signature		Date	
19. Discrepancy Indication Space DRIVER CHARGE ONLY Daniel R Cook 9/12/94									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.				Printed/Typed Name JERRY RUCKE		Signature Jerry Rucke		Date 09/12/94	

In case of emergency or spill, immediately call the National Response Center (800) 424-8802.

GENERATOR FACILITY MAILS TO GENERATOR

MA H374870 COPY>3 FACILITY MAILS TO GENERATOR

Form Approved OMB No. 2050-0039, Expires 9-30-94

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY>3:

FACILITY MAILS TO GENERATOR

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name Beatrice Co Generator USEPA ID# MP 6179355523
Manifest Document No. 00003

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698001	9 13 94	D8V	1 TR	23.05T

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE Dale M. Pertner
TITLE SCALE MASTER

DATE 9.13.94

DISTRIBUTION OF COPIES
WHITE — Office
CANARY — Generator
PINK — EPA

TOR NAME Beatrice Company

I.D. NO. MP617935523

Manifest Doc. No. MAH 374870

DESCRIPTION Contaminated Soil

EPA HW # D008

Category: E NON-WASTEWATER F WASTEWATER GK Subdivision: TC Toxic Only-Lead

Treatment Std. Ref(s): X 40 CFR 268.41(a) Y 40 CFR 268.42(a) Z 40 CFR 268.43(a)
OAC 3745-59-41-A OAC 3745-59-42-A OAC 3745-59-43-A DC01 DC02 CWA Non-CWA

The generator named above hereby provides the following NOTIFICATION as required by 40 CFR 268.7 / CAC 3745-59-07 that the waste material being shipped under the above Manifest Document Number is subject to land disposal restrictions:

- A § 268.7(a)(1) / OAC 3745-59-07-A-1: The waste does not meet the applicable treatment standards in 40 CFR 268 Subpart D / OAC 3745-59 and/or exceeds the applicable prohibition levels in 40 CFR 268.32 / OAC 3745-59-32 or RCRA § 3004(d) and may not be land disposed until it meets the standards referenced above or on the attached sheet.
- B § 268.7(a)(2) / OAC 3745-59-07-A-2: The waste meets the applicable treatment standards in 40 CFR 268 Subpart D / OAC 3745-59 and/or the applicable prohibition levels in 40 CFR 268.32 / OAC 3745-59-32, RCRA § 3004(d) (California List) or the treatment standards for hazardous debris in 40 CFR 268.45 and may be land disposed without additional treatment.
- C § 268.7(a)(3) / OAC 3745-59-07-A-3: The waste is subject to a § 268 granted petition, § 268.5 / OAC 3745-59-05 exemption, a § 268.6 / OAC 3745-59-06 extension or a Nationwide Variance under 40 CFR 268, Subpart C or Variance under rules CAC 3745-59-30 to 3745-59-33 and may be land disposed without additional treatment. The Petition, Exemption, Extension or Variance will remain in effect until the date indicated in this Notification.

The generator named above hereby provides the following NOTIFICATION and/or CERTIFICATION as required by 40 CFR 268 / CAC 3745-59 that is applicable to the waste material being shipped under the above Manifest Document Number:

- 4 This waste is exempt from land disposal restrictions per 40 CFR 268.1 / OAC 3745-59-01 until 40 CFR 268.5 OAC 3745-59-05 Exemption, 268.5 3745-59-06 Extension or Other Extension/Variance as Detailed in 40 CFR 268.1 3745-59-01;
- 5 This waste is exempt from land disposal restrictions until _____ per the applicable alternate standards established in a petition granted pursuant to 40 CFR 268.44 / OAC 3745-59-44 Alternate treatment standards Petition;
- 6 This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45. §268.7(a)(1)(iv) or 268.7(a)(2)(v) Debris. List contaminants subject to treatment per 40 CFR 268.45(b) or circle on page 2: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Nickel Antimony Beryllium Thallium Zinc Cyanide-A Cyanide-T OTHER: _____

7 I certify under penalty of law that the debris has been treated in accordance with the requirements of 40 CFR 268.45. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. §268.7(d)(2)(iii) made non-appz. Mark rxn: EXTRACTION DESTRUCTION (Identify method(s) of treatment): _____

9 § 268.7(b)(5)(iii): I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by incineration in units operated in accordance with 40 CFR Part 268, subpart O, or by 40 CFR part 268, subpart O, or by combustion in fuel substitution units operating in accordance with applicable technical requirements, and I have been unable to detect the nonwastewater organic constituents despite having used best good faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. (Incineration "good faith" detection limit alternative for NWH with 40 CFR 268.43 treatment standards)

10 § 268.7(a)(2)(ii): I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

OAC 3745-59-07-A-2(b): I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in rules 3745-59-40 to 3745-59-44 of the Administrative Code and all applicable prohibitions set forth in rule 3745-59-32 of the Administrative Code or section RCRA 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment. (Meets Calif. and §268 Subpart D standards in present form w/o additional treatment)

11 § 268.7(b)(5)(i): I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in 40 CFR Part 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d) without impermissible dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

OAC 3745-59-07-B-5(a): I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in rules 3745-59-40 to 3745-59-44 of the Administrative Code and all applicable prohibitions set forth in rule 3745-59-32 of the Administrative Code or RCRA section 3004(d) without dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. (Treatment has been performed; waste meets California, §268 Subpart D standards: TCLP, CONCENTRATION or §268.45 Table 1 IMMOBILIZATION, or) IMMOBILIZATION: Microencapsulation Macroencapsulation Sealing

12 § 268.7(b)(5)(ii): I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.42. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. (Mark applicable standard on w:) DEACT INCIN FSUES MERC l MERC u RLEAD v RTHRM w RORGS _____
OAC 3745-59-07-B-5(b): I certify under penalty of law that the waste has been treated in accordance with the requirements of rule 3745-59-42 of the Administrative Code. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment. (Waste has been treated by the required 40 CFR 268.42(a) Technology)

13 § 268.7(a)(7): I certify under penalty of law that I have personally examined and am familiar with the waste and that the lab pack contains only wastes specified in Appendix IV to part 268 or solid wastes not subject to regulation under 40 CFR part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment. (Organometallic labpack)

14 § 268.7(a)(8): I certify under penalty of law that I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste and that the lab pack contains only organic waste specified in Appendix V to part 268 or solid wastes not subject to regulation under 40 CFR part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment. (Organic labpack)

94-2 Signature [Signature] Date Sept. 9, 94

This notification/certification is provided for your convenience as an example, and is based on the information provided to ESI in the approved Waste Product Questionnaire for the waste stream referenced above by Waste Stream Identification Number (WSID). It is the generator's responsibility under 40 CFR 268.7 to ensure that appropriate notifications and/or certifications accompany each shipment of waste as required. ESI makes no representations as to the accuracy of this example, and recommends that the generator independently verify notification/certification requirements for this waste stream.

GROUPS G AND H

NON-HAZARDOUS SLUDGE



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015113

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 c. Address: 206 SOUTH LASALLE STREET d. Address: 746 SALEM ST REAR
CHICAGO, IL 60604 WOBURN, MA 01801
 e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 If owner of the generating facility differs from the generator, provide:
 Owner's Name: _____ h. Owner's Phone No.: _____

i. BFI WASTE CODE: MA/ 855/ 850803/ 215631
 Description of Waste: UNIDENTIFIED FLUORENCE POLYMER (POLYESTER) (UN3077) PG III (Inorganic Polyketone)
RECYCLED POLYESTER (POLYESTER) (UN3077) PG III (Inorganic Polyketone)
CHLOROLANE CONTAMINANT 746 E 26431
 k. Quantity: 15 Units: Y³ No.: 1 TYPE: T

TYPE	
DM	- METAL DRUM
DP	- PLASTIC DRUM
B	- BAG
BA	- 6 MIL. PLASTIC BAG
	or WRAP
T	- TRUCK
O	- OTHER

UNITS	
P	- POUNDS
Y	- YARDS
M ³	- CUBIC METERS
Y ³	- CUBIC YARDS
O	- OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: [Signature] Signature: [Signature] Shipment Date: 5/16/17

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. TRANSPORTER-I d. Phone No.: (508) 384-5151 e. Truck No.: 12
 Address: INDUSTRIAL ROAD f. Vehicle License No./State: _____
WRENTHAM, MA Acknowledgement of Receipt of Materials.
 Driver Name/Title: Charles Malley g. Driver Signature: [Signature] Shipment Date: _____

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

Site Name: BFI MAHONING LANDFILL c. Phone No.: (216) 536-8013
 Physical Address: 8100 S. STATE LINE ROAD d. Mailing Address: PO BOX 5240
LOWELLVILLE, OH 44436 POLAND, OH 44514

Discrepancy Indication Space: _____
I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent: _____ Signature: _____ Receipt Date: _____

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

Operator's* Name: _____ b. Operator's* Phone No.: _____
 Operator's* Address: _____

Special Handling Instructions and additional information: _____

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

Operator's* Name & Title: _____ Print/Type _____ Operator's* Signature _____ Date _____

Name and Address of Responsible Agency: _____

_____ Friable; _____ Non-friable; _____ Both _____ % friable _____ % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or both.

GENERATOR RETAIN



NON-HAZARDOUS WASTE & ASBESTOS MANIFEST

No. 015114

21

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

a. Generator Name: **BEATRICE COMPANY**

c. Address: **208 SOUTH LASALLE STREET**
CHICAGO, IL 60604

e. Phone No.: **(508) 371-1422**

g. Owner's Name:

b. Generating Location: **BEATRICE COMPANY**

d. Address: **246 SALEM ST REAR**
WOBURN, MA 01801

f. Phone No.: **(508) 371-1422**

h. Owner's Phone No.:

i. BFI WASTE CODE: **MA/ 855/ 950803/ 215631**

j. Description of Waste: **UN3077, PG III (Asbestos Pollutant)**

k. Quantity: 15 Units: 1³ No. 1 TYPE T

- Containers
- TYPE
- DM - METAL DRUM
 - DP - PLASTIC DRUM
 - R - BAG
 - DA - 6 MIL. PLASTIC BAG or WRAP
 - T - TRUCK
 - O - OTHER
- UNITS
- P - POUNDS
 - Y - YARDS
 - M³ - CUBIC METERS
 - Y³ - CUBIC YARDS
 - O - OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Paul A. ... (Agent for Beatrice)
Generator Authorized Agent Name

Signature

9/16/91
Shipment Date

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: **FRANKLIN ENVIRONMENTAL SERVICES, INC.**

b. Address: **INDUSTRIAL ROAD**
WRENTHAM, MA

c. Driver Name/Title: David ...
Print/Type

d. Phone No.: **(508) 384-6151**

e. Truck No.: 966

f. Vehicle License No./State: 173620 MA
Acknowledgement of Receipt of Materials.

g. Driver Signature: David ...
Shipment Date: 09/16/91

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: **BFI MAHONING LANDFILL**

b. Physical Address: **8100 S. STATE LINE ROAD**
LOWELLVILLE, OH 44636

c. Phone No.: **(216) 536-8013**

d. Mailing Address: **PO BOX 5240**
POLAND, OH 44514

Discrepancy Indication Space: _____
I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent _____ Signature _____ Receipt Date _____

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____ b. Operator's* Phone No.: _____

Operator's* Address: _____

Special Handling Instructions and additional information: _____

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packaged, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

a. Operator's* Name & Title: _____ Print/Type _____ Operator's* Signature _____ Date _____

Name and Address of Responsible Agency: _____

g. _____ Friable; _____ Non-friable; _____ Both _____ % friable _____ % nonfriable

Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or both



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015115

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I

GENERATOR (Generator completes all of Section I)

a. Generator Name: BEATRICE COMPANY

b. Generating Location: BEATRICE COMPANY

c. Address: 208 SOUTH LASALLE STREET
CHICAGO, IL 60604

d. Address: 246 SALEM ST. REAR
WOBURN, MA 01801

e. Phone No.: (508) 371-1422

f. Phone No.: (508) 371-1422

g. Owner's Name: _____

h. Owner's Phone No.: _____

i. BFI WASTE CODE MA/ 855/ 950503/ 215631

j. Description of Waste: UNIDENTIFIED POLYMER RESIDUES, SOLUBLE IN WATER, UNIDENTIFIED POLYMER RESIDUES, SOLUBLE IN WATER, CHLORIDATED CONTAINING TELLSOR

k. Quantity: _____ Units: 3 Containers: 1 TYPE: T

TYPE	
DM	- METAL DRUM
DP	- PLASTIC DRUM
B	- BAG
BA	- 6 MIL PLASTIC or WRAP
T	- TRUCK
O	- OTHER
UNITS	
P	- POUNDS
Y	- YARDS
M ³	- CUBIC METERS
Y ³	- CUBIC YARDS
O	- OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: [Signature] Signature: [Signature] Shipment Date: 5/6/94

Section II

TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: FRANKLIN ENVIRONMENTAL SERVICES, INC.

b. Address: INDUSTRIAL ROAD
WRENTHAM, MA

c. Driver Name/Title: KAY A. MOORE
Print/Type

d. Phone No.: (508) 384-6151

e. Truck No.: 2

f. Vehicle License No./State: 11784 / MA
Acknowledgement of Receipt of Materials.

g. Driver Signature: [Signature] Shipment Date: 5/6/94

Section III

DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MAHONING LANDFILL

b. Physical Address: 6100 S. STATE LINE ROAD
LOWELLVILLE, OH 44436

c. Phone No.: (216) 836-8013

d. Mailing Address: PO BOX 5240
POLAND, OH 44154

e. Discrepancy Indication Space: _____
I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.

f. Name of Authorized Agent: _____ Signature: _____ Receipt Date: _____

Section IV

ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____

b. Operator's* Phone No.: _____

c. Operator's* Address: _____

d. Special Handling Instructions and additional information: _____

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packaged, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

e. Operator's* Name & Title: _____ Print/Type Operator's* Signature: _____ Date: _____

f. Name and Address of Responsible Agency: _____

g. Friable; Non-friable; Both _____ % friable _____ % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or to the contractor performing the work.

GENERATOR RETAIN



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015116

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

a. Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY

c. Address: 208 SOUTH LASALLE STREET d. Address: 246 SALEM ST. REAR
CHICAGO, IL 60604 WOBURN, MA 01801

e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422

g. Owner's Name: _____ h. Owner's Phone No.: _____

i. BFI WASTE CODE: MA/ 855/ 950603/ 215631

Description of Waste: EDUCATIONAL LABORATORY MATERIALS, CHEMICALS, LIQUIDS, SOLIDS, AND GASES (UN3077, PG III (Acute Poisoning))

Quantity	Units	No.	TYPE
<u>15</u>	<u>DRUMS</u>	<u>15</u>	<u>DM</u>

- Containers**
- DM - METAL DRUM
 - DP - PLASTIC DRUM
 - B - BAG
 - BA - 6 MIL. PLASTIC BAG or WRAP
 - T - TRUCK
 - O - OTHER
- UNITS**
- P - POUNDS
 - Y - YARDS
 - M³ - CUBIC METERS
 - Y³ - CUBIC YARDS
 - O - OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: Carl Landis (Agent for Beatrice) Signature: [Signature] Shipment Date: 9/9/84

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. d. Phone No.: (508) 384-6151 e. Truck No.: _____

b. Address: INDUSTRIAL ROAD JACK GRAY TOWN f. Vehicle License No./State: _____
WRENTHAM, MA Acknowledgement of Receipt of Materials: _____

c. Driver Name/Title: [Name] g. Driver Signature: [Signature] Shipment Date: _____

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MAHONING LANDFILL c. Phone No.: (216) 536-8013

b. Physical Address: 8100 S. STATE LINE ROAD d. Mailing Address: PO BOX 5240
LOWELLVILLE, OH 44426 POLAND OH 44511

e. Discrepancy Indication Space: _____
I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.

f. Name of Authorized Agent: _____ Signature: _____ Receipt Date: _____

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____ b. Operator's* Phone No.: _____

c. Operator's* Address: _____

d. Special Handling Instructions and additional information: _____

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

e. Operator's* Name & Title: _____ Operator's* Signature: _____ Date: _____
Print/Type

f. Name and Address of Responsible Agency: _____

g. Friable; Non-friable; Both % friable % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or by



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015117

7

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

a. Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 c. Address: 208 SOUTH LASALLE STREET d. Address: 246 SALEM ST. REAR
CHICAGO, IL 60604 WOBURN, MA 01801
 e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 g. Owner's Name: _____ h. Owner's Phone No.: _____

i. BFI WASTE CODE: MA/ 855/ 950803/ 215631
 j. Description of Waste: UN5077, PG III (Marine Pollution)
PERCHLOROPOLYBIPHENYL (PCPP) CONTAMINATED SOIL
 k. Quantity _____ Units _____ No. _____ TYPE _____

CONTAINERS	
No.	TYPE
DM	- METAL DRUM
DP	- PLASTIC DRUM
B	- BAG
BA	- 6 MIL. PLASTIC BAG or WRAP
T	- TRUCK
O	- OTHER

UNITS	
P	- POUNDS
Y	- YARDS
M ³	- CUBIC METERS
Y ³	- CUBIC YARDS
O	- OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: _____ Signature: _____ Date: SEP 6, 94

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. d. Phone No.: (508) 384-5151 e. Truck No.: 715
 b. Address: INDUSTRIAL ROAD JACK COAL TRANSPORT f. Vehicle License No./State: _____
WRENTHAM MA 01904 Acknowledgement of Receipt of Materials.
 c. Driver Name/Title: JIMMY A. KELLY g. Driver Signature: _____ Date: 9-6-94
 Print/Type _____ Shipment Date: _____

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MARIONING LANDFILL c. Phone No.: (216) 280-1301
 b. Physical Address: 3100 S. STATE LINE ROAD d. Mailing Address: PO BOX 22
LOWELLVILLE OH 44436 PO BOX 22

e. Discrepancy Indication Space: _____
 I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent: _____ Signature: _____ Receipt Date: _____

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____ b. Operator's* Phone No.: _____
 Operator's* Address: _____

f. Special Handling Instructions and additional information: _____
 OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

Operator's* Name & Title: _____ Print/Type _____ Operator's* Signature: _____ Date: _____
 Name and Address of Responsible Agency: _____

_____ Friable; _____ Non-friable; _____ Both _____ % friable _____ % nonfriable

Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or both.

GENERATOR RETAIN



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015118

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

a. Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 c. Address: 208 SOUTH LASALLE STREET d. Address: 246 SALEM ST. REAR
CHICAGO, IL 60604 WOBURN, MA 01501
 e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 If owner of the generating facility differs from the generator, provide:
 g. Owner's Name: _____ h. Owner's Phone No.: _____
 i. BFI WASTE CODE: MA/ 955/ 950803/ 215631
 Description of Waste: CHLORINATED HYDROCARBON LIQUIDS, EXCEPT FUELS, UNDISPERSED, PG III (Mining Pollutant) k. Quantity _____ Units _____ No. _____ TYPE _____
CHLORINATED HYDROCARBON LIQUIDS, EXCEPT FUELS, UNDISPERSED, PG III (Mining Pollutant) CHLORINATED CONTAMINATED SOIL

TYPE	
DM	- METAL DRUM
DP	- PLASTIC DRUM
B	- BAG
BA	- 6 MIL. PLASTIC BA
	or WRAP
T	- TRUCK
O	- OTHER

UNITS	
P	- POUNDS
Y	- YARDS
M ³	- CUBIC METERS
Y ³	- CUBIC YARDS
O	- OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: [Signature] Signature: [Signature] Shipment Date: 5/11/93

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. TRANSPORTER I d. Phone No.: (508) 384-6151 e. Truck No.: 7
 b. Address: INDUSTRIAL ROAD JACK GRAY TRANSPORT f. Vehicle License No./State: _____
WRENTHAM, MA 01971 Acknowledgement of Receipt of Materials.
 c. Driver Name/Title: _____ g. Driver Signature: _____ Shipment Date: _____
 Print/Type

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MAHONING LANDFILL c. Phone No.: (216) 836-5013
 b. Physical Address: 8100 S. STATE LINE ROAD d. Mailing Address: PO BOX 5240
LOWELLVILLE OH 44436 POLAND, OH 44514
 e. Discrepancy Indication Space: _____
 I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.
 f. Name of Authorized Agent: _____ Signature: _____ Receipt Date: _____

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____ b. Operator's* Phone No.: _____
 c. Operator's* Address: _____
 d. Special Handling Instructions and additional information: _____
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.
 e. Operator's* Name & Title: _____ Operator's* Signature: _____ Date: _____
 Print/Type
 f. Name and Address of Responsible Agency: _____
 g. Friable; Non-friable; Both % friable % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or both.



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015119

10

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I

GENERATOR (Generator completes all of Section I)

a. Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 c. Address: 208 SOUTH LASALLE STREET d. Address: 246 SALEM ST. REAR
CHICAGO, IL 60604 WOBURN, MA 01801
 e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 If owner of the generating facility differs from the generator, provide:
 g. Owner's Name: _____ h. Owner's Phone No.: _____

i. BFI WASTE CODE MA/ 855/ 950803/ 215631 Containers _____
 j. Description of Waste: ENVIRONMENTAL HAZARDOUS WASTE (HAW) CODE 15 UN3077, PG III (Marine Pollutant), POLYCHLORINATED BIPHENYL (PCB) CONTAMINATED SOIL k. Quantity 15 Units ✓ No. 1 TYPE T

TYPE	
DM	- METAL DRUM
DP	- PLASTIC DRUM
B	- BAG
BA	- 6 MIL. PLASTIC BA or WRAP
T	- TRUCK
O	- OTHER
UNITS	
P	- POUNDS
Y	- YARDS
M ³	- CUBIC METERS
Y ³	- CUBIC YARDS
O	- OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Bill Moshier (Agent for Beatrice) Signature _____ Shipment Date 5/8/99
 Generator Authorized Agent Name _____

Section II

TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. d. Phone No.: (508) 384-5151 e. Truck No.: 110
 b. Address: INDUSTRIAL ROAD
WRENTHAM, MA f. Vehicle License No./State: _____
 Acknowledgement of Receipt of Materials.
 c. Driver Name/Title: DAVID MOSHER g. Driver Signature David Mosher Shipment Date 5/8/99
 Print/Type _____

Section III

DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MAHONING LANDFILL c. Phone No.: (216) 536-8013
 b. Physical Address: 5100 S. STATE LINE ROAD d. Mailing Address: PO BOX 5240
LOWELLVILLE, OH 44435 POLAND, OH 44514
 e. Discrepancy Indication Space: _____
 I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.
 f. Name of Authorized Agent _____ Signature _____ Receipt Date _____

Section IV

ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____ b. Operator's* Phone No.: _____
 c. Operator's* Address: _____
 d. Special Handling Instructions and additional information: _____

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

e. Operator's* Name & Title: _____ Operator's* Signature _____ Date _____
 Print/Type _____
 f. Name and Address of Responsible Agency: _____
 g. _____ Friable; _____ Non-friable; _____ Both _____ % friable _____ % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or to



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015121

11

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I

GENERATOR (Generator completes all of Section I)

a. Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 c. Address: 208 SOUTH LASALLE STREET d. Address: 246 SALEM ST. REAR
CHICAGO, IL 60604 WOBURN, MA 01801
 e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 If owner of the generating facility differs from the generator, provide:
 g. Owner's Name: _____ h. Owner's Phone No.: _____

i. BFI WASTE CODE: MA/ 855/ 950803/ 215631
 j. Description of Waste: CHLOROLANE CONTAMINATED SOIL ERG#31
 k. Quantity: 15 Units: Y³ No.: 1 TYPE: T

TYPE	
DM	- METAL DRUM
DP	- PLASTIC DRUM
B	- BAG
BA	- 6 MIL. PLASTIC BAG or WRAP
T	- TRUCK
O	- OTHER
UNITS	
P	- POUNDS
Y	- YARDS
M ³	- CUBIC METERS
Y ³	- CUBIC YARDS
O	- OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Paul LAQUIDARA (Agent for Beatrice) [Signature] Sept. 8, 94
 Generator Authorized Agent Name Signature Shipment Date

Section II

TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. TRANSPORTER I d. Phone No.: (508) 384-6151 e. Truck No.: 29
 b. Address: INDUSTRIAL ROAD
WRENTHAM, MA f. Vehicle License No./State: 11784 / MA
 Acknowledgement of Receipt of Materials.
 c. Driver Name/Title: KEVIN A. MOORE g. [Signature] 9/8/94
 Print/Type Driver Signature Shipment Date

Section III

DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MAHONING LANDFILL c. Phone No.: (216) 535-8013
 b. Physical Address: 6100 S. STATE LINE ROAD d. Mailing Address: PO BOX 5740
LOWELLVILLE, OH 44436 POLAND, OH 44514
 e. Discrepancy Indication Space: _____
 I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.
 f. _____
 Name of Authorized Agent Signature Receipt Date

Section IV

ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____ b. Operator's* Phone No.: _____
 c. Operator's* Address: _____
 d. Special Handling Instructions and additional information: _____
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.
 e. Operator's* Name & Title: _____ Operator's* Signature: _____ Date: _____
 Print/Type
 f. Name and Address of Responsible Agency: _____
 g. _____ Friable; _____ Non-friable; _____ Both _____ % friable _____ % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or the



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015122

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 c. Address: 208 SOUTH LASALLE STREET d. Address: 246 SALEM ST. REAR
CHICAGO, IL 60604 WOBURN, MA 01801
 e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 If owner of the generating facility differs from the generator, provide:
 g. Owner's Name: _____ h. Owner's Phone No.: _____
 i. BFI WASTE CODE MA/ 855/ 950803/ 215631 Containers _____
 Description of Waste: UNIDENTIFIED POLYMERIC CARBON BLACK (PCB) k. Quantity _____ Units V³ No. 1 TYPE T

TYPE	
DM	- METAL DRUM
DP	- PLASTIC DRUM
B	- BAG
BA	- 6 MIL. PLASTIC BAG or WRAP
T	- TRUCK
O	- OTHER
UNITS	
P	- POUNDS
Y	- YARDS
M ³	- CUBIC METERS
Y ³	- CUBIC YARDS
O	- OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: [Signature] Signature _____ Shipment Date: 1/19/94

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. d. Phone No.: (508) 384-6151 e. Truck No.: OH 407
 b. Address: INDUSTRIAL ROAD f. Vehicle License No./State: F-V80H
WRENTHAM, MA Acknowledgement of Receipt of Materials: _____
 c. Driver Name/Title: Daniel J. Under g. Driver Signature: [Signature] Shipment Date: _____

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MAHONING LANDFILL c. Phone No.: (216) 536-8013
 b. Physical Address: 8100 S. STATE LINE ROAD d. Mailing Address: PO BOX 5240
LOWELLVILLE OH 44436 POLAND, OH 44514

e. Discrepancy Indication Space: _____
 I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.

f. Name of Authorized Agent _____ Signature _____ Receipt Date _____

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

Operator's* Name: _____ b. Operator's* Phone No.: _____
 c. Operator's* Address: _____
 Special Handling Instructions and additional information: _____
 OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

Operator's* Name & Title: _____ Print/Type _____ Operator's* Signature _____ Date _____
 f. Name and Address of Responsible Agency: _____
 _____ Friable; _____ Non-friable; _____ Both _____ % friable _____ % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or both.

GENERATOR RETAIN



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015123

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

a. Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 c. Address: 208 SOUTH LASALLE STREET d. Address: 246 SALEM ST. REAR
CHICAGO, IL 60604 WOBURN, MA 01501
 e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 If owner of the generating facility differs from the generator, provide:
 g. Owner's Name: _____ h. Owner's Phone No.: _____
 i. BFI WASTE CODE MA/ 855/ 950803/ 215631 Containers _____
 j. Description of Waste: CHLORODIBENZENE CONTAMINATED SOIL ERG231 k. Quantity 15 Units Y³ No. 1 TYPE T

TYPE	
DM	- METAL DRUM
DP	- PLASTIC DRUM
B	- BAG
BA	- 6 MIL. PLASTIC BA or WRAP
T	- TRUCK
O	- OTHER

UNITS	
P	- POUNDS
Y	- YARDS
M ³	- CUBIC METERS
Y ³	- CUBIC YARDS
O	- OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or ant applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name Paul L. Aquilana (Agent for Beatrice) Signature [Signature] Shipment Date Sept 9, 91

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. TRANSPORTER I d. Phone No.: (508) 384-6151 e. Truck No.: 106
 b. Address: INDUSTRIAL ROAD WRENTHAM, MA WAZZETA, OH f. Vehicle License No./State: 83445K OHIO
 Acknowledgement of Receipt of Materials.
 c. Driver Name/Title: _____ g. Driver Signature [Signature] Shipment Date 9-7-91

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MAHONING LANDFILL c. Phone No.: (216) 536-8013
 b. Physical Address: 8100 S. STATE LINE ROAD d. Mailing Address: PO BOX 5240
LOWELLVILLE, OH 44436 POLAND, OH 44514
 e. Discrepancy Indication Space: _____
 I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.
 f. Name of Authorized Agent _____ Signature _____ Receipt Date _____

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____ b. Operator's* Phone No.: _____
 c. Operator's* Address: _____
 d. Special Handling Instructions and additional information: _____
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.
 e. Operator's* Name & Title: _____ Print/Type _____ Operator's* Signature _____ Date _____
 f. Name and Address of Responsible Agency: _____
 g. Friable; Non-friable; Both % friable % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or both.



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015124

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 Address: 208 SOUTH LASALLE STREET d. Address: 246 CALEM ST REAR
CHICAGO, IL 60604 WOBURN, MA 01501
 Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 Owner of the generating facility differs from the generator, provide:
 Owner's Name: _____ h. Owner's Phone No.: _____

BFI WASTE CODE: MA/ 652/ 950803/ 215531 Containers

Description of Waste: _____ k. Quantity _____ Units _____ No. _____ TYPE _____

- TYPE**
- DM - METAL DRUM
 - DP - PLASTIC DRUM
 - B - BAG
 - BA - 6 MIL. PLASTIC BAG or WRAP
 - T - TRUCK
 - O - OTHER
- UNITS**
- P - POUNDS
 - Y - YARDS
 - M³ - CUBIC METERS
 - Y³ - CUBIC YARDS
 - O - OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: _____ Signature: _____ Shipment Date: 5-9-94

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. TRANSPORTER I d. Phone No.: (508) 384-6101 e. Truck No.: _____
 Address: INDUSTRIAL ROAD f. Vehicle License No./State: _____
WRENTHAM, MA Acknowledgement of Receipt of Materials: _____
 Driver Name/Title: _____ g. Driver Signature: _____ Shipment Date: _____

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

Site Name: BFI BARRONING LANDFILL c. Phone No.: (216) 538-4713
 Physical Address: 8100 S. STATE LINE ROAD d. Mailing Address: PO BOX 5740
LOWELLVILLE, OH 44646 POLAND, OH 43084

Discrepancy Indication Space: _____
I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent: _____ Signature: _____ Receipt Date: _____

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

Operator's* Name: _____ b. Operator's* Phone No.: _____
 Operator's* Address: _____

Special Handling Instructions and additional information: _____

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

Operator's* Name & Title: _____ Print/Type _____ Operator's* Signature _____ Date _____

Name and Address of Responsible Agency: _____

_____ Friable; _____ Non-friable; _____ Both _____ % friable _____ % nonfriable

Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or both

GENERATOR RETAIN



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015125

16

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

Generator Name: BEATRICE COMPANY
 Address: 208 SOUTH LASALLE STREET
CHICAGO, IL 60604
 Phone No.: (508) 371-1422
 If the generating facility differs from the generator, provide:
 Facility Name: _____

b. Generating Location: BEATRICE COMPANY
 d. Address: 246 SALEM ST REAR
WOBURN, MA 01801
 f. Phone No.: (508) 371-1422
 h. Owner's Phone No.: _____

WASTE CODE: MA/ 855/ 950803/ 215631
 Description of Waste: UNDO77, PG III (Marine Pollutant)
CHLORDANE CONTAMINATED SOIL

k. Quantity 15 Units ✓ No. 1 TYPE T

TYPE	
DM	- METAL DRUM
DP	- PLASTIC DRUM
B	- BAG
BA	- 6 MIL. PLASTIC BAG or WRAP
T	- TRUCK
O	- OTHER

UNITS	
P	- POUNDS
Y	- YARDS
M ³	- CUBIC METERS
Y ³	- CUBIC YARDS
O	- OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Authorized Agent Name: [Signature]
 Signature: _____
 Date: _____

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

Name: FRANKLIN ENVIRONMENTAL SERVICES, INC.
 Address: INDUSTRIAL ROAD
WRENTHAM, MA
 Driver Name/Title: DAVID PROCTOR
 Print/Type: _____

d. Phone No.: (508) 384-6151 e. Truck No.: _____
 f. Vehicle License No./State: _____
 Acknowledgement of Receipt of Materials: _____
 g. Driver Signature: [Signature] Shipment Date: 9/12/91

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

Name: BFI MAHONING LANDFILL
 Address: 5100 S. STATE LINE ROAD
LOWELLVILLE, OH 44436

c. Phone No.: (216) 536-8013
 d. Mailing Address: PO BOX 5240
POLAND, OH 44514

Discrepancy Indication Space: _____
 I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.
 Authorized Agent: _____ Signature: _____ Receipt Date: _____

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

Operator's* Name: _____ b. Operator's* Phone No.: _____
 Operator's* Address: _____
 Special Handling Instructions and additional information: _____

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

Operator's* Name & Title: _____ Print/Type: _____ Operator's* Signature: _____ Date: _____
 Address: _____
 Responsible Agency: _____

_____ Friable; _____ Non-friable; _____ Both _____ % friable _____ % nonfriable
 *Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or both.



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015126

17

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

a. Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 c. Address: 208 SOUTH LASALLE STREET d. Address: 248 SALEM ST. REAR
CHICAGO, IL 60604 WOBURN, MA 01501
 e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 If owner of the generating facility differs from the generator, provide:
 g. Owner's Name: _____ h. Owner's Phone No.: _____
 i. BFI WASTE CODE: MA/ 855/ 950803/ 215631 Containers
 Description of Waste: LIQUID CHLORODANE CONTAMINATED SOIL k. Quantity Units No. TYPE
150077, PG III (Mobile Pollutant) 15 US 1 T
CHLORODANE CONTAMINATED SOIL

- TYPE**
 DM - METAL DRUM
 DP - PLASTIC DRUM
 B - BAG
 BA - 6 MIL. PLASTIC or WRAP
 T - TRUCK
 O - OTHER
- UNITS**
 P - POUNDS
 Y - YARDS
 M³ - CUBIC METERS
 Y³ - CUBIC YARDS
 O - OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: Paul J. ... Signature: [Signature] Shipment Date: _____

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. d. Phone No.: (508) 384-6151 e. Truck No.: _____
 b. Address: INDUSTRIAL ROAD f. Vehicle License No./State: 11734 MA
WRENTHAM, MA Acknowledgement of Receipt of Materials.
 c. Driver Name/Title: [Signature] g. Driver Signature: [Signature] Shipmen: [Signature]

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MAMONING LANDFILL c. Phone No.: (216) 536-8013
 b. Physical Address: 8100 S STATE LINE ROAD d. Mailing Address: PO BOX 5240
LOWELLVILLE OH 44438 POLAND, OH 44514

e. Discrepancy Indication Space: _____
I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.

f. Name of Authorized Agent: _____ Signature: _____ Receipt Date: _____

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____ b. Operator's* Phone No.: _____
 c. Operator's* Address: _____
 d. Special Handling Instructions and additional information: _____

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

e. Operator's* Name & Title: _____ Operator's* Signature: _____ Date: _____

f. Name and Address of Responsible Agency: _____

g. Friable; Non-friable; Both % friable % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation.



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015127

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I

GENERATOR (Generator completes all of Section I)

a. Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 c. Address: 208 SOUTH LASALLE STREET d. Address: 246 SALEM ST. REAR
CHICAGO, IL 60604 WOBURN, MA 01801
 e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 If owner of the generating facility differs from the generator, provide:
 g. Owner's Name: _____ h. Owner's Phone No.: _____

i. BFI WASTE CODE MA/ 855/ 950803/ 215631 Containers
 j. Description of Waste: UNIDENTIFIED HAZARDOUS SUBSTANCE CONTAINED IN 15 UNIDENTIFIED 55 GALLON DRUMS (Name Pollution) k. Quantity 15 Units 15 No. 1 TYPE T
CHLORDANE CONTAMINATED SOIL

- TYPE**
 DM - METAL DRUM
 DP - PLASTIC DRUM
 B - BAG
 BA - 6 MIL. PLASTIC E or WRAP
 T - TRUCK
 O - OTHER
- UNITS**
 P - POUNDS
 Y - YARDS
 M³ - CUBIC METERS
 Y³ - CUBIC YARDS
 O - OTHER

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Carl J. ... (Agent for Beatrice) Signature Sept 10 1984 Shipment Date
 Generator Authorized Agent Name Signature Shipment Date

Section II

TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. d. Phone No.: (508) 384-6151 e. Truck No.: _____
 b. Address: INDUSTRIAL ROAD f. Vehicle License No./State: _____
WRENTHAM, MA Acknowledgement of Receipt of Materials.
 c. Driver Name/Title: Charles M. ... g. Driver Signature Charles M. ... Shipment Date Sept 10 1984
 Print/Type Driver Signature Shipment Date

Section III

DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MAHONING LANDFILL c. Phone No.: (216) 536-8013
 b. Physical Address: 6100 S. STATE LINE ROAD d. Mailing Address: PO BOX 5246
LOWELLVILLE, OH 44426 POLAND, OH 44514
 e. Discrepancy Indication Space: _____
 I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.
 f. Name of Authorized Agent _____ Signature _____ Receipt Date _____

Section IV

ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____ b. Operator's* Phone No.: _____
 c. Operator's* Address: _____
 d. Special Handling Instructions and additional information: _____
OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packaged, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.
 e. Operator's* Name & Title: _____ Operator's* Signature _____ Date _____
 Print/Type Operator's* Signature Date
 f. Name and Address of Responsible Agency: _____
 g. Friable; Non-friable; Both _____ % friable _____ % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation, or



NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

No. 015128

If waste is asbestos waste, complete Sections I, II, III and IV.
If waste is NOT asbestos waste, complete only Sections I, II, and III.

Section I GENERATOR (Generator completes all of Section I)

a. Generator Name: BEATRICE COMPANY b. Generating Location: BEATRICE COMPANY
 c. Address: 208 SOUTH LASALLE STREET d. Address: 240 SALEM ST. REAR
CHICAGO, IL 60604 WOBURN, MA 01801
 e. Phone No.: (508) 371-1422 f. Phone No.: (508) 371-1422
 If owner of the generating facility differs from the generator, provide:
 g. Owner's Name: _____ h. Owner's Phone No.: _____

i. BFI WASTE CODE MA/ 855/ 950803/ 215831 Containers _____

j. Description of Waste: CHLORIDANE CONTAMINATED SOIL k. Quantity 15 Units ✓ No. 1 TYPE T

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: [Signature] Signature: [Signature] Shipment Date: [Date]

TYPE	
DM	- METAL DRUM
DP	- PLASTIC DRUM
B	- BAG
BA	- 6 MIL PLASTIC or WRAP
T	- TRUCK
O	- OTHER

UNITS	
P	- POUNDS
Y	- YARDS
M ³	- CUBIC METERS
Y ³	- CUBIC YARDS
O	- OTHER

Section II TRANSPORTER (Generator completes a-d; Transporter I complete e-g)

a. Name: FRANKLIN ENVIRONMENTAL SERVICES, INC. TRANSPORTER I
 b. Address: INDUSTRIAL ROAD d. Phone No.: (508) 384-5151 e. Truck No.: _____
WRENTHAM, MA f. Vehicle License No./State: _____
 Acknowledgement of Receipt of Materials.
 c. Driver Name/Title: _____ g. Driver Signature _____
 Print/Type _____ Shipme _____

Section III DESTINATION (Generator completes a-d; destination site completes e-f)

a. Site Name: BFI MAHONING LANDFILL c. Phone No.: (216) 535-8013
 b. Physical Address: 8100 S. STATE LINE ROAD d. Mailing Address: PO BOX 5240
LOWELLVILLE, OH 44426 POLAND, OH 44130
 e. Discrepancy Indication Space: _____
 I hereby certify that the above named has been accepted and to the best of my knowledge the foregoing is true and accurate.

f. Name of Authorized Agent: [Signature] Signature: [Signature] Receipt Date: [Date]

Section IV ASBESTOS (Generator completes a-d,f,g, Operator* completes e)

a. Operator's* Name: _____ b. Operator's* Phone No.: _____
 c. Operator's* Address: _____
 d. Special Handling Instructions and additional information: _____

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

e. Operator's* Name & Title: _____ Operator's* Signature: _____
 Print/Type _____
 f. Name and Address of Responsible Agency: _____
 g. _____ Friable; _____ Non-friable; _____ Both _____ % friable _____ % nonfriable

* Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation

APPENDIX K

SLUDGE COMPLIANCE SAMPLING

Table 1
Sludge Compliance Sample Summary (mg/Kg)

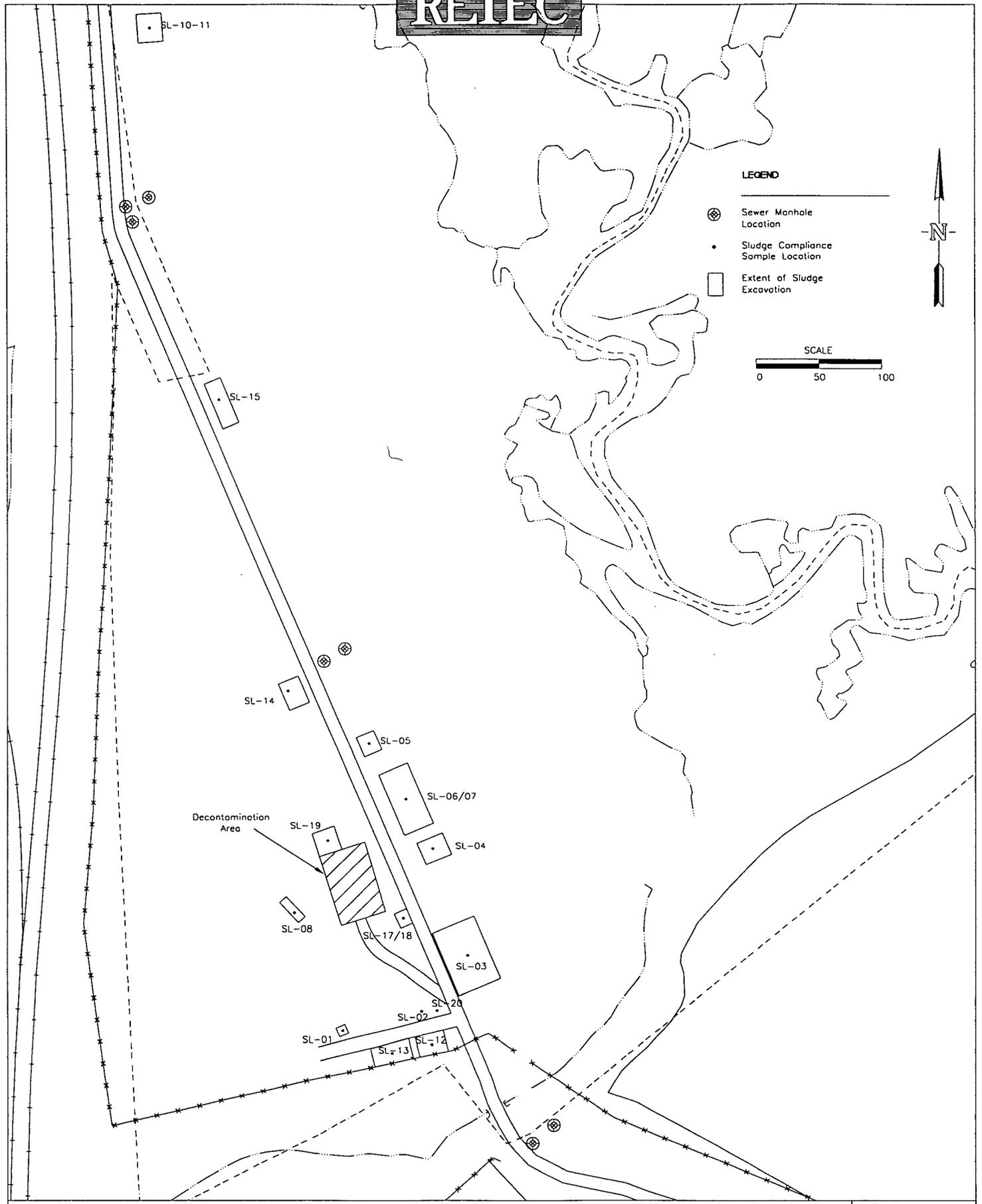
Compound	Target Concentration	SL-1 08/30/94	SL-2 10/18/94	SL-3 08/30/94	SL-4 08/30/94	SL-5 08/30/94	SL-6/7 08/30/94	SL-8 08/30/94	SL-8 09/08/94	SL-10/11 08/30/94
Lead	640	19.0	9.1	124.8	72.7	14.2	8.7	51.3	--	10.2
Chlordane	6.14	0.015	0.251	0.786	0.011	1.492	0.009	50.55	4.206	0.293
4, 4 - DDT	23.5	0.007	0.019	0.084	0.004	0.035	0.006	0.933	0.035	0.004
cPAHs	0.69	0.028	0.026	0.101	0.561	0.211	0.252	0.284	--	0.035
PCBs	1.04	0.297	0.334	0.979	0.259	0.263	0.274	307.1	0.290	0.346
STATUS		pass	pass	pass	pass	pass	pass	fail	pass	pass

Compound	Target Concentration	SL-12 08/30/94	SL-12 09/08/94	SL-13 08/30/94	SL-14 08/30/94	SL-14 09/08/94	SL-15 08/30/94	SL-17/18 10/18/94	SL-19 10/18/94	SL-20 10/18/94
Lead	640	228.5	--	66.6	58.1	--	24.2	41.9	29.5	41.0
Chlordane	6.14	0.283	--	0.010	0.049	--	0.020	0.021	0.010	1.490
4, 4 - DDT	23.5	0.179	--	0.006	0.032	--	0.002	0.002	0.004	0.004
cPAHs	0.69	1.930	0.302	0.320	0.323	--	0.124	0.259	0.257	0.341
PCBs	1.04	0.416	--	0.036	1.328	0.538	0.248	0.331	0.351	0.325
STATUS		fail	pass	pass	fail	pass	pass	pass	pass	pass

Notes:

All concentrations mg/kg

-- No analysis performed



SLUDGE EXCAVATIONS

FIGURE

0947s004

Sludge
VOCs (ug/Kg)
Compliance Sample Summary

	SL-01 08/30/94 ug/kg Q	SL-02 11/15/94 ug/kg Q	SL-03 08/30/94 ug/kg Q	SL-04 08/30/94 ug/kg Q	SL-05 08/30/94 ug/kg Q	SL-07 08/30/94 ug/kg Q	SL-08 08/30/94 ug/kg Q	SL-10/11 08/30/94 ug/kg Q
Chloromethane				< 1.0 U		< 1.2 U	< 1.3 U	
Bromomethane				< 1.0 U		< 1.2 U	< 1.3 U	
Vinyl Chloride				< 1.0 U		< 1.2 U	< 1.3 U	
Chloroethane				< 1.0 U		< 1.2 U	< 1.3 U	
Methylene Chloride				9.5 UJ		12.0 UJ	< 16.0 U	
Acetone				8.3 UJ		5.2 UJ	< 7.8 U	
Carbon Disulfide				< 1.0 U		< 1.2 U	< 1.3 U	
1,1-Dichloroethane				< 1.0 U		< 1.2 U	< 1.3 U	
1,1-Dichloroethane				< 1.0 U		< 1.2 U	< 1.3 U	
1,2-Dichloroethane (cis)				< 1.0 U		< 1.2 U	< 1.3 U	
1,2-Dichloroethane (trans)	< 1.3 U	< 1.3 U	< 1.1 U	< 1.0 U	< 1.1 U	< 1.2 U	< 1.3 U	6.6
Chloroform	< 1.3 U	< 1.3 U	< 1.1 U	< 1.0 U	< 1.1 U	< 1.2 U	< 1.3 U	< 1.5 U
1,2-Dichloroethane				< 1.0 U		< 1.2 U	< 1.3 U	
2-Butanone				< 14 U		< 5.0 U	< 1.3 U	
1,1,1-Trichloroethane	< 1.3 U	< 1.3 U	< 1.1 U	< 1.0 U	< 1.1 U	< 1.2 U	< 1.3 U	< 1.5 U
Carbon Tetrachloride				< 1.0 U		< 1.2 U	< 1.3 U	
Bromodichloromethane				< 1.0 U		< 1.2 U	< 1.3 U	
1,2-Dichloropropane				< 1.0 U		< 1.2 U	< 1.3 U	
cis-1,3-Dichloropropene				< 1.0 U		< 1.2 U	< 1.3 U	
Trichloroethene	< 1.3 U	< 1.3 U	< 1.1 U	< 1.0 U	< 1.1 U	< 1.2 U	< 1.3 U	23.1
Dibromochloromethane				< 1.0 U		< 1.2 U	< 1.3 U	
1,1,2-Trichloroethane				< 1.0 U		< 1.2 U	< 1.3 U	
Benzene				< 1.0 U		< 1.2 U	< 1.3 U	
trans-1,3-Dichloropropene				< 1.0 U		< 1.2 U	< 1.3 U	
Bromoform				< 1.0 U		< 1.2 U	< 1.3 U	
4-Methyl-2-Pentanone				< 1.0 U		< 1.2 U	< 1.3 U	
2-Hexanone				< 1.0 U		< 1.2 U	< 1.3 U	
Tetrachloroethene	< 1.3 U	< 1.3 U	< 1.1 U	< 1.0 U	< 1.1 U	< 1.2 U	< 1.3 U	< 1.5 U
1,1,2,2-Tetrachloroethane				< 1.0 U		< 1.2 U	< 1.3 U	
Toluene				< 1.0 U		< 1.2 U	< 1.3 U	
Chlorobenzene				< 1.0 U		< 1.2 U	< 1.3 U	
Ethylbenzene				< 1.0 U		< 1.2 U	< 1.3 U	
Styrene				< 1.0 U		< 1.2 U	< 1.3 U	
Xylenes (total)				< 1.0 U		< 1.2 U	< 1.3 U	

Notes:

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

Sludge
 VOCs (ug/Kg)
 Compliance Sample Summary (continued)

	SL-12 08/30/94 ug/kg Q	SL-13 08/30/94 ug/kg Q	SL-14 08/30/94 ug/kg Q	SL-15 08/30/94 ug/kg Q	SL-17/18 11/15/94 ug/kg Q	SL-19 11/15/94 ug/kg Q	SL-20 11/15/94 ug/kg Q
Chloromethane							
Bromomethane							
Vinyl Chloride							
Chloroethane							
Methylene Chloride							
Acetone							
Carbon Disulfide							
1,1-Dichloroethene							
1,1-Dichloroethane							
1,2-Dichloroethene (cis)							
1,2-Dichloroethene (trans)	< 1.1 U	< 1.1 U	< 1.1 U	< 1.0 U	< 1.2 U	< 1.2 U	< 1.2 U
Chloroform	< 1.1 U	< 1.1 U	< 1.1 U	< 1.0 U	< 1.2 U	1.9	< 1.2 U
1,2-Dichloroethane							
2-Butanone							
1,1,1-Trichloroethane	< 1.1 U	< 1.1 U	< 1.1 U	< 1.0 U	< 1.2 U	< 1.2 U	< 1.2 U
Carbon Tetrachloride							
Bromodichloromethane							
1,2-Dichloropropane							
cis-1,3-Dichloropropene							
Trichloroethene	< 1.1 U	< 1.1 U	< 1.1 U	20.1	2.1	< 1.2 U	2.4
Dibromochloromethane							
1,1,2-Trichloroethane							
Benzene							
trans-1,3-Dichloropropene							
Bromoform							
4-Methyl-2-Pentanone							
2-Hexanone							
Tetrachloroethene	< 1.1 U	< 1.1 U	< 1.1 U	< 1.8 U	< 1.2 U	< 1.2 U	< 1.2 U
1,1,2,2-Tetrachloroethane							
Toluene							
Chlorobenzene							
Ethylbenzene							
Styrene							
Xylenes (total)							

Notes:

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

**Sludge
cPAH (ug/Kg)
Compliance Sample Summary**

	SI-1 08/30/94 ug/kg Q	SI-2 10/18/94 ug/kg Q	SI-3 08/30/94 ug/kg Q	SI-4 08/30/94 ug/kg Q	SI-5 08/30/94 ug/kg Q	SI-6/7 08/30/94 ug/kg Q	SI-8 08/30/94 ug/kg Q	SI-10/11 08/30/94 ug/kg Q
Phenol				< 225 U		< 239 U	< 268 U	
bis(2-Chloroethyl)ether				< 225 U		< 239 U	< 268 U	
2-Chlorophenol				< 225 U		< 239 U	< 268 U	
1,3-Dichlorobenzene				< 225 U		< 239 U	< 268 U	
1,4-Dichlorobenzene				< 225 U		< 239 U	< 268 U	
1,2-Dichlorobenzene				< 225 U		< 239 U	< 268 U	
2-Methylphenol				< 225 U		< 239 U	< 268 U	
2,2'-oxybis(1-Chloropropane				< 225 U		< 239 U	< 268 U	
4-Methylphenol				< 225 U		< 239 U	< 268 U	
N-Nitroso-di-n-propylamine				< 225 U		< 239 U	< 268 U	
Hexachloroethane				< 225 U		< 239 U	< 268 U	
Nitrobenzene				< 225 U		< 239 U	< 268 U	
Isophorone				< 225 U		< 239 U	< 268 U	
2-Nitrophenol				< 225 U		< 239 U	< 268 U	
2,4-Dimethylphenol				< 225 U		< 239 U	< 268 U	
bis(2-Chloroethoxy)methane				< 225 U		< 239 U	< 268 U	
2,4-Dichlorophenol				< 225 U		< 239 U	< 268 U	
1,2,4-Trichlorobenzene				< 225 U		< 239 U	< 268 U	
Naphthalene				< 225 U		< 239 U	< 268 U	
4-Chloroaniline				< 225 U		< 239 U	< 268 U	
Hexachlorobutadiene				< 225 U		< 239 U	< 268 U	
4-Chloro-3-methylphenol				< 225 U		< 239 U	< 268 U	
2-Methylnaphthalene				< 225 U		< 239 U	< 268 U	
Hexachlorocyclopentadiene				< 225 U		< 239 U	93 J	
2,4,6-Trichlorophenol				< 225 U		< 239 U	< 268 U	
2,4,5-Trichlorophenol				< 561 U		< 596 U	< 670 U	
2-Chloronaphthalene				< 225 U		< 239 U	< 268 U	
2-Nitroaniline				< 561 U		< 596 U	< 670 U	
Dimethylphthalate				< 225 U		< 239 U	< 268 U	
Acenaphthylene				< 225 U		< 239 U	< 268 U	
2,6-Dinitrotoluene				< 225 U		< 239 U	< 268 U	
3-Nitroaniline				< 561 U		< 596 U	< 670 U	
Acenaphthene				< 225 U		< 239 U	< 268 U	
2,4-Dinitrophenol				< 561 U		< 596 U	< 670 U	
4-Nitrophenol				< 561 U		< 596 U	< 670 U	
Dibenzofuran				< 225 U		< 239 U	< 268 U	
2,4-Dinitrotoluene				< 225 U		< 239 U	< 268 U	
Diethylphthalate				< 225 U		< 239 U	< 268 U	
4-chlorophenyl-phenylether				< 225 U		< 239 U	< 268 U	
Fluorene				< 225 U		< 239 U	< 268 U	
4-Nitroaniline				< 561 U		< 596 U	< 670 U	
4,6-Dinitro-2-methylphenol				< 561 U		< 596 U	< 670 U	
N-Nitrosodiphenylamine (1)				< 225 U		< 239 U	< 268 U	
4-Bromophenyl-phenylether				< 225 U		< 239 U	< 268 U	
Hexachlorobenzene				< 225 U		< 239 U	< 268 U	
Pentachlorophenol				< 561 U		< 596 U	62 J	
Phenanthrene				< 225 U		< 239 U	75 J	
Anthracene				< 225 U		< 239 U	< 268 U	
Carbazole				< 225 U		< 239 U	< 268 U	
Di-n-butylphthalate				225 B		268 J	< 268 U	
Fluoranthene				< 225 U		< 239 U	93 J	
Pyrene				136 J		< 239 U	111 J	
Burylbenzylphthalate				225 UJ		< 239 U	< 268 U	
3,3'-Dichlorobenzidine				225 UJ		< 239 U	< 268 U	
Benzo(a)anthracene	< 39 U	< 38 U	< 36 U	77 J	40	< 36 U	51	< 45 U
Chrysene	< 39 U	< 38 U	< 36 U	135 J	56	< 36 U	66	< 45 U
bis(2-Ethylhexyl)phthalate				132 UJ		< 239 U	428 B	
Di-n-octylphthalate				225 UJ		< 239 U	< 268 U	
Benzo(b)fluoranthene	< 28 J	< 26 J	< 38 U	153 J	74	< 36 U	91	< 35 J
Benzo(k)fluoranthene	< 39 U	< 38 U	< 36 U	71 J	< 34 U	< 36 U	29 J	< 45 U
Benzo(a)pyrene	< 39 U	< 38 U	< 36 U	70 J	41	< 36 U	47 J	< 45 U
Indeno(1,2,3-cd)pyrene	< 39 U	< 38 U	< 27 J	55 J	< 34 U	< 36 U	40 U	< 45 U
Dibenz(a,h)anthracene	< 39 U	< 38 U	< 36 U	34 UJ	< 34 U	< 36 U	< 40 U	< 45 U
Benzo(g,h,i)perylene				73 J		< 239 U	< 268 U	

NOTES:

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

**Sludge
cPAH (ug/Kg)
Compliance Sample Summary (continued)**

	SI-12 8/30/94 ug/kg Q	SI-12 09/08/94 ug/kg Q	SI-13 08/30/94 ug/kg Q	SI-14 08/30/94 ug/kg Q	SI-15 08/30/94 ug/kg Q	SI-17/18 10/18/94 ug/kg Q	SI-19 10/18/94 ug/kg Q	SI-20 10/18/94 ug/kg Q
Phenol								
bis(2-Chloroethyl)ether								
2-Chlorophenol								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
1,2-Dichlorobenzene								
2-Methylphenol								
2,2'-oxybis(1-Chloropropane								
4-Methylphenol								
N-Nitroso-di-n-propylamine								
Hexachloroethane								
Nitrobenzene								
Isophorone								
2-Nitrophenol								
2,4-Dimethylphenol								
bis(2-Chloroethoxy)methane								
2,4-Dichlorophenol								
1,2,4-Trichlorobenzene								
Naphthalene								
4-Chloroaniline								
Hexachlorobutadiene								
4-Chloro-3-methylphenol								
2-Methylnaphthalene								
Hexachlorocyclopentadiene								
2,4,6-Trichlorophenol								
2,4,5-Trichlorophenol								
2-Chloronaphthalene								
2-Nitroaniline								
Dimethylphthalate								
Acenaphthylene								
2,6-Dinitrotoluene								
3-Nitroaniline								
Acenaphthene								
2,4-Dinitrophenol								
4-Nitrophenol								
Dibenzofuran								
2,4-Dinitrotoluene								
Diethylphthalate								
4-chlorophenyl-phenylether								
Fluorene								
4-Nitroaniline								
4,6-Dinitro-2-methylphenol								
N-Nitrosodiphenylamine (I)								
4-Bromophenyl-phenylether								
Hexachlorobenzene								
Pentachlorophenol								
Phenanthrene								
Anthracene								
Carbazole								
Di-n-butylphthalate								
Fluoranthene								
Pyrene								
Butylbenzylphthalate								
3,3'-Dichlorobenzidine	301	41	47	46	< 33 U	< 37 U	46	53
Benzo(a)anthracene	593	76	61	57	124	< 37 U	57	69
Chrysene								
bis(2-Ethylhexyl)phthalate								
Di-n-octylphthalate								
Benzo(b)fluoranthene	386	96	104	110	< 33 U	< 37 U	76	97
Benzo(k)fluoranthene	156	31	35 J	33	< 33 U	< 37 U	30 J	32 J
Benzo(a)pyrene	304	58	46	51	< 33 U	< 37 U	48	61
Indeno(1,2,3-cd)pyrene	190	< 36 U	27 J	26	< 33 U	< 37 U	< 39 U	29 J
Dibenz(a,h)anthracene	< 35 U	< 36 U	< 39 U	< 37 U	< 33 U	< 37 U	< 39 U	< 37 U
Benzo(g,h,i)perylene								

NOTES:

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

Sludge
Pesticides & PCBs (ug/Kg)
Compliance Sample Summary

	SL01 08/30/94		SL-02 10/18/94		SL03 08/30/94		SL04 08/30/94		SL05 08/30/94		SL6/7 08/30/94		SL08 08/30/94		SL08 09/08/94		SL10/11 08/30/94										
	ug/kg	Q	ug/kg	Q	ug/kg	Q	ug/kg	Q	ug/kg	Q	ug/kg	Q	ug/kg	Q	ug/kg	Q	ug/kg	Q									
alpha-BHC							<	2	U			2	UJ			2	UJ										
beta-BHC							<	2	U			<	2	U			2	UJ									
delta-BHC							<	2	U			2	UJ			2	UJ										
gamma-BHC (Lindane)							<	2	U			2	UJ			75	PE										
Heptachlor							<	2	U			<	2	U		<	2	U									
Aldrin							<	2	U			<	2	U		<	2	U									
Heptachlor epoxide							<	2	U			<	2	U		<	2	U									
Endosulfan I							<	2	U			<	2	U		<	2	U									
Dieldrin							<	3	U			3	UJ			4	UJ										
4,4'-DDE							<	3	U			3	JP			<	4	U									
Endrin							<	3	U			3	UJ			4	UJ										
Endosulfan II							<	3	U			3	UJ			<	4	U									
4,4'-DDD							<	4	P			4	P			<	4	U									
Endosulfan sulfate							<	3	U			3	UJ			<	4	U									
Methoxychlor							<	16	U			17	UJ			<	18	UJ									
Endrin ketone							<	3	U			3	UJ			<	4	U									
Endrin aldehyde							<	3	U			<	3	U		<	4	U									
Toxaphene							<	162	U			<	171	U		<	181	U									
4,4'-DDT	7.3	P	19.0	P	84.3	DU	4.3	P	35.0	D	5.6	J	933	J	35.0	PE	3.5	J									
alpha-Chlordane	7.6		116.0	DP	357.0	DP	5.7	P	673.0	PD	2.8	P	22850	D	2210	DP	140	D									
gamma-Chlordane	7.1	P	135.0	DP	429.0	D	5.2	P	819.0	PD	6.3		27700	D	1996	PI	153	D									
Aroclor-1016	<	37.1	U	<	41.8	U	<	33.7	U	<	32.4	U	<	32.9	U	<	34.2	U	<	38391	U	<	36.2	U	<	43.2	U
Aroclor-1221	<	74.2	U	<	83.6	U	<	67.4	U	<	64.8	U	<	65.9	U	<	68.5	U	<	76781	U	<	72.3	U	<	86.3	U
Aroclor-1232	<	37.1	U	<	41.8	U	<	33.7	U	<	32.4	U	<	32.9	U	<	34.2	U	<	38391	U	<	36.2	U	<	43.2	U
Aroclor-1242	<	37.1	U	<	41.8	U	<	33.7	U	<	32.4	U	<	32.9	U	<	34.2	U	<	38391	U	<	36.2	U	<	43.2	U
Aroclor-1248	<	37.1	U	<	41.8	U	<	33.7	U	<	32.4	U	<	32.9	U	<	34.2	U	<	38391	U	<	36.2	U	<	43.2	U
Aroclor-1254	<	37.1	U	<	41.8	U	<	33.7	U	<	32.4	U	<	32.9	U	<	34.2	U	<	38391	U	<	36.2	U	<	43.2	U
Aroclor-1260	<	37.1	U	<	41.8	U	<	979.0	DP	<	32.4	U	<	32.9	U	<	34.2	U	<	38391	U	<	36.2	U	<	43.2	U

Notes:

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- J - The associated numerical value is an estimated quantity.
- UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.
- P - Pesticide / Aroclor target analyte has greater than 25 % difference detected concentrations between the two GC columns.
- D - Compounds identified in the analysis at a secondary dilution factor.

Sludge
Pesticides & PCBs (ug/Kg)
Compliance Sample Summary (continued)

	SL12 08/30/94 ug/kg Q		SL13 08/30/94 ug/kg Q		SL14 08/30/94 ug/kg Q		SL14 09/08/94 ug/kg Q		SL15 08/30/94 ug/kg Q		SL17/18 10/18/94 ug/kg Q		SL19 10/18/94 ug/kg Q		SL20 10/18/94 ug/kg Q									
alpha-BHC																								
beta-BHC																								
delta-BHC																								
gamma-BHC (Lindane)																								
Heptachlor																								
Aldrin																								
Heptachlor epoxide																								
Endosulfan I																								
Dieldrin																								
4,4'-DDE																								
Endrin																								
Endosulfan II																								
4,4'-DDD																								
Endosulfan sulfate																								
Methoxychlor																								
Endrin ketone																								
Endrin aldehyde																								
Toxaphene																								
4,4'-DDT	179	DP	5.9	P	32.3	P			1.9	JP	2.0	JP	<	4.4	U	<	4.1	U						
alpha-Chlordane	103	P	4.4	PJ	26.5				7.6	PJ	9.8	P		4.9	P		705	PD						
gamma-Chlordane	180	DP	5.7	PJ	22.5	P			12.1	PJ	11.4	P		5.3	P		785	PD						
Aroclor-1016	<	32.7	U	<	36.8	U	<	35.3	U	<	37.5	U	<	31.0	U	<	41.4	U	<	44	U	<	40.6	U
Aroclor-1221	<	65.3	U	<	73.6	U	<	70.5	U	<	74.9	U	<	62.1	U	<	82.8	U	<	87	U	<	81.2	U
Aroclor-1232	<	32.7	U	<	36.8	U	<	35.3	U	<	37.5	U	<	31.0	U	<	41.4	U	<	44	U	<	40.6	U
Aroclor-1242	<	32.7	U	<	36.8	U	<	35.3	U	<	37.5	U	<	31.0	U	<	41.4	U	<	44	U	<	40.6	U
Aroclor-1248	<	32.7	U	<	36.8	U	<	35.3	U	<	37.5	U	<	31.0	U	<	41.4	U	<	44	U	<	40.6	U
Aroclor-1254	<	32.7	U	<	36.8	U	<	35.3	U	<	37.5	U	<	31.0	U	<	41.4	U	<	44	U	<	40.6	U
Aroclor-1260	416.0	D	35.5	JP	1328	DP	538.0	P	<	31.0	U	<	41.4	U	<	44	U	<	44	U	<	40.6	U	

Notes:

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J - The associated numerical value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

P - Pesticide / Aroclor target analyte has greater than 25 % difference detected concentrations between the two GC columns.

D - Compounds identified in the analysis at a secondary dilution factor.

**Sludge
Metals (mg/Kg)
Compliance Sample Summary**

	SL-01 08/30/94	SL-2 10/18/94	SL-03 08/30/94	SL-04 08/30/94	SL-05 08/30/94	SL-6/7 08/30/94	SL-08 08/30/94	SL-10/11 08/30/94
Aluminum				3543		3321	5712	
Antimony				< 8.9 U		< 9.4 U	< 10.6 U	
Arsenic				3.3		2.9	11.0	
Barium				15.9 B		9.1 B	20.6 B	
Beryllium				< 0.2 U		< 0.2 U	0.2 B	
Cadmium				0.6 B		< 0.7 U	< 0.7 U	
Calcium				544 B		415 B	480 B	
Chromium				11.9		7.6	11.3	
Cobalt				2.3 B		1.3 B	1.1 B	
Copper				8.1		4.9	15.1	
Iron				6261		3210	5430	
Lead	19.0	9.1 J	125	72.7	14.2	8.7	51.3	10.2
Magnesium				879		714 B	419 B	
Manganese				45.4		37.3	42.8	
Mercury				< 0.1 U		< 0.1 U	0.4	
Nickel				7.0		4.9 B	< 1.9 U	
Potassium				172 B		117 B	< 65.8 U	
Selenium				0.3 B		0.3 B	0.9	
Silver				< 0.6 U		< 0.7 U	< 0.7 U	
Sodium				109 B		101 B	114 B	
Thallium				< 0.2 U		< 0.2 U	< 0.2 U	
Vanadium				6.6 B		5.6 B	18.2	
Zinc				24.7		16.8	32.9	
Cyanide				< 0.2 U		< 0.2 U	< 0.3 U	

Notes:

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

B - The analyte was found in the associated blank as well as the sample.

All concentrations mg/kg.

**Sludge
Metals (mg/Kg)
Compliance Sample Summary (continued)**

	SL-12 8/30/94	SL-13 08/30/94	SL-14 08/30/94	SL-15 08/30/94	SL-17/18 10/18/94	SL-19 10/18/94	SL-20 10/18/94
Aluminum							
Antimony							
Arsenic							
Barium							
Beryllium							
Cadmium							
Calcium							
Chromium							
Cobalt							
Copper							
Iron							
Lead	229	66.6	58.1	24.2	41.9 J	29.5 J	41.0 J
Magnesium							
Manganese							
Mercury							
Nickel							
Potassium							
Selenium							
Silver							
Sodium							
Thallium							
Vanadium							
Zinc							
Cyanide							

Notes:

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

B - The analyte was found in the associated blank as well as the sample.

All concentrations mg/kg.

APPENDIX L

SOIL INVESTIGATION

This appendix was originally presented in the Predesign Investigation Report (RETEC, 1993), Section 5.0.

5.0 SOIL INVESTIGATIONS

The work plan identified data gaps related to the design of the remedies for soils impacted by mixed contaminants and VOCs. The Predesign Investigation described in the work plan, the results of which are discussed in this section, was planned to gather information required to refine estimates of the horizontal and vertical limits of soil requiring remediation.

The work plan presented a conceptual model of the distribution of mixed contaminants in soil based on data collected during the RI and earlier investigations at the site. This model included an estimate of the limits of excavation and a discussion of the areas where additional data was needed to clarify uncertainties in the interpretation. This evaluation was used to select sample locations. Samples were placed most frequently near the boundaries of known areas where the concentrations of mixed contaminants exceed cleanup levels, especially where the amount of existing data was limited. In three locations, samples were collected from three different depths to help understand the relationship of chemical concentration and depth.

The work plan specified that existing data and data collected during the Predesign Investigation would be combined to prepare a new estimate of the limit of required cleanup. The evaluation strategy described included plotting and contouring chemical concentrations for each of the four types of mixed contaminant on a map of the site to provide an estimate of the areal distribution along with an evaluation of the vertical distribution of chemical concentrations. This information was to be combined to allow estimation of the volume of soil that will require remediation. The results of this evaluation are included in this section.

The data gaps, objectives and sampling strategy for VOC soils presented in the Predesign Work Plan were similar to those described above for mixed contaminant soils. The work plan showed an estimate of the extent of soils with concentrations of VOCs above the cleanup goals identified in the ROD based on data collected during the RI and other earlier investigations. These cleanup goals were developed based on literature values for the relationship between soil and ground water contaminant concentrations, known as partitioning coefficients. One objective of the Predesign Investigation was to perform a study to measure site-specific partitioning coefficients for the VOCs of interest at the site. These site-specific partitioning coefficients were then used in the flushing model presented in the FS to refine cleanup criteria for VOCs in soils at the Wildwood Property.

The other major goal in relation to VOC-impacted soils was to collect sufficient additional information to allow refinement of the distribution of VOC soil so that an *in situ* soil treatment system can be designed. Based on the data set presented in the Predesign Work Plan and data generated during the Predesign Investigation, soil concentrations for each criteria compound VOC have been plotted and contoured on site maps. Areas requiring remediation for VOCs in soils have been determined by comparing the distribution of criteria compound VOCs with the cleanup levels established in the partitioning study.

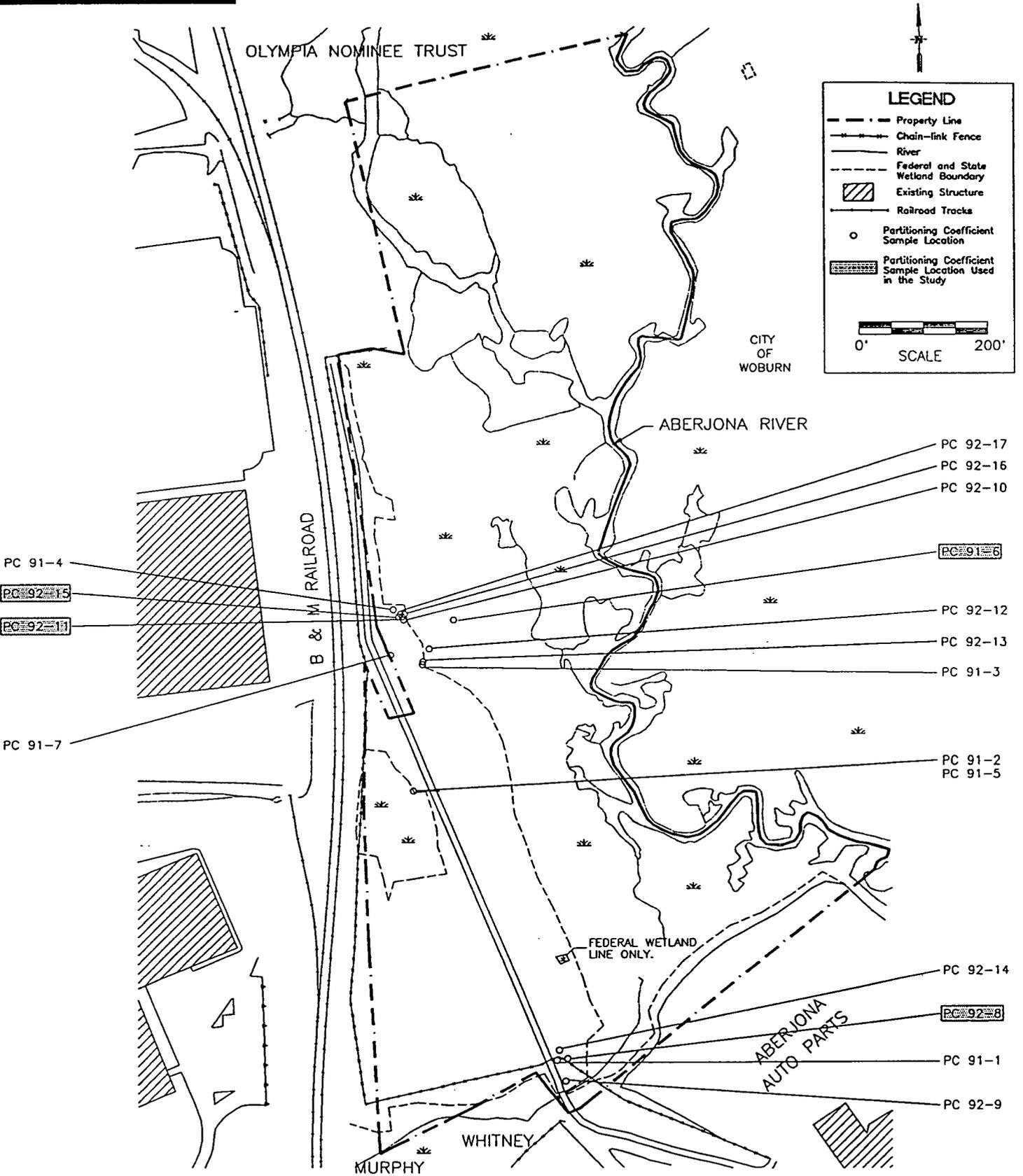
5.1 Field Activities

This section describes the field data collection activities performed during the Predesign Investigation including sample collection for the partitioning coefficient study and the mixed contaminant/VOC soil investigation.

5.1.1 Partitioning Coefficient Study

Soil samples for the partitioning coefficient study were collected in August and September 1992 during three sampling events. Sample sites were chosen to be representative of a variety of soil types, VOC concentrations, and organic carbon fractions (f_{oc}). Samples were chosen so that the VOCs of concern were represented at a range of concentrations. To screen for suitable sampling sites, a total of 17 preliminary soil samples were collected from different locations suspected to contain VOCs. Based on the analytical results of these screening samples, four samples were selected for the partitioning study. Sample locations are shown on Figure 5-1.

The first seven screening samples were collected in August 26 and 27, 1992 simultaneously for both VOC analysis and partitioning coefficient analysis. Samples PC91-1 through PC91-7 were collected in August 1992 from a depth of 0 to 24 inches. Soil for the partitioning coefficient study was collected using a hand auger with an eight-inch long stainless steel sleeve inserted; the steel sleeve was immediately capped at both ends upon removal from the borehole. Three stainless steel sleeves were collected from each borehole and submitted for potential partitioning coefficient study analysis by RETEC's Pittsburgh, Pennsylvania treatability laboratory pending results of the VOC analyses. Samples from the walls of each of the seven boreholes were collected using a hand trowel and stored in a glass sample jar for VOC screening analysis by Wadsworth Laboratories of Pittsburgh, Pennsylvania. Based on the results of the VOC analysis, sample PC91-6 was selected as the first sample to be run in the partitioning coefficient study. Other samples were not selected due to the lack of VOCs measured in the screening samples.



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PARTITIONING COEFFICIENT SAMPLE LOCATIONS

FIGURE
5-1

A second round of sampling took place on September 24, 1992 to identify additional locations suitable for the partitioning coefficient study. A total of six samples (PC92-8 through PC92-13) were collected and analyzed for VOCs. Samples were collected by removing the vegetative mat, and driving a six-inch long brass sleeve into the underlying sediments. The sleeve was then removed from the ground, capped, and sent to New England Testing Laboratory for VOC analysis. Based on the results of these analyses, sample locations PC92-8 and PC92-11 were selected to be sampled for the partitioning coefficient study. Again, other samples were not selected due to a lack of VOCs in the screening analysis. On September 30, 1992 these locations were revisited and sampled using a hand auger. As with sample PC91-6, the samples were collected in three, eight-inch long stainless steel sleeves inserted into the bucket of the hand auger. The sleeves were capped, placed on ice, and sent to the treatability laboratory for later compositing and analysis.

The third round of sampling to select the location for the fourth partitioning coefficient sample and a duplicate sample also took place on September 30, 1992. Four locations, PC92-14 through PC92-17, were sampled by driving a six-inch long brass sleeve into the exposed sediments. These samples were analyzed for VOCs, and, based on the results of these analyses, location PC92-15 was selected for the final partitioning coefficient study sample. This location was revisited on December 8, 1992 and sampled using the same methodologies as the previous partitioning coefficient samples. In this case, a second sample was collected from an adjacent borehole to serve as a duplicate sample.

5.1.2 Mixed/VOC Soil Investigation

For the soil characterization component of the Predesign Investigation, a total of 39 soil samples were collected from 17 borings. Samples were collected from depth intervals ranging from 0 to 72 inches below grade. Of the 39 samples, 21 soil samples were analyzed for VOCs, and 18 samples were analyzed for mixed contaminants. Table 5-1 provides a sample information summary and Figure 5-2 presents the sample locations.

During July and August 1992, 39 soil samples were collected using either a hand-coring device or a truck-mounted hollow stem auger to advance the sampling borehole. The hand-coring device consisted of an auger threaded to a T-shaped rod. For VOC sampling, an eight-

TABLE 5-1
Soil Sampling Summary
Wildwood Property
Wells G & H Superfund Site

Date/ Time of Collection	Sample Location	Sample Number	Sample Depth	Analysis	Notes
7/13/92 3:27	WSPD-SB91-1	01	16"-24"	ROD VOCs	Matrix Spike/Matrix Spike Duplicate
7/13/92 3:35		02	0"-24"	Mixed Contaminants	Matrix Spike/Matrix Spike Duplicate
7/13/92 4:30	WSPD-SB91-2	01	16"-24"	ROD VOCs	
7/14/92 9:40	WSPD-SB91-3	01	16"-24"	ROD VOCs	
7/14/92 9:54		02	0"-24"	Mixed Contaminants	
7/15/92 10:20	WSPD-SB91-4	01	16"-24"	ROD VOCs	EPA Split
7/15/92 11:15	WSPD-SB91-5	01	0"-24"	Mixed Contaminants	EPA Split
7/14/92 10:30	WSPD-SB91-6	01	16"-24"	ROD VOCs	
7/16/92 2:17	WSPD-SB91-7	01	16"-24"	ROD VOCs	EPA Split
7/16/92 2:35		02	40"-48"	ROD VOCs	
8/27/92 3:30		03	66"-72"	ROD VOCs	Samples collected with a split spoon sampler ASTM Method D1586.
7/16/92 1:30		04	0"-24"	Mixed Contaminants	EPA Split
7/16/92 2:55		05	24"-48"	Mixed Contaminants	
8/27/92 3:45		06	48"-72"	Mixed Contaminants	Samples collected with a split spoon sampler ASTM Method D1586.
7/14/92 3:08	WSPD-SB91-8	01	16"-24"	ROD VOCs	

TABLE 5-1 (Continued)
Soil Sampling Summary
Wildwood Property
Wells G & H Superfund Site

Date/ Time of Collection	Sample Location	Sample Number	Sample Depth	Analysis	Notes
8/27/92 2:45		02	42"-48"	ROD VOCs	Samples collected with a split spoon sampler ASTM Method D1586.
8/27/92 3:15		03	66"-72"	ROD VOCs	Samples collected with a split spoon sampler ASTM Method D1586.
7/14/92 4:45		04	0"-24"	Mixed Contaminants	
7/15/92 11:55	WSPD-SB91-9	01	0"-24"	Mixed Contaminants	EPA Split
7/15/92 12:28		02	24"-48"	Mixed Contaminants	
8/27/92 4:00		03	48"-72"	Mixed Contaminants	Samples collected with a split spoon sampler ASTM Method D1586.
7/16/92 10:25	WSPD-SB91-10	01	16"-24"	ROD VOCs	
7/16/92 11:12		02	40"-48"	ROD VOCs	
8/27/92 2:30		03	66"-72"	ROD VOCs	MS/MSD; Samples collected with a split spoon sampler ASTM Method D1586.
7/16/92 11:35		04	0"-24"	Mixed Contaminants	
7/14/92 11:35	WSPD-SB91-11	01	16"-24"	ROD VOCs	
7/13/92 2:05	WSPD-SB91-12	01	16"-24"	ROD VOCs	
7/13/92 2:15		02	0"-24"	Mixed Contaminants	
7/15/92 2:53	WSPD-SB91-13	01	16"-24"	ROD VOCs	
7/15/92 3:13		02	0"-24"	Mixed Contaminants	

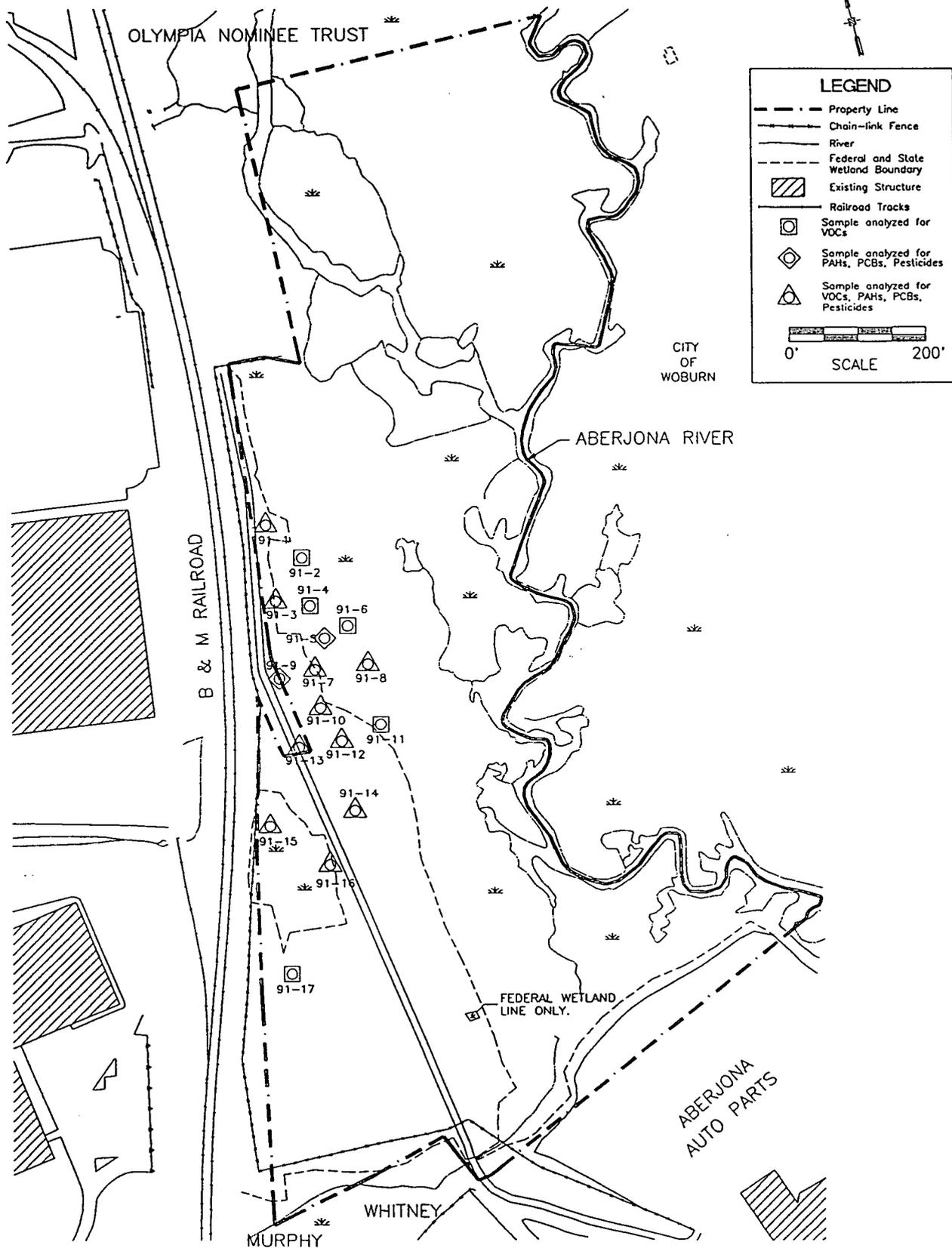
TABLE 5-1 (Continued)
Soil Sampling Summary
Wildwood Property
Wells G & H Superfund Site

Date/ Time of Collection	Sample Location	Sample Number	Sample Depth	Analysis	Notes
7/15/92 3:48		03	24"-48"	Mixed Contaminants	
8/27/92 1:50		04	48"-72"	Mixed Contaminants	MS/MSD; Samples collected with a split spoon sampler ASTM Method D1586.
7/13/92 11:50	WSPD-SB91-14	01	16"-24"	ROD VOCs	Matrix Spike/Matrix Spike Duplicate
7/13/92 11:55		02	0"-24"	Mixed Contaminants	Matrix Spike/Matrix Spike Duplicate
7/14/92 12:35	WSPD-SB91-15	01	16"-24"	ROD VOCs	
7/14/92 12:50		02	0"-24"	Mixed Contaminants	
7/13/92 10:30	WSPD-SB91-16	01	16"-24"	ROD VOCs	
7/13/92 10:50		02	0"-24"	Mixed Contaminants	
7/13/92 9:55	WSPD-SB91-17	01	16"-24"	ROD VOCs	
7/16/92 10:25	WSPD-SB91-18	01	16"-24"	ROD VOCs	Duplicate of WSPD-SB-91-10-01
7/15/92 3:11	WSPD-SB91-19	01	0"-24"	Mixed Contaminants	Duplicate of WSPD-SB-91-13-02
7/14/92 6:20	WSPD-TB91-1			ROD VOCs	Trip Blank
7/16/92 4:15	WSPD-TB91-2			ROD VOCs	Trip Blank
7/16/92 4:15	WSPD-FB91-1			ROD VOCs	Field Blank
7/16/92 4:15	WSPD-FB91-2			Mixed Contaminants	Field Blank

**TABLE 5-1 (Continued)
Soil Sampling Summary
Wildwood Property
Wells G & H Superfund Site**

Date/ Time of Collection	Sample Location	Sample Number	Sample Depth	Analysis	Notes
8/27/92 2:50	WSPD-SB91-20	01	42"-48"	ROD VOCs	Duplicate of SB91-8-02; Samples collected with a split spoon sampler ASTM Method D1586.
8/27/92 3:40	WSPD-SB91-21	01	48"-72"	Mixed Contaminants	Duplicate of SB91-7-06; Samples collected with a split spoon sampler ASTM Method D1586.
8/27/92 5:30	WSPD-TB91-3			ROD VOCs	Trip Blank
8/27/92 5:30	WSPD-FB91-3			Mixed Contaminants	Field Blank

NOTE: Samples collected with a split spoon sampler ASTM Method D1586.



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MIXED AND VOC SOIL SAMPLE LOCATIONS

FIGURE 5-2

inch long by two-inch I.D. stainless steel sleeve was inserted in the auger and the ends of the sample sleeve were closed with teflon-lined plastic caps immediately following removal from the auger to prevent the loss of VOCs. For mixed contaminant sampling, soil from a 24-inch interval was collected and composited in a stainless steel mixing bowl. A truck-mounted hollow-stem auger was used to drill to the required depth for those locations that could not be augered by hand, and a split-spoon sampler was driven to retrieve the sample by ASTM method D-1586. For VOC sampling, 6-inch brass sleeves were used in the split spoon to limit the loss of VOCs and samples were collected from a six-inch interval.

The extent of soil VOC contamination was evaluated from analysis of 21 soil samples collected from 15 different borehole locations on the Wildwood Property. The samples were analyzed for chloroform, tetrachloroethene, trichloroethene, trans-1,2-dichloroethene, and 1,1,1-trichloroethane following the EPA's CLP Statement of Work for Organic Compounds. Seventeen VOC samples were collected with a hand auger from eight-inch depth intervals including 15 from an interval of 16 to 24 inches and two from an interval of 40 to 48 inches. Four samples were collected with a split spoon from six-inch depth intervals including one from an interval of 42 to 48 inches and three from an interval of 66 to 72 inches.

Eighteen soil samples were also collected for analysis of mixed contaminants from 12 different borehole locations. The samples were analyzed for chlordane, 4,4-DDT, cPAHs, and PCBs following CLP Statement of Work for Organic Compounds. Fifteen samples were collected using a hand auger including 12 from an interval of 0 to 24 inches and three from an interval of 24 to 48 inches. A split-spoon sampler was used to collect three samples from an interval of 48 to 72 inches. Soil from each 24-inch interval was composited in a stainless steel mixing bowl. The soils were thoroughly mixed together in the bowl, and a 500-ml glass jar was then filled with a sub-sample of this soil composite submitted for laboratory analysis.

5.2 Soil Partitioning Study

Analytical procedures and results for samples collected during the partitioning coefficient study are summarized in this section. The partitioning coefficient study was conducted in compliance with Appendix II of the Consent Decree and in accordance with the procedures outlined in the Predesign Work Plan approved by EPA. A detailed report on the laboratory methodologies and data reduction are presented in the Partitioning Coefficient Study Report in Appendix C.

5.2.1 Partitioning Study Analytical Method

The soil-water partitioning tests involved sequential batch washing of the soil with buffered water. First, three aliquots of each soil were sent for analysis for the chemicals-of-interest. This provided the initial soil concentration data. Then, for each test, a number of centrifuge tubes were filled with buffered water (200 mg NaHCO₃/L of distilled water) and a known amount of soil. To inhibit microbial growth and prevent biodegradation of the contaminants, mercuric chloride was added to each tube at 0.1% of the total mass of soil and water in the tube. Calcium chloride was also added to the tubes to aid in the settling of solids if needed. The tubes were then tumbled in a rotary extractor for 24 hours. After this contact time, the soil-water mixture was separated by placing the tubes in a centrifuge for 30 minutes at 12,500 rpm. The water phase was sampled and sent for analysis. Any remaining water was decanted and the tubes were refilled with buffered water. The appropriate amounts of mercuric chloride and calcium chloride were also added and the test was repeated. This was done until the desired number of washes was completed; three washes were performed for samples PC91-6, PC92-8, and PC92-11 and five washes were performed for samples PC92-15 and PC92-18. After the final wash, three aliquots of the soil were sent for analysis to provide the final soil concentration data. Section 2.0 of Appendix C discusses in greater detail the final experimental methods used.

Because of the highly volatile nature of the chemicals-of-interest in this study, several steps were taken to minimize volatilization. Soil samples were shipped from the field in sampling sleeves with zero head space and, once the sleeves were opened, each step of the experimental procedure was completed as quickly as possible to minimize the amount of time the soil and water samples were exposed to air. Centrifuge tubes were filled so that there was no head space and volatilization in the tubes was minimal. A technique using Leur-lok syringes to take water samples was developed to help minimize volatilization. These syringes prevented exposure of the samples to air until the moment of sampling. The syringes could be sent to the lab and the sample inserted directly into the analytical instrument for analysis. The procedures used to minimize volatilization are presented in detail in Section 2.2 of Appendix C.

5.2.2 Partitioning Study Results

As described above, four soil samples and one duplicate sample were included in the partitioning coefficient study. Before partitioning coefficient samples were collected, screening samples were collected from each proposed location and sent to the laboratory for VOC analysis to evaluate their suitability. The results of these screening samples are presented in Table 5-2.

Table 5-2
 Partitioning Coefficient Study Screening Sample Results (PPM)
 Wildwood Property
 Wells G & H Superfund Site

Sample ID	TCE	PCE	trans-1,2-DCE	Chloroform	1,1,1-TCA
PC91-1	ND	ND	ND	ND	ND
PC91-2	0.1600	ND	ND	ND	ND
PC91-3	ND	ND	ND	ND	ND
PC91-4	0.0078	0.0024	0.0240	ND	ND
PC91-6	0.2800	0.2300	0.0500	ND	ND
PC91-7	0.0027	ND	ND	ND	ND
PC92-8	0.4220	0.1390	0.1200	ND	0.0170
PC92-9	ND	ND	ND	ND	ND
PC92-10	0.0120	0.0630	0.0520	ND	ND
PC92-11	1.2900	1.1200	1.2800	ND	ND
PC92-12	ND	ND	ND	ND	ND
PC92-13	ND	ND	ND	ND	ND
PC92-14	0.0450	0.0140	ND	ND	ND
PC92-15	1.7700	0.6070	0.4490	ND	ND
PC92-16	1.0600	0.3600	0.4050	ND	ND
PC92-17	0.0058	0.0380	0.1350	ND	ND

Note:

Sample PC91-5 was collected, but was never analyzed.

Based on these screening samples, partitioning coefficient samples were collected from four locations. Each sample was subjected three or five washes with water. Initial and final soil characterizations were performed and each wash was analyzed for the chemicals of interest.

These data were subsequently plotted, for each chemical of interest and each soil, in a graph of concentration of soil versus concentration in water. The slope of the resultant plot is the partitioning coefficient (K_p) for that chemical in that soil.

Chloroform

Of the four samples plus one duplicate used in this study, chloroform was found above detectable limits in two samples, PC91-6 and PC92-8. The chloroform concentration in the initial soil samples, final soil samples and in each wash are summarized in Table 5-3. These data were subsequently used to calculate a K_p for each of the two soil samples where chloroform was found. These results were then averaged and a resultant K_p of 5.22 L/kg was determined for chloroform for these soils.

Trans-1,2-Dichloroethene

Of the four samples plus one duplicate used in this study, trans-1,2-dichloroethene was found above detectable limits in two samples, PC91-6 and PC92-15. The trans-1,2-dichloroethene concentration in the initial soils, final soils and in each wash are presented in Table 5-4. These data were subsequently used to calculate K_p for the two samples where trans-1,2-dichloroethene was found. These results were subsequently averaged and a K_p of 7.8 L/kg was determined for trans-1,2-dichloroethene for these soils.

Tetrachloroethene

All five samples used in this study contained tetrachloroethene. Initial soil concentration varied from 0.005 to 43.3 ppm. The results of initial soil, final soil and aqueous concentrations are presented in Table 5-5. For each soil sample a K_p was determined. An average K_p of 14.8 L/kg was determined for tetrachloroethene.

TABLE 5-3
Results for Chloroform Analyses

Sample	Initial Soil* Concentration (ppm)	Final Soil* Concentration (ppm)	Aqueous Concentrations (ppb)				
			Wash 1	Wash 2	Wash 3	Wash 4	Wash 5
PC91-6	0.1871	0.0097	32.0	9.3	2.5	ND	ND
PC92-8	0.0273	0.0493	24.0	11.0	8.9	ND	ND
PC92-11	<0.082	<0.120	<5.0	<1.0	<1.0	ND	ND
PC92-15	<0.086	<0.101	<1.0	<50.0	<50.0	<50.0	<50.0
PC92-18	<0.087	<0.103	<100	<100	<100	<100	<100

* - Average of Three Analyses

ND - Not Determined

TABLE 5-4
Results for Trans-1,2-dichloroethene

Sample	Initial Soil* Concentration (ppm)	Final Soil* Concentration (ppm)	Aqueous Concentrations(ppb)				
			Wash 1	Wash 2	Wash 3	Wash 4	Wash 5
PC 91-6	0.0102	0.0021	2.7	1.2	<1.0	ND	ND
PC 92-8	<0.0013	<0.0014	<1.0	<1.0	<1.0	ND	ND
PC 92-11	<0.082	<0.120	<5.0	<1.0	<1.0	ND	ND
PC 92-15	<0.0718	<0.101	16**	<50	<50	<50	<50
PC 92-18	<0.0873	<0.103	<100	<100	<100	<100	<100

* - Average of Three Analyses

ND - Not Determined

** - Laboratory reported total 1,2-dichloroethene value is estimated concentration of trans-1,2-dichloroethene.

TABLE 5-5
Results for Tetrachloroethene

Sample	Initial Soil* Concentration (ppm)	Final Soil* Concentration (ppm)	Aqueous Concentrations(ppb)				
			Wash 1	Wash 2	Wash 3	Wash 4	Wash 5
PC 91-6	0.593	0.150	29.0	24.0	19.0	ND	ND
PC 92-8	0.0054	0.0035	1.0	<1.0	<1.0	ND	ND
PC 92-11	43.3	27.0	2000	1700	1300	ND	ND
PC 92-15	19.0	3.27	1100	950	770	640	500
PC 92-18	2.7	3.37	1000	720	540	440	270

* - Average of Three Analyses

ND - Not Determined

1,1,1-Trichloroethane

As shown in Table 5-6, 1,1-trichloroethane was not found above detectable limits for any samples used in this partitioning study. Therefore, no K_p value could be measured for 1,1,1-trichloroethane.

Trichloroethene

All five soil samples used in this study contained trichloroethene at initial soil concentrations which varied from 0.045 to 14.7 ppm. The results of analyses of initial and final soil and the water from each wash is presented in Table 5-7. These data were subsequently used to calculate a K_p for each soil sample. An average K_p of 7.66 L/kg was determined for trichloroethene in this soil.

Calculation of Soil Action Levels

For each sample the fraction of organic carbon (f_{oc}) was determined through total organic carbon analyses (TOC). These data are presented in Table 5-8. The f_{oc} varied from 1.67 to 2.77 percent. Using the following equation:

$$K_p = f_{oc} \times K_{oc}$$

determinations of K_p and K_{oc} were made for each compound of interest using specific f_{oc} data. Subsequently, K_p and K_{oc} were averaged for each compound of interest. These data are compared to the data used in the Feasibility Study Model shown in Table 5-9. The Feasibility Study Model used reported K_{oc} values found in the literature and an assumed f_{oc} of 1.0 percent. From this information the model determined K_p . As shown in Table 5-9, the experimental data provides K_p values which are four times to an order of magnitude greater than K_p values used in the FS.

This will have a significant impact on the residual concentrations of these compounds which can be left in soil such that MCLs will not be exceeded in ground water. Table 5-10 summarizes soil cleanup criteria predicted from experimental data and compares them to the model predictions. The acceptable residual soil concentrations are four times to order of magnitude greater than what the model predicts. The one exception to this analysis was 1,1,1-trichloroethane. No data was developed for this compound. However, as shown in Table 5-8, the f_{oc} for these soils are approximately 2.0 percent versus the 1.0 percent use in the model.

TABLE 5-6
Results for 1,1,1-trichloroethane

Sample	Initial Soil* Concentration (ppm)	Final Soil* Concentration (ppm)	Aqueous Concentrations(ppb)				
			Wash 1	Wash 2	Wash 3	Wash 4	Wash 5
PC 91-6	<0.0012	<0.0035	<1.0	<1.0	<1.0	ND	ND
PC 92-8	<0.0013	<0.0014	<1.0	<1.0	<1.0	ND	ND
PC 92-11	<0.082	<0.120	<5.0	<1.0	<1.0	ND	ND
PC 92-15	<0.086	<0.101	<1.0	<50	<50	<50	<50
PC 92-18	<0.087	<0.103	<100	<100	<100	<100	<100

* - Average of Three Analyses

ND - Not Determined

TABLE 5-7
Results for Trichloroethene

Sample	Initial Soil* Concentration (ppm)	Final Soil* Concentration (ppm)	Aqueous Concentrations(ppb)				
			Wash 1	Wash 2	Wash 3	Wash 4	Wash 5
PC 91-6	0.130	0.0167	21.0	7.5	4.3	ND	ND
PC 92-8	0.045	0.066	25.0	15.0	11.0	ND	ND
PC 92-11	14.7	4.030	1100	620	400	ND	ND
PC 92-15	7.5	0.557	780	340	200	130	96
PC 92-18	1.33	0.600	380	240	180	140	100

* - Average of Three Analyses

ND - Not Determined

TABLE 5-8
Determination of f_{oc}

SAMPLE	EXPERIMENTAL f_{oc}(%)
PC91-6	2.00
PC92-8	1.67
PC92-11	2.03
PC92-15	2.40
PC92-18	2.77

TABLE 5-9
Experimentally Derived K_{oc} and K_p for Compounds of Interest

COMPOUND	PARTITIONING COEFFICIENT STUDY		FEASIBILITY STUDY	
	EXPERIMENTAL DETERMINATION		MODEL DETERMINATION (Based on Literature) (Values of k_{oc})	
	K_{oc}	K_p	K_{oc}	K_p
CHLOROFORM	318.1	5.22	31.0	0.31
TRANS-1,2 DICHLOROETHENE	451.6	7.8	59.0	0.59
TETRACHLOROETHENE	712.7	14.8	364.0	3.64
1,1,1 - TRICHLOROETHANE	ND	ND	152.0	1.52
TRICHLOROETHENE	374.6	7.66	126.0	1.26

ND - 1,1,1-trichloroethene was not detected in any samples used for the partitioning coefficient study

TABLE 5-10
Experimentally Derived Site-Specific Soil Cleanup Criteria

COMPOUND	EXPERIMENTALLY PREDICTED SOIL ACTION LEVEL (ppm)	MODEL PREDICTED SOIL ACTION LEVEL (ppm)
CHLOROFORM	1.052	0.063
TRANS-1,2 DICHLOROETHENE	1.100	0.083
TETRACHLOROETHENE	0.149	0.037
1,1,1 -TRICHLOROETHANE	1.226	0.613
TRICHLOROETHENE	0.077	0.013

Thus, for 1,1,1-trichloroethane an action level was determined using reported literature values of K_{oc} and a 2.0 percent f_{oc} as input to the Feasibility Study Model.

5.3 Mixed Contaminant/Voc Soil Investigation

Table 5-11 presents a summary of analytical results for the soil samples analyzed for mixed contaminants and VOCs during the Predesign Investigation. The evaluation presented below uses this data, along with data from earlier investigations presented in the Predesign Work Plan. Table 2-4 presents mixed contaminant and VOC soil analytical data from earlier investigations used in the data evaluation.

5.3.1 Sample Statistics

Table 5-12 presents summary statistics for the data from the RI and earlier investigations used in the evaluation of the extent of mixed contaminants and VOCs in soils at the Wildwood Property. Thirty-five samples collected from 20 soil borings were analyzed for at least one mixed contaminant during the RI and earlier investigations. Twenty-three percent of the samples at 35% of the boring locations had at least one mixed contaminant above the ROD specified cleanup level. Sixty-four samples collected from forty-five soil borings were analyzed for VOCs. Forty-seven percent of the samples from 42% of the borings had VOCs above the cleanup levels established by the partitioning coefficient study.

Table 5-13 presents summary statistics for data from the Predesign Investigation used in the evaluation described below. The goal of the Predesign Investigation soil sampling effort was to refine the limits drawn from the RI data by placing soil samples in locations where data gaps were identified in the Predesign Work Plan. Sample depths ranged from 0 to 6 feet. Eighteen samples collected from twelve borings were analyzed for mixed contaminants. Seventeen percent of the samples collected from 17% of the borings had concentrations of at least one mixed contaminant above cleanup criteria. Twenty-one soil samples, collected from fifteen borings were analyzed for VOCs. Fourteen percent of the samples from 13% of the borings had at least one VOC above cleanup criteria established during the partitioning coefficient study.

Table 5-14 presents the summary statistics for data from the combined data set for both Predesign Investigation and previous investigations. Statistical analysis of data from previous investigations, the Predesign Investigation data, and the combined data sets establish consistencies in the characteristics of mixed contaminant and VOC soil concentrations on the Wildwood Property. Eighty-six soil samples were collected during these investigations.

Table 5-11
Summary of Soil Analytical Results
 Wildwood Property
 Wells G & H Superfund Site

Sample Number	Cleanup Criteria	SB91-1-01	SB91-1-02	SB91-2-01	SB91-3-01	SB91-3-02	SB91-4-01	SB91-5-01	SB91-6-01	SB91-7-01	SB91-7-02	SB91-7-03
Sampling Date	(mg/kg)	07/13/92	07/13/92	07/13/92	07/14/92	07/14/92	07/15/92	07/15/92	07/14/92	07/14/92	07/14/92	8/27/92
Sample Depth		16"-24"	0"-24"	16"-24"	16"-24"	0"-24"	16"-24"	0"-24"	16"-24"	16"-24"	40"-48"	66"-72"
VOLATILES (mg/kg)												
Chloroform	1.052 *	< 0.006 U		< 0.007 U	< 0.006 U		< 0.021 U		< 0.015 U	< 0.04 U	< 0.006 U	< 0.012 U
Tetrachloroethene	0.149 *	< 0.006 U		< 0.007 U	< 0.006 U		< 0.021 U		< 0.015 U	0.85	< 0.012 U	< 0.012 U
Trichloroethene	0.077 *	0.004 J		0.004 J	0.006 U		0.045		0.046	0.29	0.009	< 0.012 U
trans-1,2-Dichloroethene	1.100 *	< 0.006 U		< 0.007 U	< 0.006 U		< 0.021 U		< 0.015 U	< 0.04 U	< 0.006 U	< 0.012 U
1,1,1-Trichloroethane	1.226 *	< 0.006 U		< 0.007 U	< 0.006 U		< 0.021 U		< 0.015 U	< 0.04 U	< 0.006 U	< 0.012 U
PESTICIDES (mg/kg)												
alpha-Chlordane	6.14 (total)		< 0.0021 U		< 0.012 U		< 0.0047 U		< 0.0047 U			
gamma-Chlordane			< 0.0021 U		< 0.012 U		< 0.0047 U		< 0.0047 U			
4,4-DDT	23.5		< 0.0041 U		< 0.024 U		< 0.0091 U		< 0.0091 U			
TOTAL			0		0		0		0			
PCBs (mg/kg)												
TOTAL	1.04		0		1.3		0.8					
cPAHS (mg/kg)												
TOTAL	0.69		0.209		0		0					
TOC (mg/kg)		22,000		43,000	4,500		350,000		12,000	72,000	15,000	2,200

Sample Number	Cleanup Criteria	SB91-7-04	SB91-7-04RE	SB91-7-05	SB91-7-06	Dup. of SB91-7-06	SB91-8-01	SB91-8-02	Dup. of SB91-8-02	SB91-8-03	SB91-08-04	SB91-08-04RE
Sampling Date	(mg/kg)	07/16/92	07/16/92	07/16/92	08/27/92	08/27/92	07/14/92	08/27/92	08/27/92	08/27/92	07/14/92	07/14/92
Sample Depth		0"-24"	0"-24"	24"-48"	48"-72"	48"-72"	16"-24"	42"-48"	42"-48"	66"-72"	0"-24"	0"-24"
VOLATILES (mg/kg)												
Chloroform	1.052 *						< 0.017 U	< 0.012 U	< 0.062 U	< 0.012 U		
Tetrachloroethene	0.149 *						< 0.017 U	0.033 J	0.14 J	0.004 J		
Trichloroethene	0.077 *						0.45	0.052 J	0.48 J	0.01 J		
trans-1,2-Dichloroethene	1.100 *						< 0.017 U	< 0.012 U	< 0.062 U	0.053		
1,1,1-Trichloroethane							< 0.017 U	< 0.012 U	< 0.062 U	< 0.012 U		
PESTICIDES (mg/kg)												
alpha-Chlordane	6.14 (total)	< 0.0028 U		< 0.0022 U	< 0.0020 U	0.0043 J					< 0.0025 U	
gamma-Chlordane		< 0.0028 U		< 0.0022 U	< 0.0020 U	< 0.0021 U					< 0.0025 U	
4,4-DDT	23.5	< 0.0054 U		< 0.0043 U	< 0.0039 U	< 0.0 U					< 0.0049 U	
TOTAL		0		0	0	0.0043					0	
PCBs (mg/kg)												
TOTAL	1.04	0.29		0	0	0.16					0	
cPAHS (mg/kg)												
TOTAL	0.69	0.063	0.121	0	0	0					0	0
TOC (mg/kg)							17,000	14,000	22,000	3,900		

* - as established by laboratory soil partitioning study
 Qualifiers: U = non-detected; J = estimated value

Table 5-11 (cont.)
 Summary of Soil Analytical Results
 Wildwood Property
 Wells G & H Superfund Site

Sample Number Sampling Date Sample Depth	Cleanup Criteria (mg/kg)	Dup. of SB91-10-01										
		SB91-9-01 07/15/92 0°-24°	SB91-9-02 07/15/92 24°-48°	SB91-9-02RE 07/15/92 24°-48°	SB91-9-03 08/27/92 48°-72°	SB91-10-01 07/16/92 16°-24°	SB91-10-01 07/16/92 16°-24°	SB91-10-02 07/16/92 40°-48°	SB91-10-03 08/27/92 66°-72°	SB91-10-04 07/16/92 0°-24°	SB91-10-04RE 07/16/92 0°-24°	SB91-11-01 07/14/92 16°-24°
VOLATILES (mg/kg)												
Chloroform	1.052 *					< 0.006 U	< 0.006 U	< 0.006 U	< 150 U			< 0.006 U
Tetrachloroethene	0.149 *					0.003 J	0.002 J	< 0.006 U	< 150 U			< 0.006 U
Trichloroethene	0.077 *					0.003	0.025	0.017	830 J			0.003 J
trans-1,2-Dichloroethene	1.100 *					< 0.006 U	< 0.006 U	< 0.006 U	< 150 U			< 0.006 U
1,1,1-Trichloroethane	1.226 *					< 0.006 U	< 0.006 U	< 0.006 U	< 150 U			< 0.006 U
PESTICIDES (mg/kg)												
alpha-Chlordane	6.14 (total)	< 0.16 U	< 0.082 U		< 0.0020 U					< 0.0020 U		
gamma-Chlordane		< 0.16 U	< 0.082 U		< 0.0020 U					< 0.0020 U		
4,4-DDT	23.5	< 0.31 U	< 0.16 U		< 0.0039 U					0.0042		
TOTAL		0	0		0					0.0042		
PCBs (mg/kg)												
TOTAL	1.04	250	60		0.041					0		
cPAHS (mg/kg)												
TOTAL	0.69	0.054	0		0					0		0
TOC (mg/kg)						10.000	11.000	1.100	6.400			21.000

Sample Number Sampling Date Sample Depth	Cleanup Criteria (mg/kg)	Dup. of SB91-13-02									
		SB91-12-01 07/13/92 16°-24°	SB91-12-02 07/13/92 0°-24°	SB91-13-01 07/17/92 16°-24°	SB91-13-02 07/15/92 0°-24°	SB91-13-02RE 07/15/92 0°-24°	SB91-13-01 07/15/92 0°-24°	SB91-13-03 07/15/92 24°-48°	SB91-13-04 08/27/92 48°-72°	SB91-14-01 07/13/92 16°-24°	SB91-14-02 07/13/92 0°-24°
VOLATILES (mg/kg)											
Chloroform	1.052 *	< 0.006 U		< 0.006 U						< 0.006 U	< 0.007 U
Tetrachloroethene	0.149 *	< 0.006 U		< 0.006 U						< 0.006 U	< 0.007 U
Trichloroethene	0.077 *	0.023		< 0.006 U						0.006 U	< 0.007 U
trans-1,2-Dichloroethene	1.100 *	< 0.006 U		< 0.006 U						< 0.006 U	< 0.007 U
1,1,1-Trichloroethane	1.226 *	< 0.006 U		< 0.006 U						< 0.006 U	< 0.007 U
PESTICIDES (mg/kg)											
alpha-Chlordane	6.14 (total)		< 0.0019 U		< 0.0018 U		< 0.0018 U	< 0.0020 U	< 0.0020 U		< 0.002 U
gamma-Chlordane			< 0.0019 U		< 0.0018 U		< 0.0018 U	< 0.0020 U	< 0.0020 U		< 0.002 U
4,4-DDT	23.5		< 0.0038 U		0.013 J		< 0.0035 U	< 0.0040 U	< 0.0039 U		< 0.0038 U
TOTAL			0		0.013		0	0	0		0
PCBs (mg/kg)											
TOTAL	1.04		0		0		0.12	0	0		0
cPAHS (mg/kg)											
TOTAL	0.69		0		0		0	0	0		0
TOC (mg/kg)		15.000		750						2.800	21.000

* - as established by laboratory soil partitioning study
 Qualifiers: U = non-detected; J = estimated value

Table 5-11 (cont.)
 Summary of Soil Analytical Results
 Wildwood Property
 Wells G & H Superfund Site

Sample Number Sampling Date Sample Depth	Cleanup Criteria (mg/kg)	SB91-15-02 07/14/92 0'-24"	SB91-16-01 07/13/92 16'-24"	SB91-16-02 07/13/92 0'-24"	SB91-16-02RR 07/13/92 0'-24"	SB91-17-01 07/13/92 16'-24"
VOLATILES (mg/kg)						
Chloroform	1.052 *		< 0.006 U			< 0.006 U
Tetrachloroethene	0.149 *		< 0.006 U			< 0.006 U
Trichloroethene	0.077 *		< 0.006 U			0.002 J
trans-1,2-Dichloroethene	1.100 *		< 0.006 U			< 0.006 U
1,1,1-Trichloroethane	1.226 *		< 0.006 U			< 0.006 U
PESTICIDES (mg/kg)						
alpha-Chlordane	6.14 (total)	< 0.0025 U		< 0.0081 U		
gamma-Chlordane		< 0.0025 U		< 0.0081 U		
4,4-DDT	23.5	< 0.0049 U		< 0.016 U		
TOTAL		0		0		
PCBs (mg/kg)						
TOTAL	1.04	0		0		
cPAHS (mg/kg)						
TOTAL	0.69	0		0.061	0.056	
TOC (mg/kg)						
			16,000			18,000

* - as established by laboratory soil partitioning study
 Qualifiers: U = non-detected; J = estimated value

Table 5-12
Statistical Data Summary of
Soil Samples Collected During The RI
and Previous Site Investigations
Wells G&H Superfund Site
Woburn, MA

Clean Up Criteria ppm	No. of Analyses	No. Detected Above CUC	Maximum Conc. ppm	Median Conc. ppm	Geometric Mean ppm	
Surface Samples						
Chloroform	1.05	1	0	0.006	0.006	0.006
Tetrachloroethene	0.149	7	1	36.0	0.004	0.018
Trichloroethene	0.077	7	2	18.0	0.004	0.069
1,2-Dichloroethene	1.10	9	1	21.0	0.006	0.016
1,1,1-Trichloroethane	1.23	7	1	46.0	0.007	0.025
cPAHs	0.690	2	0	0.336	0.336	0.336
Chlordane	6.14	3	2	40,000.	18,000.	224.
4,4-DDT	23.5	2	0	0.210	0.600	0.152
PCBs	1.04	0	0	0.203	0.203	0.203
Samples From 0 to 2 Feet						
Chloroform	1.05	18	0	0.006	0.006	0.006
Tetrachloroethene	0.149	23	4	6.60	0.004	0.015
Trichloroethene	0.077	28	14	13.0	0.100	0.061
1,2-Dichloroethene	1.10	29	1	5.48	0.006	0.009
1,1,1-Trichloroethane	1.23	21	0	0.007	0.007	0.007
cPAHs	0.690	19	5	29.9	0.336	0.621
Chlordane	6.14	7	2	23.0	0.040	0.197
4,4-DDT	23.5	5	0	1.10	0.032	0.097
PCBs	1.04	13	3	130.	0.203	0.628
Samples From 2 to 4 Feet						
Chloroform	1.05	15	0	0.830	0.006	0.014
Tetrachloroethene	0.149	23	9	130.	0.017	0.079
Trichloroethene	0.077	27	14	89.0	0.123	0.160
1,2-Dichloroethene	1.10	26	8	8.50	0.006	0.039
1,1,1-Trichloroethane	1.23	21	0	0.007	0.007	0.007
cPAHs	0.690	14	1	3.00	0.336	0.392
Chlordane	6.14	3	0	0.016	0.016	0.016
4,4-DDT	23.5	4	0	0.032	0.032	0.032
PCBs	1.04	9	0	0.203	0.203	0.203
All Samples						
Chloroform	1.05	34	0	0.830	0.006	0.009
Tetrachloroethene	0.149	53	14	130.	0.004	0.069
Trichloroethene	0.077	62	30	89.0	0.068	0.094
1,2-Dichloroethene	1.10	64	10	21.0	0.006	0.022
1,1,1-Trichloroethane	1.23	49	1	46.0	0.007	0.013
cPAHs	0.690	35	6	29.90	0.336	0.499
Chlordane	6.14	13	4	40,000.	0.042	0.664
4,4-DDT	23.5	11	0	1.10	0.032	0.070
PCBs	1.04	22	3	130.	0.203	0.395

Notes: Detection limits were not available for the RI data. Samples below detection limit were given a value of one half the average detection limit reached during the Pre-design Investigation.

Table 5-13
Statistical Data Summary of
Predesign Investigation Soil Samples
Wells G&H Superfund Site
Woburn, MA

	Clean Up	No. of	No. Detected	Maximum	Median	Geometric
	Criteria					
	ppm					
Samples From 0 to 2 Feet						
Chloroform	1.05	16	0	0.020	0.003	0.004
Tetrachloroethene	0.149	16	1	0.850	0.003	0.005
Trichloroethene	0.077	16	2	0.450	0.003	0.012
1,2-Dichloroethene	1.10	16	0	0.020	0.003	0.004
1,1,1-Trichloroethane	1.23	16	0	0.020	0.003	0.004
cPAHs	0.690	13	0	0.209	0.125	0.180
Chlordane	6.140	13	0	0.160	0.002	0.004
4,4-DDT	23.5	13	0	0.155	0.004	0.004
PCBs	1.04	13	2	250.	0.420	0.434
Samples From 2 to 4 Feet						
Chloroform	1.05	4	0	0.031	0.004	0.010
Tetrachloroethene	0.149	4	0	0.140	0.027	0.027
Trichloroethene	0.077	4	1	0.480	0.035	0.044
1,2-Dichloroethene	1.10	4	0	0.031	0.009	0.005
1,1,1-Trichloroethane	1.23	4	0	0.031	0.009	0.005
cPAHs	0.690	3	0	0.294	0.287	0.287
Chlordane	6.140	3	0	0.082	0.002	0.007
4,4-DDT	23.5	3	0	0.080	0.002	0.007
PCBs	1.04	3	1	60.	0.172	1.18
Samples From 4 to 6 Feet						
Chloroform	1.05	2	0	0.006	0.006	0.006
Tetrachloroethene	0.149	2	0	0.006	0.005	0.005
Trichloroethene	0.077	3	1	830.	0.004	0.027
1,2-Dichloroethene	1.10	2	0	0.006	0.005	0.005
1,1,1-Trichloroethane	1.23	2	0	0.006	0.005	0.005
cPAHs	0.690	3	0	0.385	0.385	0.385
Chlordane	6.140	3	0	0.002	0.002	0.002
4,4-DDT	23.5	3	0	0.004	0.004	0.004
PCBs	1.04	3	0	0.156	0.156	0.156
All Samples						
Chloroform	1.05	22	0	0.031	0.003	0.005
Tetrachloroethene	0.149	22	1	0.850	0.003	0.007
Trichloroethene	0.077	23	4	830.	0.003	0.020
1,2-Dichloroethene	1.10	22	0	0.031	0.003	0.004
1,1,1-Trichloroethane	1.23	22	0	0.031	0.003	0.004
cPAHs	0.690	19	0	0.385	0.200	0.167
Chlordane	6.140	19	0	0.160	0.002	0.004
4,4-DDT	23.5	19	0	0.155	0.004	0.004
PCBs	1.04	19	3	250.	0.150	0.463

Table 5-14
Statistical Data Summary of
All Soil Samples
Wells G&H Superfund Site
Woburn, MA

	Clean Up	No. of	No. Detected	Maximum	Median	Geometric
	Criteria					
	ppm					
Samples From 0 to 2 Feet						
Chloroform	1.05	34	0	0.020	0.004	0.005
Tetrachloroethene	0.149	39	5	6.60	0.004	0.005
Trichloroethene	0.077	44	16	13.0	0.045	0.034
1,2-dichloroethene	1.10	45	1	5.48	0.006	0.007
1,1,1-Trichloroethane	1.23	37	0	0.020	0.007	0.006
cPAHs	0.690	32	5	29.9	0.336	0.375
Chlorodane	6.140	20	2	23.0	0.002	0.016
4,4-DDT	23.5	18	0	1.10	0.004	0.010
	1.04	26	5	130.	0.300	0.514
Samples From 2 to 4 Feet						
Chloroform	1.05	19	0	0.830	0.006	0.011
Tetrachloroethene	0.149	27	9	130.	0.004	0.067
Trichloroethene	0.077	31	15	89.0	0.004	0.135
1,2-dichloroethene	1.10	30	8	8.50	0.009	0.030
1,1,1-Trichloroethane	1.23	25	0	0.031	0.007	0.008
cPAHs	0.690	17	1	3.00	0.336	0.462
Chlorodane	6.140	6	0	0.082	0.016	0.006
4,4-DDT	23.5	7	0	0.080	0.032	0.017
PCBs	1.04	12	1	60.0	0.203	0.195
All Samples						
Chloroform	1.05	56	0	0.830	0.006	0.006
Tetrachloroethene	0.149	75	15	130.	0.004	0.036
Trichloroethene	0.077	85	34	830.	0.004	0.057
1,2-dichloroethene	1.10	86	10	21.0	0.006	0.013
1,1,1-Trichloroethane	1.23	71	1	46.0	0.007	0.008
cPAHs	0.690	54	6	29.9	0.336	0.333
Chlorodane	6.140	32	4	40,000.	0.002	0.334
4,4-DDT	23.5	30	0	1.10	0.004	0.035
PCBs	1.04	41	6	250.	0.203	0.429

Notes: Detection limits were not available for the RI data. Samples below detection limit were given a value of one half the average detection limit reached during the Prodesign Investigation.

Chloroform and 4,4-DDT were not found above the cleanup criteria. 1,1,1-trichloroethane was only found above cleanup criteria in one location. Only six samples collected during the Predesign Investigation contained concentrations of compounds above cleanup criteria. Of the compounds detected above criteria, trichloroethene was encountered most frequently (40% of the samples). Tetrachloroethene and 1,2-dichloroethene were encountered in 20% and 11% of the samples. In all cases, when tetrachloroethene and dichloroethene were encountered, trichloroethene was also encountered above criteria. Chlordane, cPAHs, and PCBs were encountered above criteria at lesser frequency, 13%, 11% and 15%, respectively.

Combined data from the RI and Predesign Investigation show several orders of magnitude difference between maximum concentrations and minimum concentrations. The geometric mean concentrations were comparable to the median concentrations while the arithmetic mean was greater than the median by an order of magnitude. This suggests that the data is log normally distributed.

When the statistical analysis of the data set was evaluated with respect to sample location, three general trends in the spatial variability of impacted soil were observed. First, only 28% of sample locations showed contamination above cleanup criteria. Second, these locations were usually within fifty feet of the site road. Third, sample locations with soil impacted above cleanup criteria were generally separated by sample locations where contamination was not detected. These trends indicate that soil contamination occurred at discrete surface point sources with concentrations decreasing exponentially with distance from those points.

5.3.2 Quality Assurance Samples

Field duplicates of soil samples were collected to check the precision of the sampling and analytical procedures. Field duplicates were collected at a frequency of 10% of the total amount of field samples taken. Four field duplicates were collected during the program. The comparison between field samples and duplicates was performed as part of the laboratory data validation program, which followed U.S. EPA Region I guidelines for evaluating organic analysis. The criteria for duplicate samples is the relative percent difference (RPD) for all compounds detected in soil must be less than 50%. If any results have a RPD greater than 50% in soil, estimate the positive results (J) for that compound in both samples.

Table 5-15 presents the results of duplicate sample analysis and evaluation. The RPD calculated for samples and duplicates from locations SB91-7, SB91-8 and SB91-13 are greater than 50%. Therefore, all detected compounds in both field and duplicate samples were reported as estimates. The percent difference calculated for the field sample and duplicate collected from

location SB91-10 was below 50%. Compounds analyzed, but not shown in Table 5-15, were not detected in these samples.

Blank samples were used during the mixed/VOC soil investigation in an effort to detect outside sources of sample contamination that may affect the reliability of the analytical results. Trip blanks were used to detect possible contamination during the handling and transport of field samples. Trip blanks were prepared and analyzed at a rate of one sample per laboratory shipment. Field blanks were collected to detect possible cross-contamination or environmental contamination of field samples. Field blanks were generated from deionized or distilled rinse water during decontamination of sampling equipment. Field blanks were collected at a frequency of one for every 20 field samples collected. Results from the trip and field blank analysis showed no detectable concentrations of any compounds analyzed for in any of the blanks.

5.4 Data Evaluation

5.4.1 Evaluation Methods

A first attempt at contouring contaminant concentrations was made using GEO-EAS, a geostatistical modeling software developed by the EPA at the Environmental Monitoring Systems Laboratory in Las Vegas, Nevada. The software produces two dimensional contour maps from a normally distributed data set, using a geostatistical method called kriging. The first step in the kriging process is to generate a plot of concentration variance versus distance between sample locations for all possible pairs of samples in the data set. A line of best fit, usually spherical or exponential, is then drawn through the plotted data. This line is used to model the spatial variability of the concentration data. Contaminant concentrations are determined at unsampled locations by using the variogram model to weigh the influence of the surrounding samples. The variogram models generated by the software are based on the assumption that contamination is from a single source and concentration variance increases with horizontal distance between samples.

Variogram plots of the Wildwood Property combined data set did not match this trend. Concentration variance tended to increase with distance, then decrease as samples with concentrations from different point sources were being paired in the variogram plot. This behavior supports the assumptions drawn from the statistical analysis of the data set. Data taken from discrete areas around a sample location with a high concentration of VOCs or mixed contaminants tended to have log normal concentration frequency distribution.

TABLE 5-15
 Field Duplicate Mixed/VOC Soil Results
 (concentrations in mg/kg)
 Wildwood Property
 Wells G & H Superfund Site

Sample Number (WSPD--): Sample Date:	SB91-8-02 8/27/92	SB91-20-01 Duplicate	%RPD	SB91-10-01 7/16/92	SB91-18-01 Duplicate	%RPD	SB91-13-02 7/15/92	SB91-19-01 Duplicate	%RPD	SB91-7-06 8/27/92	SB91-21-01 Duplicate	%RPD
Volatile Organics*												
Tetrachloroethene	0.033	0.140	124	0.003J	0.002J	40	NA	NA		NA	NA	
Trichloroethene	0.052	0.480	161	0.035	0.025	33	NA	NA		NA	NA	
Pesticides*												
4,4'-DDT	NA	NA		NA	NA		0.013	0.0035U	115	0.0039U	0.004U	
Alpha chlordane	NA	NA		NA	NA		0.0018U	0.0018U		0.002U	0.0043	73
PCBs*												
Aroclor 1254	NA	NA		NA	NA		0.036U	0.120	107	0.039U	0.160	121

* Detected Compounds
 NA: Not Analyzed

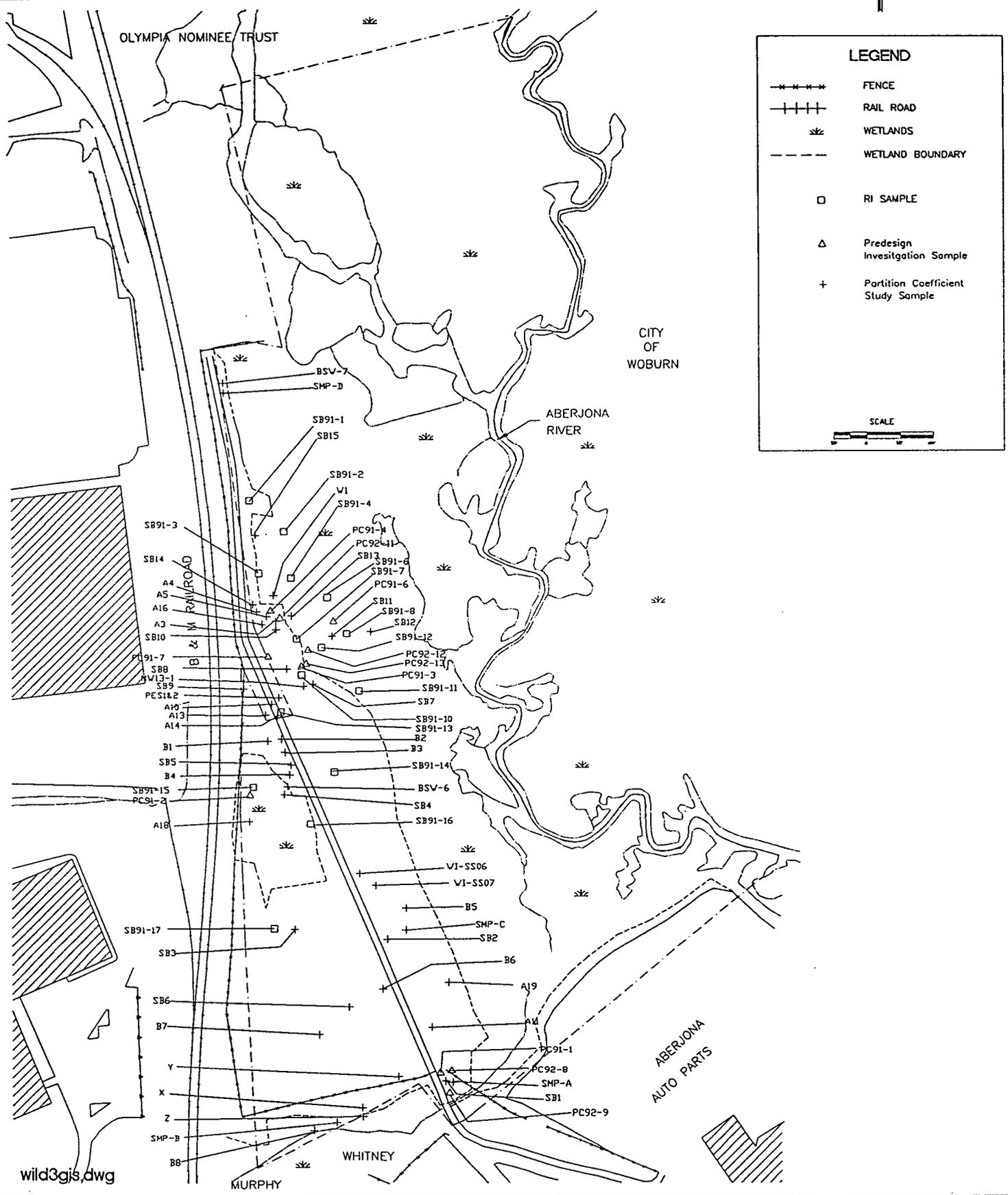
Rather than breaking down areas of contamination until use of the geostatistical model was appropriate, linear contouring techniques using transformed values of concentrations (i.e., logarithm of the concentration), was used to establish the limits of soil impacted above the cleanup criteria. This method was consistent with the exponential decreases in concentrations observed in areas of high sample density. Logarithmic contours of concentration values for each of the nine contaminants of concern were generated with the Softdesk Digital Terrain Modeling (DTM) contouring software. The software created a triangulated irregular network (TIN) from the combined data set and used the TIN to interpolate contours of the concentration data.

5.4.2 Mixed Contaminant Soil Evaluation

The horizontal limit of mixed contaminant soil above cleanup criteria was established with data from the Predesign Investigation, the RI, and earlier investigations. Figure 5-3 shows the sample locations used to determine the limits. A database was created containing the coordinates for each sample location and maximum concentrations of the four criteria compounds found at that sample location. Some sample locations had several samples collected from between 0 and 6 feet below the ground surface. In that case the highest concentration measured for each compound at each location was used. If a compound was not detected above the analytical detection limit, its concentration was assumed to be zero for that location.

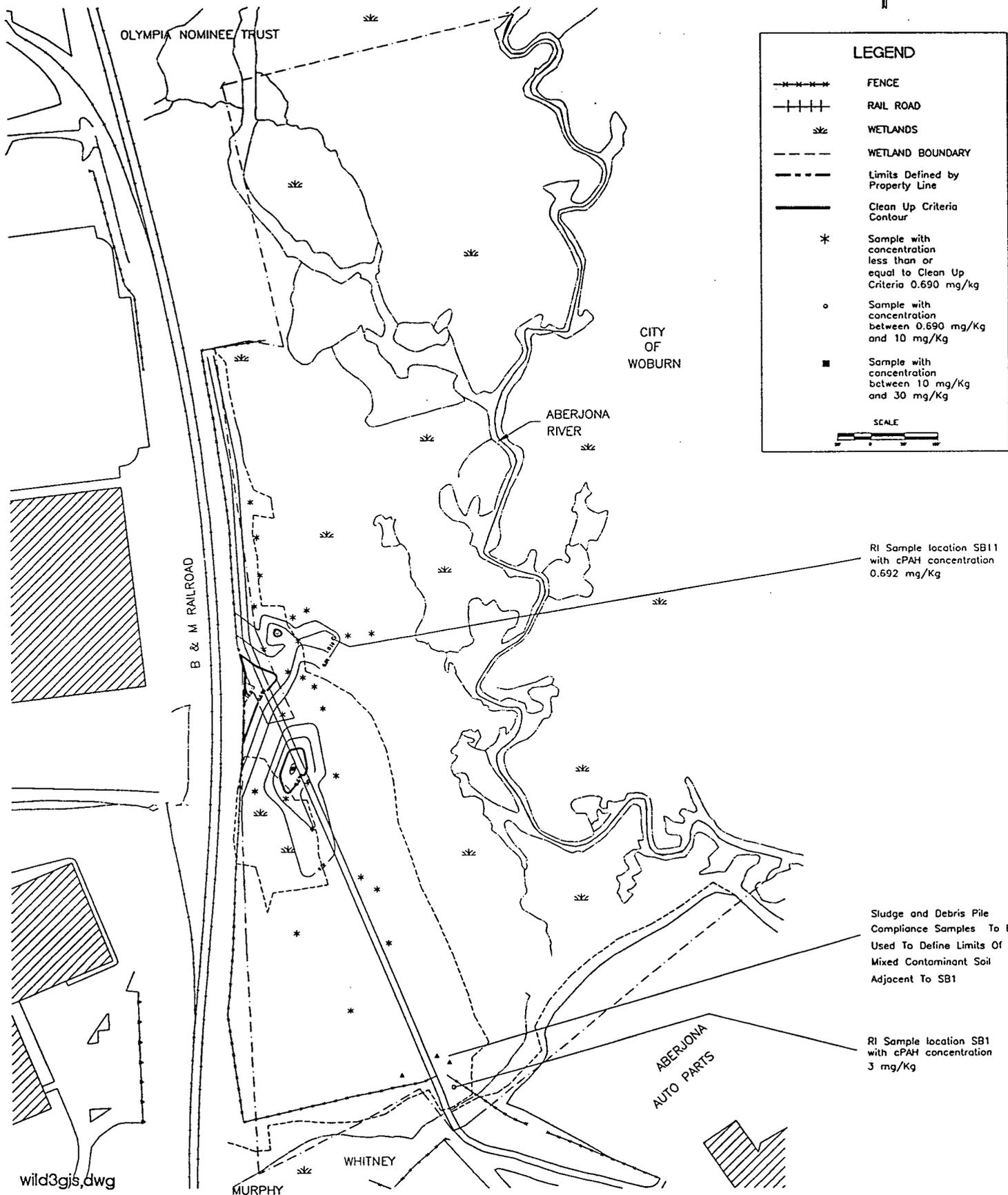
The database was used to generate contour maps for each criteria compound. Figures 5-4, 5-5, 5-6 and 5-7 show soil concentration contours for cPAHs, PCBs, chlordane and 4,4-DDT prepared as described above. The darker contour lines shown on these figures correspond to the soil cleanup levels established by the ROD. Figure 5-8 is a summary figure which shows the cleanup level contours for each of the mixed contaminants overlaid on the site map. The outer limits of the union of these contoured areas include 11,100 square feet and establish the overall horizontal extent of mixed contaminant soils with concentrations above the cleanup criteria. In an area at the southern end of the site near RI sample location SB1, compliance samples from locations shown on Figure 5-6 will be collected at sludge and debris pile locations and used to more clearly define the extent of impacted soil in this area.

Table 5-16 presents a summary of cPAH and PCB analytical results for locations where soil samples were collected at more than one depth during the RI or the Predesign Investigation. This table was prepared to allow evaluation of the relationship between chemical concentration and depth. Values underlined on the table indicate values which exceed the cleanup levels set by the ROD. The site conceptual model presented in the work plan was based on the assumption

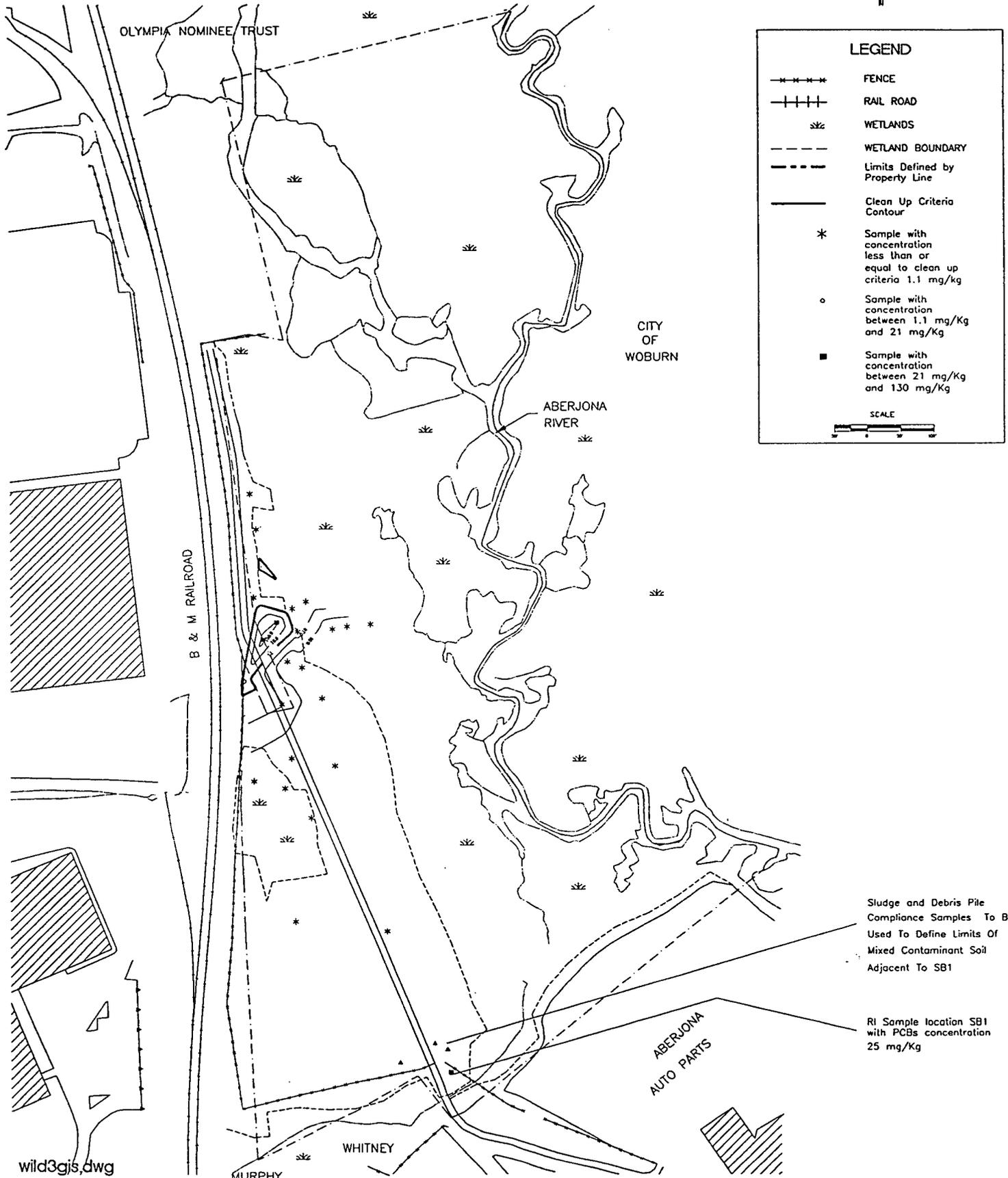


Sample Locations Used for Contaminant Contouring

FIGURE 5-3



cPAHs Concentration in Soil
Contour Map (mg/Kg)



LEGEND

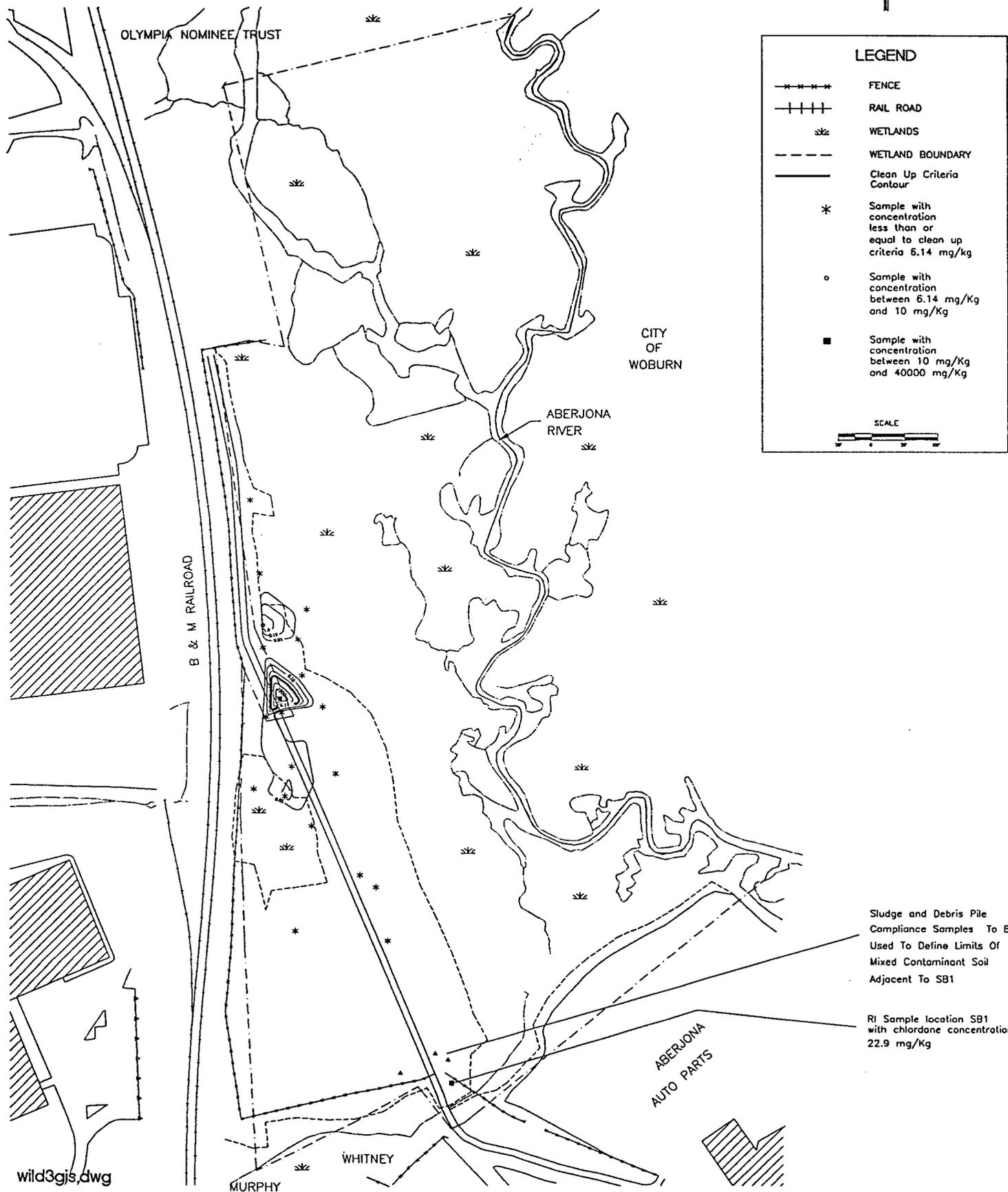
- *—*—*— FENCE
- +—+—+ RAIL ROAD
- WETLANDS
- WETLAND BOUNDARY
- - - - Limits Defined by Property Line
- Clean Up Criteria Contour
- * Sample with concentration less than or equal to clean up criteria 1.1 mg/kg
- o Sample with concentration between 1.1 mg/Kg and 21 mg/Kg
- Sample with concentration between 21 mg/Kg and 130 mg/Kg

SCALE

wild3gjs,dwg

**PCBs Concentration in Soil
Contour Map (mg/Kg)**

**FIGURE
5-5**



LEGEND

- *—*—*— FENCE
- +—+—+— RAIL ROAD
- WETLANDS
- - - - - WETLAND BOUNDARY
- Clean Up Criteria Contour
- * Sample with concentration less than or equal to clean up criteria 6.14 mg/kg
- o Sample with concentration between 6.14 mg/Kg and 10 mg/Kg
- Sample with concentration between 10 mg/Kg and 40000 mg/Kg

SCALE

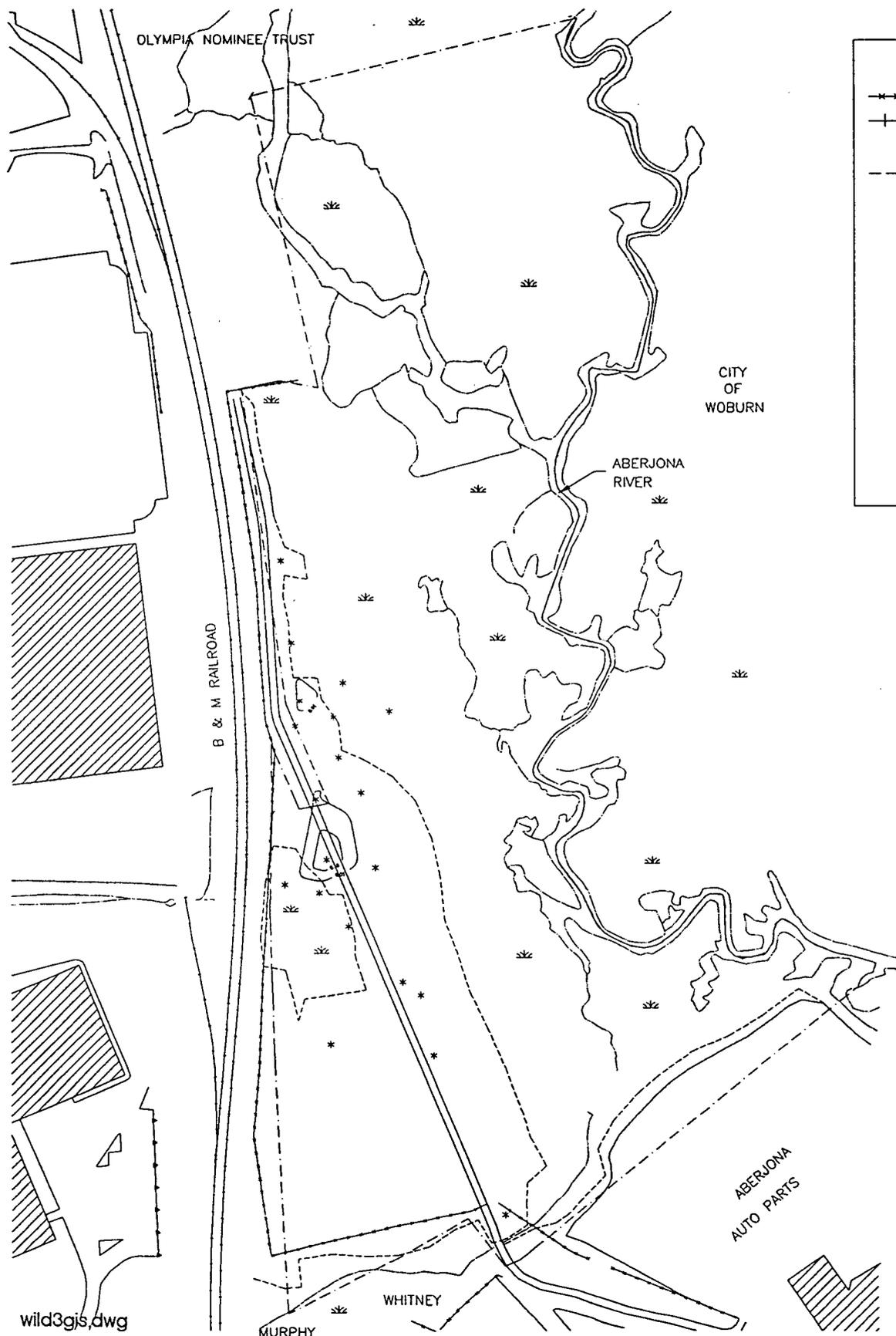
Sludge and Debris Pile Compliance Samples To Be Used To Define Limits Of Mixed Contaminant Soil Adjacent To SB1

RI Sample location SB1 with chlordane concentration 22.9 mg/Kg

wild3gjis.dwg

Chlordane Concentration in Soil Contour Map (mg/Kg)

FIGURE 5-6



LEGEND

- FENCE
- +++++ RAIL ROAD
- WETLANDS
- WETLAND BOUNDARY
- *

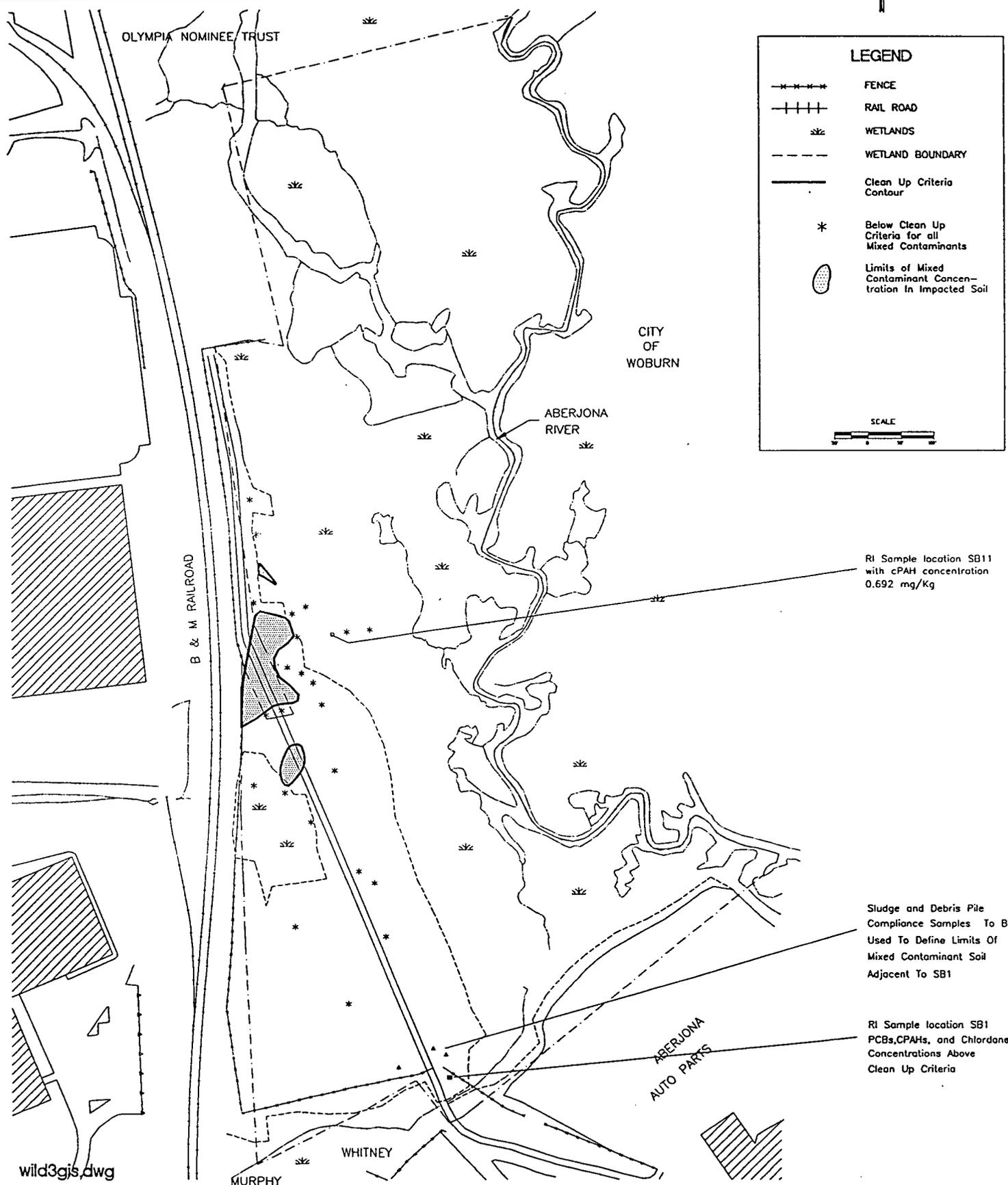
Sample with concentration less than or equal to clean up criteria 23.5 mg/kg
(No 4-4 DDT Samples Above Clean Up Criteria)

SCALE

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**4,4-DDT Concentration in Soil
Contour Map (mg/Kg)**

**FIGURE
5-7**



Limits of Mixed Contaminants in Soil Above Clean Up Criteria

Table 5-16
Contaminant Concentration Variation With Depth (ppm)
Wildwood Property
Wells G & H Superfund Site

Mixed Contaminants

	Depth	SB91-7	SB91-9	SB91-13	SB1	SB3	SB4	SB5	SB6	SB7	SB8	SB9	SB10	SB12	SB13	SB14	SB15
cPAHs	0'-2'	0.121	0.054	ND	ND	ND	0.480	<u>23.800</u>	ND	ND	0.282	<u>29.900</u>	<u>1.860</u>	ND	ND	ND	ND
	2'-4'	ND	ND	ND	<u>3.000</u>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075
	4'-6'	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

	Depth	SB91-7	SB91-9	SB91-13	SB1	SB3	SB4	SB5	SB6	SB7	SB8	SB9	SB10	SB12	SB13	SB14	SB15
PCBs	0'-2'	0.290	<u>250.000</u>	0.120	<u>25.000</u>	ND	ND	ND	NA	NA	NA	<u>3.000</u>	<u>130.000</u>	ND	NA	0.140	0.600
	2'-4'	ND	<u>60.000</u>	ND	NA	0.080	0.081	NA	NA	NA	ND	0.130	ND	ND	0.170	0.140	ND
	4'-6'	0.160	0.041	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

VOCs

	Depth	SB91-7	SB91-8	SB91-10	SB1	SB3	SB4	SB5	SB6	SB7	SB8	SB9	SB10	SB12	SB13	SB14	SB15
TCE	0'-2'	<u>0.290</u>	<u>0.450</u>	<u>0.035</u>	0.010	0.003	<u>5.900</u>	<u>13.000</u>	0.004	<u>0.730</u>	<u>0.032</u>	<u>0.260</u>	<u>0.042</u>	<u>0.520</u>	<u>3.900</u>	<u>0.014</u>	<u>0.068</u>
	2'-4'	0.009	<u>0.480</u>	<u>0.017</u>	ND	ND	0.007	<u>0.540</u>	ND	<u>0.270</u>	0.008	<u>0.027</u>	<u>0.340</u>	<u>2.700</u>	<u>25.000</u>	<u>0.023</u>	<u>0.039</u>
	4'-6'	ND	0.010	830.000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

	Depth	SB91-7	SB91-8	SB91-10	SB1	SB3	SB4	SB5	SB6	SB7	SB8	SB9	SB10	SB12	SB13	SB14	SB15
PCE	0'-2'	<u>0.850</u>	ND	0.003	NA	NA	NA	NA	ND	<u>0.022</u>	ND	ND	ND	0.032	<u>2.000</u>	0.021	ND
	2'-4'	<u>0.020</u>	0.140	ND	NA	NA	NA	ND	ND	<u>0.027</u>	ND	ND	<u>0.500</u>	<u>0.270</u>	<u>6.400</u>	<u>0.057</u>	ND
	4'-6'	ND	0.004	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NOTES:
 ND - Not Detected
 NA - Not Analyzed
 NS - Not Sampled
 An underlined value indicates that the sample has exceeded clean up criteria.

that areas of high mixed contaminant concentrations were generated from surface sources and that the relatively low solubility of these compounds would lead to a limited amount of vertical migration.

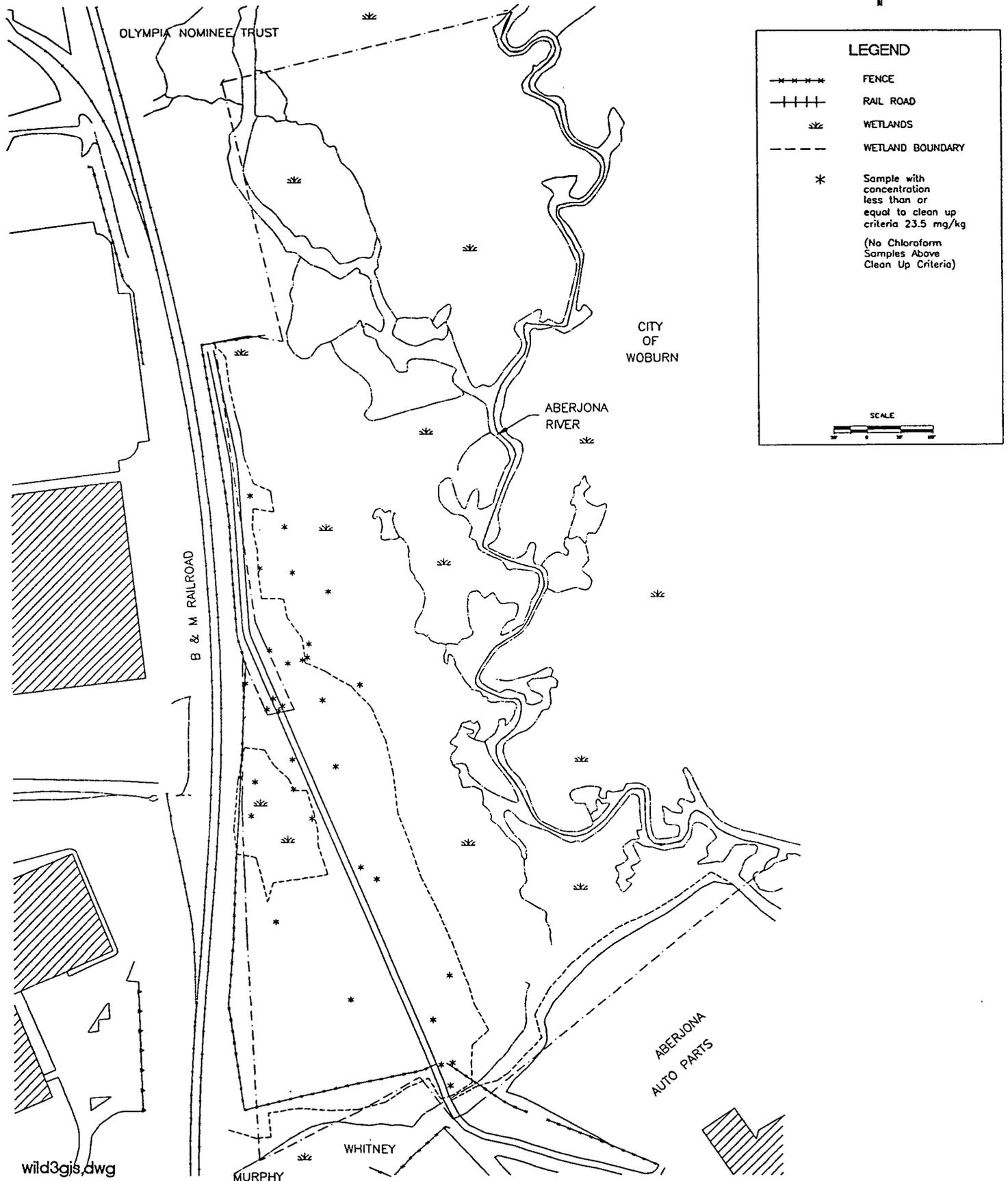
The data presented in the table generally support this interpretation. The results presented in the table can be characterized as showing relatively high concentrations in surface soils with a rapid drop off in concentration with depth. At only two locations are concentrations exceeding cleanup levels found below a depth of two feet, and at no location do the results indicate that excavation will be required solely because of chemical concentrations measured below a depth of two feet.

Based on the refined limits of excavation shown in Figure 5-8, the volume of mixed contaminants above cleanup levels has been estimated to be approximately 1,150 cubic yards. This estimate is based on the summary area shown and an average depth of excavation of 2.8 feet. This value for the depth of excavation was established based on the information presented in Table 5-16.

5.4.3 VOC Soil Evaluation

The horizontal limits of VOC-impacted soil above cleanup criteria were established with data from the mixed contaminant/VOC soil investigation, the partitioning coefficient study soil screening samples, the RI, and earlier investigations. Figure 5-3 shows the sample locations used to determine the limits. A database was created containing the coordinates for each sample location and maximum concentrations of the five VOC criteria compounds found. Some sample locations had more than one sample collected between a depth of 0 and 6 feet. In that case the highest measured concentration for each compound in each location was used. If a compound was not detected above the analytical detection limit, its concentration was assumed to be zero for modeling purposes.

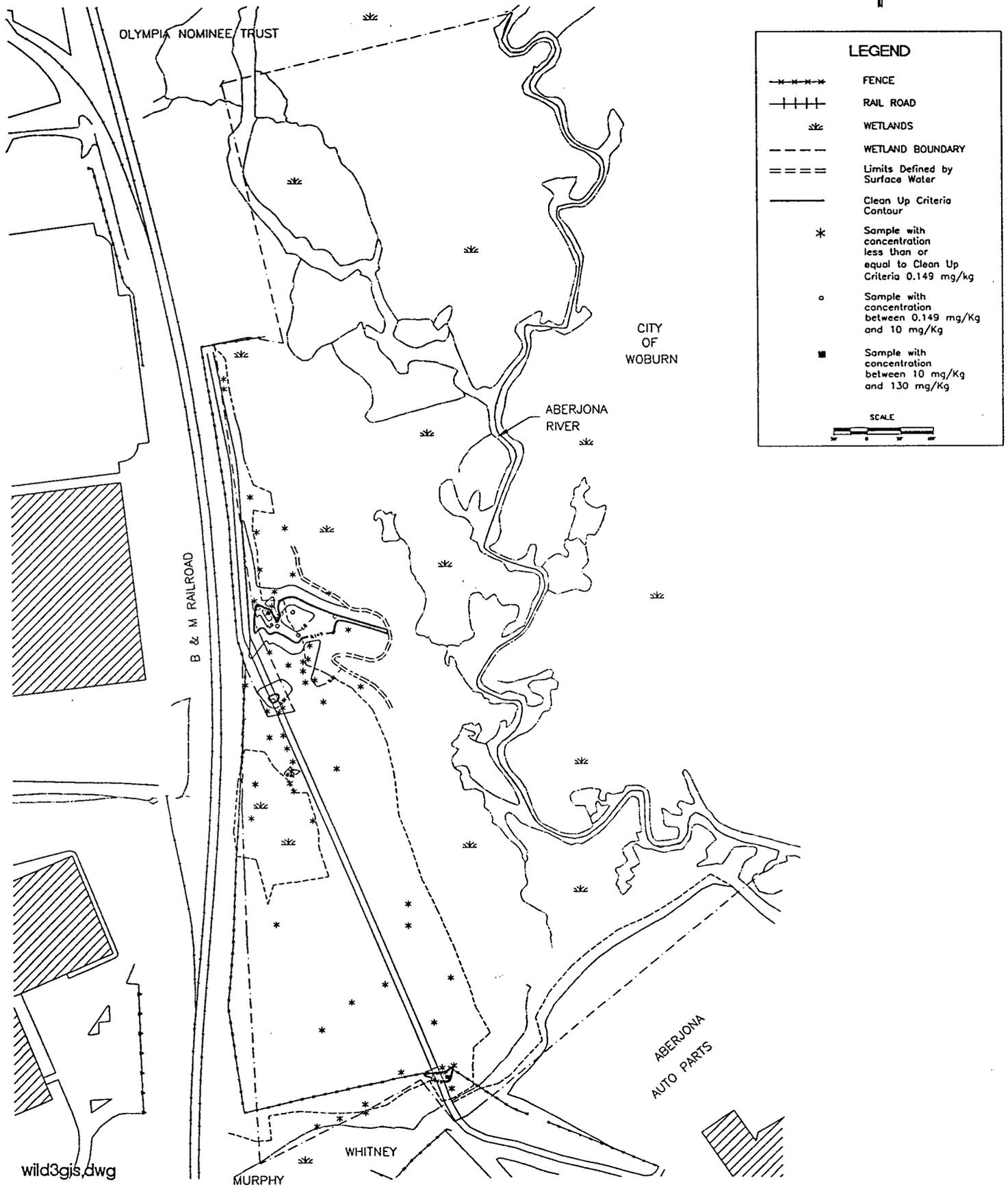
The database was used to generate contour maps of each VOC criteria compound as described above. Procedures followed to generate the contour figures are the same as those described for mixed contaminant soils. Figures 5-9, 5-10, 5-11, 5-12 and 5-13 show soil concentration contours for chloroform, tetrachloroethene, trichloroethene, trans-1,2-dichloroethene and 1,1,1-trichloroethane respectively. The contours shown as darker lines on the figures represent the areas which contain soils with concentrations higher than cleanup levels established in the partitioning coefficient study. Figure 5-14 is a summary figure which shows overlays of these cleanup level contours. These contours define the overall horizontal extent of VOC-impacted soil with concentrations above the cleanup criteria defined by the partitioning



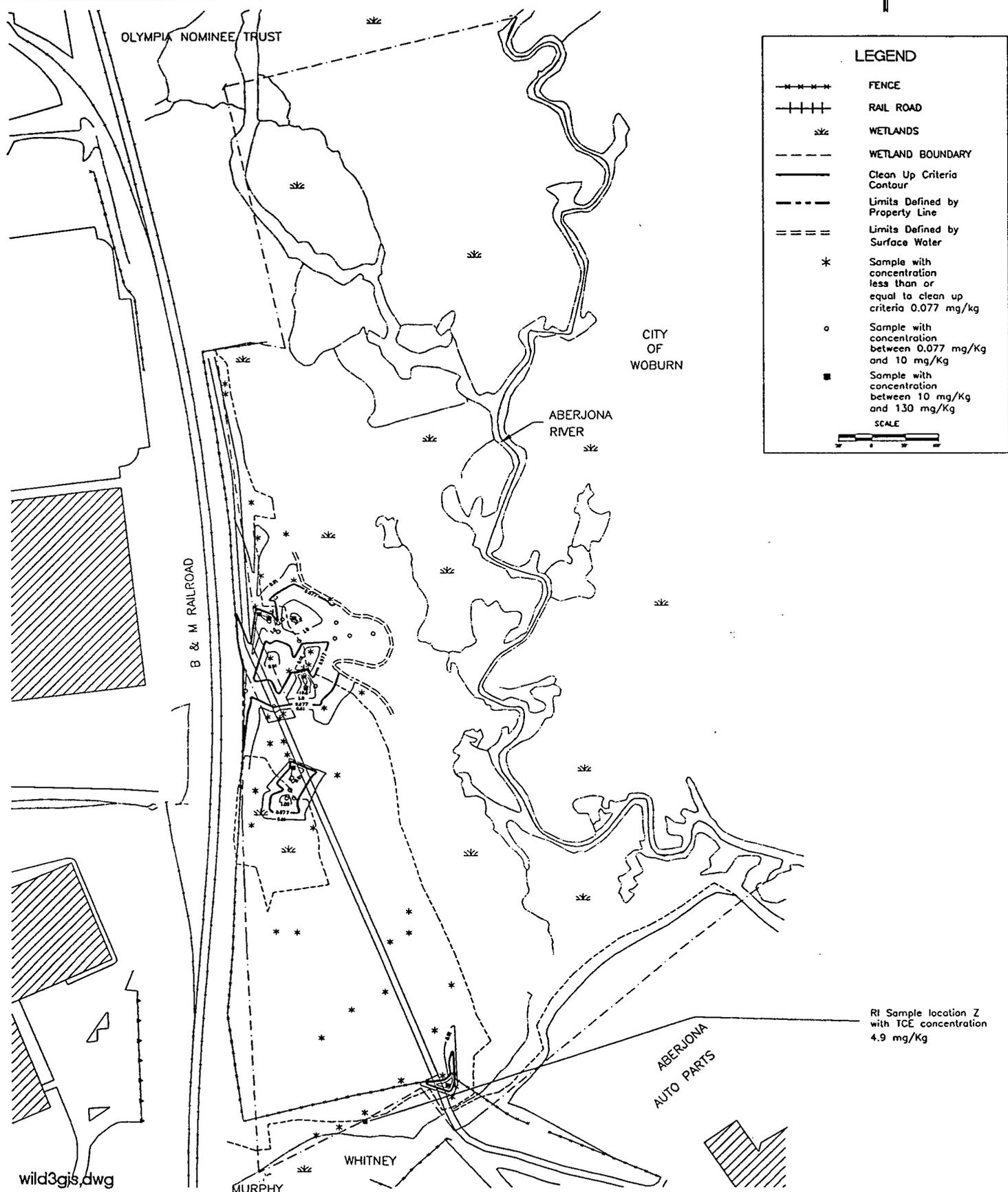
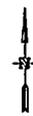
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Chloroform Concentration in Soil Contour Map (mg/Kg)

FIGURE
5-9

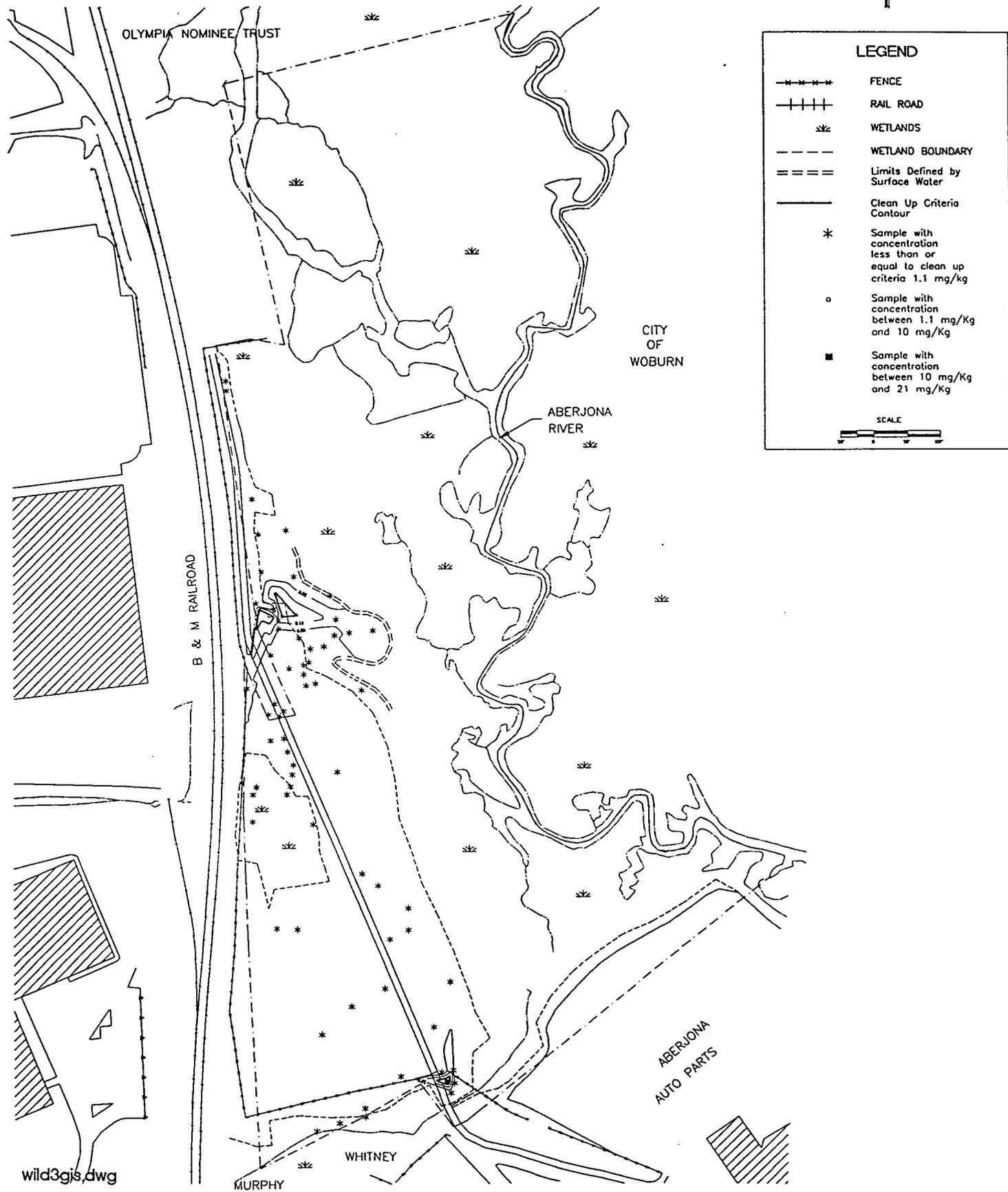
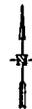


Tetrachloroethene Concentration in Soil Contour Map (mg/Kg)



wild3gis.dwg

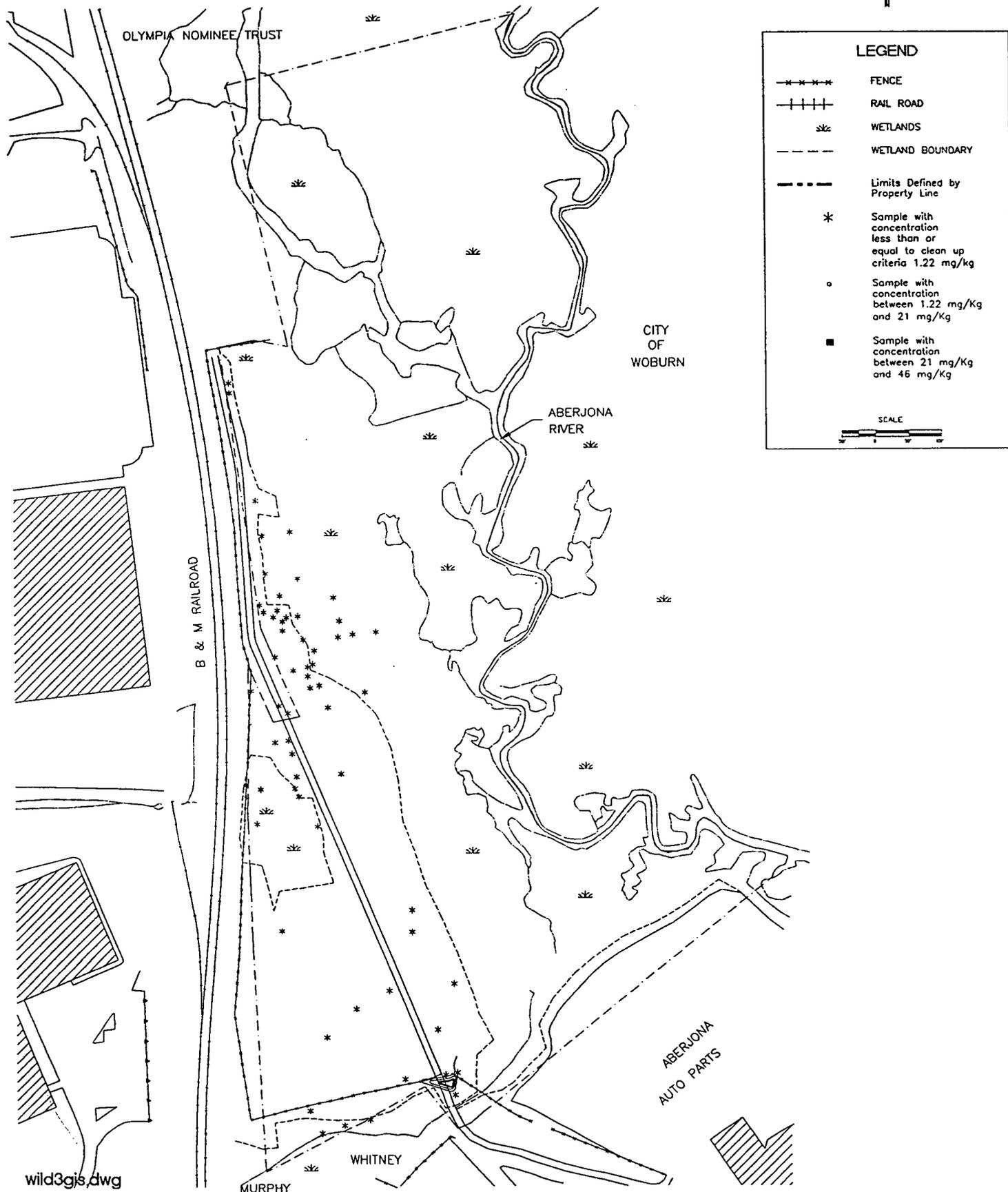
Trichloroethene Concentration in Soil Contour Map (mg/Kg)



wild3gjs,dwg

Trans 1,2 DCE Concentration in Soil
Contour Map (mg/Kg)

FIGURE
5-12



1,1,1 Trichloroethane Concentration in Soil
Contour Map (mg/Kg)

FIGURE
5-13

study. In an area at the southern end of the site along the access road, compliance samples to be taken at sludge and debris pile locations will be used to further define the extent of VOC-impacted soil.

Table 5-16 presents a summary of trichloroethene and tetrachloroethene analytical results for locations where VOC soil samples were collected at more than one depth during the RI or the Predesign Investigation. This table was prepared to allow evaluation of the relationship between chemical concentration and depth. Values underlined on the table indicate values which exceed the cleanup levels set by the partitioning coefficient study. The primary source of VOCs in soils at the site is believed to be the same as for the mixed contaminants, spilling or dumping of chemical residues on the ground surface. Because the criteria compound VOCs are more mobile than the mixed contaminants and heavier than water, the pattern of chemical concentrations is different than for those compounds. Chlorinated VOCs migrate downward through the soil below ground water table. Concentrations of these compounds above cleanup criteria in ground water have been measured at the site. Nearer the ground surface, these compounds are more likely to volatilize to the air, reducing their concentration in soil.

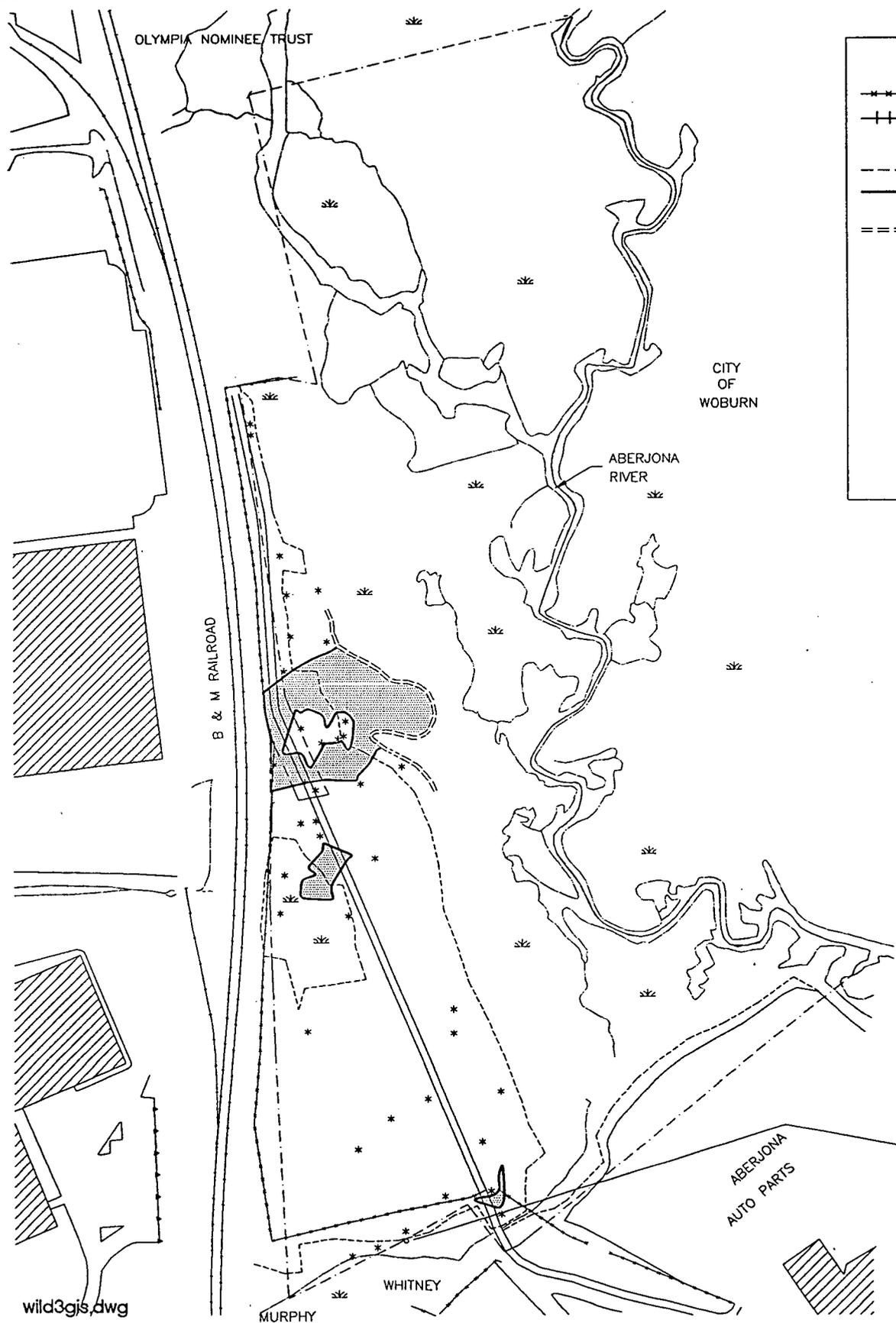
Soil samples collected during the Predesign Investigation generally support the conceptual model of the spatial distribution of VOCs and mixed contaminants in soil based on data collected during the RI and earlier investigations at the Site. The combined data set clearly establishes horizontal and vertical limits of impacted soil and provides a sound basis for the design of remedial actions for the Wildwood Property.



LEGEND

- FENCE
- ++++ RAIL ROAD
- WETLANDS
- WETLAND BOUNDARY
- Clean Up Criteria Contour
- ==== Limits Defined by Surface Water
- *
- Limits of VOC Concentration in Impacted Soil

SCALE



Sludge and Debris Pile Compliance Samples To Be Used To Define Limits Of Mixed Contaminant Soil Adjacent To Z

RI Sample Location Z With TCE Concentration Greater Than Or Equal To Clean Up Criteria

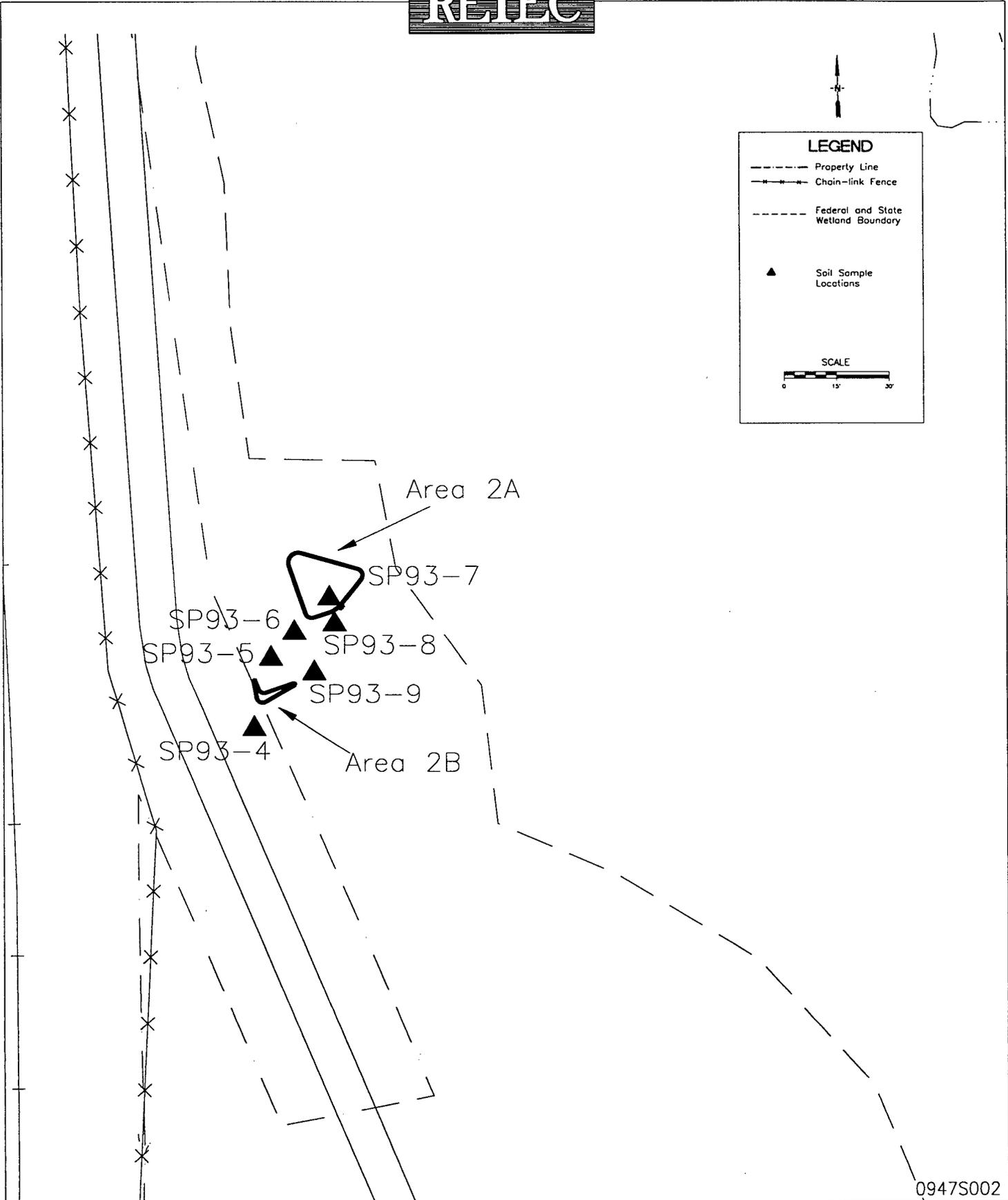
wild3gjs.dwg

Limits of VOCs in Soil Above Clean Up Criteria

FIGURE 5-14

APPENDIX M

SUPPLEMENTAL PCB SAMPLING



0947S002

Areas 2A and 2B Delineation

FIGURE

REPORT OF ANALYTICAL RESULTS

Case Number: D1103-02

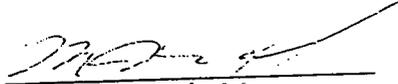
Prepared for:

Remediation Technologies, Inc.
9 Pond Lane
Concord, MA 01742
Attn: Jamie Greacen

Prepared by:

New England Testing Laboratory, Inc.
1254 Douglas Avenue
North Providence, RI 02904

Date Reported: 17 NOV 1993

Reviewed By: 

Mark H. Bishop
Laboratory Director

NEW ENGLAND TESTING LABORATORY, INC.

1254 Douglas Avenue, North Providence, Rhode Island 02904-5392 • 401-353-3420

Sample Description

The following samples were submitted to New England Testing Laboratory on 3 NOV 1993:

"Wells G&H RD/RA Wildwood Property"

1. S93-4
2. S93-5
3. S93-6
4. S93-7
5. S93-8
6. S93-9

The Custody record is included in this report. The samples were assigned an internal identification code (case number) for laboratory information management purposes. The case number for this sample submission is as follows:

Case Number: D1103-02

Request for Analysis

The following table details the analyses performed on the samples:

<u>Sample</u>	<u>Analysis</u>	<u>Method*</u>
01103-02:		
1. S93-4	PCB's	8080
2. S93-5		
3. S93-6		
4. S93-7		
5. S93-8		
6. S93-9		

*Note: This method is documented in:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,
SW-846, USEPA.

Quality Assurance/Control Statements

All samples were found to be properly preserved/cooled upon receipt. All analyses were performed within EPA designated holding times. Procedure/calibration checks required by the designated protocols were within control limits.

ANALYTICAL RESULTS

Case No. D1103-02

PCB's

<u>Sample</u>	<u>Result, mg/Kg</u>
SP93-4	<0.5
SP93-5	1.52 as Aroclor 1254
SP93-6	7.33 as Aroclor 1254
SP93-7	5670 as Aroclor 1254
SP93-8	1.18 as Aroclor 1254
SP93-9	81.6 as Aroclor 1254

J. NO. 947-712 PROJECT NAME Wells G+H RD/RA Wildwood Property

PLERS (Signature) James R. Green

NO. OF CONTAINERS	REMARKS					
	PCB	PAH	ED	ED	ED	ED
1	✓					PCB's only
1	✓					
1	✓					
1	✓					
1	✓					
1	✓					

Relinquished by: (Signature) James R. Green	Date / Time 11-2-93 5pm	Received by: (Signature) Fed Ex	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature) Suzanne Rogers Date / Time 11/3/93

REMARKS: Contact Jamie Green RE/TEC (508) 371-1422



RE/TEC REMEDIATION TECHNOLOGIES
 Damonmill Square
 9 Pond Lane
 Concord, MA 01742

11/3/93

REPORT OF ANALYTICAL RESULTS

Case Number: D1021-02

Prepared for:

Remediation Technologies, Inc.
9 Pond Lane
Concord, MA 01742
Attn: Jamie Greacen

Prepared by:

New England Testing Laboratory, Inc.
1254 Douglas Avenue
North Providence, RI 02904

Date Reported: 03 DEC 1993

Reviewed By: Mark H. Bishop

Mark H. Bishop
Laboratory Director

NEW ENGLAND TESTING LABORATORY, INC.

1254 Douglas Avenue, North Providence, Rhode Island 02904-5392 • 401-353-3420

Sample Description

The following samples were submitted to New England Testing Laboratory on 21 OCT 1993:

"Wells G&H RD/RA Wildwood Property"

1. S93-1
2. S93-2
3. S93-3

The Custody record is included in this report. The samples were assigned an internal identification code (case number) for laboratory information management purposes. The case number for this sample submission is as follows:

Case Number: D1021-02

Request for Analysis

The following table details the analyses performed on the samples:

<u>Sample</u>	<u>Analysis</u>	<u>Method*</u>
D1021-02: S93-1 S93-2 S93-3	CRITERIA VOCs	8240
S93-1	TOTAL LEAD	6010
	CRITERIA PESTICIDES and PCBs	8080
	CRITERIA PNAs	8270

*Note: This method is documented in:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,
SW-846, USEPA.

Quality Assurance/Control Statements

The samples were found to be properly preserved/cooled upon receipt. All analyses were performed within EPA designated holding times. Procedure/calibration checks required by the designated protocols were within control limits.

ANALYTICAL RESULTS

DEC 13 1993

SAMPLE NUMBER	S93-1	S93-2	S93-3
DATE ANALYZED	10/27/93	10/27/93	10/27/93
LAB SAMPLE NUMBER	S93-1	S93-2	S93-3

CRITERIA VOC'S, UG/KG

Vinyl Chloride	< 2.5	< 2.5	< 2.5
1,1-Dichloroethene	< 2.5	< 2.5	< 2.5
1,1-Dichloroethane	< 2.5	< 2.5	< 2.5
t-1,2-Dichloroethene	< 2.5	< 2.5	< 2.5
Chloroform	< 2.5	< 2.5	< 2.5
1,2-Dichloroethane	< 2.5	< 2.5	< 2.5
1,1,1-Trichloroethane	< 2.5	< 2.5	< 2.5
Trichloroethene	< 2.5	< 2.5	< 2.5
Tetrachloroethene	2.1 J	1.7 J	1.2 J

J=Below modified CRDL:2.5 ug/kg

B=Compound detected in method blank

D=result obtained from analysis of secondary dilution

SAMPLE NUMBER	S93-1	DATE	DATE
LAB SAMPLE NUMBER	S93-1	EXTRACTED	ANALYZED
Total lead, mg/kg	14.0	NA	12/4/93
PESTICIDES, mg/kg		10/31/93	11/17/93
Chlordane	0.016		
4,4-DDT	0.019		
cPAHs, mg/kg		10/31/93	11/9/93
Benzo(a)anthracene	< 0.049		
Benzo(b)fluoranthene	< 0.049		
Benzo(k)fluoranthene	< 0.049		
Benzo(a)pyrene	< 0.049		
Chrysene	< 0.049		
Dibenz(a,h)anthracene	< 0.049		
Indeno(1,2,3-c,d)perlyene	< 0.049		
PCB Aroclors, mg/kg		10/31/93	11/17/93
1016	< 0.033		
1221	< 0.067		
1232	< 0.033		
1242	< 0.033		
1248	< 0.033		
1254	0.141		
1260	< 0.033		

CUSTODY RECORD

CHAIN OF CUSTODY RECORD

US EPA ARCHIVE DOCUMENT

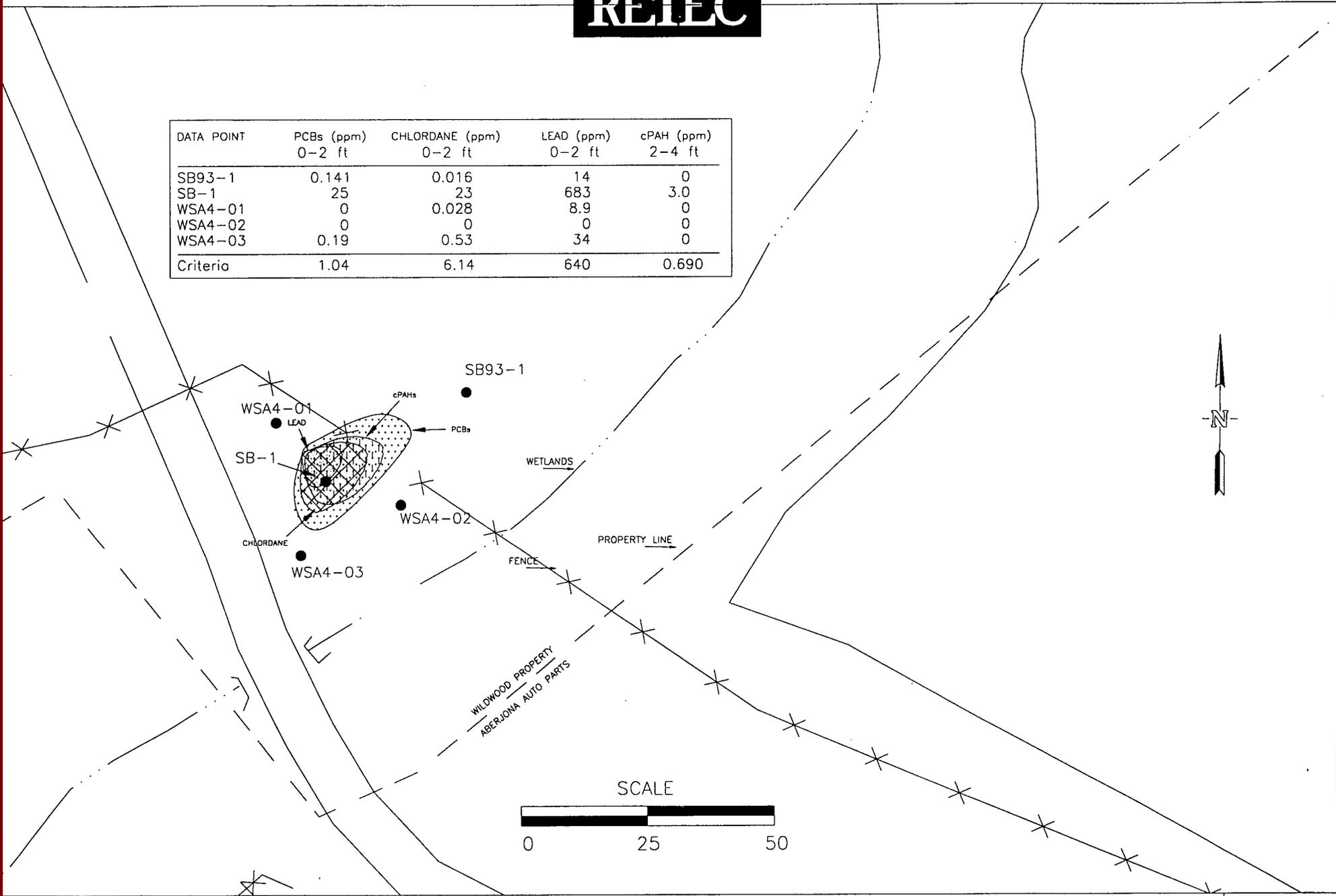
PROJ. NO.		PROJECT NAME				NO. OF CONTAINERS	TESTS						REMARKS
5-0147-720		Wells C+H RO/RA					Soil Cd in Comp. / Soil Cd in VOC's						
CLIENT RETEC/Beatrice													
SAMPLE I.D.	DATE	TIME	COMP	GAU	STATION LOCATION								
593-1	10-22-93				East of 5A-1	1	X						Refer to Table 2 of Attachment 1 of the 7-22-93 contract w/ Beatrice
593-2	10-22-93				Northwest of Z	1		X					
593-3	10-22-93				At 14-KD	1		X					
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)			
<i>[Signature]</i>		10/22/93 3pm		<i>[Signature]</i>									
Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Relinquished by: (Signature)		Date/Time		Received by: (Signature)			
Relinquished by: (Signature)		Date/Time		Received for Laboratory by: (Signature)		Date/Time		Remarks					
				<i>[Signature]</i>		10/21/93		Wells C+H Soil VOC's No. of Containers					

APPENDIX N

SUPPLEMENTAL AREA 4 SAMPLING



DATA POINT	PCBs (ppm) 0-2 ft	CHLORDANE (ppm) 0-2 ft	LEAD (ppm) 0-2 ft	cPAH (ppm) 2-4 ft
SB93-1	0.141	0.016	14	0
SB-1	25	23	683	3.0
WSA4-01	0	0.028	8.9	0
WSA4-02	0	0	0	0
WSA4-03	0.19	0.53	34	0
Criteria	1.04	6.14	640	0.690



Delineation of Area 4

FIGURE

0947S004

REPORT OF ANALYTICAL RESULTS

WORK ORDER #: NETL 16

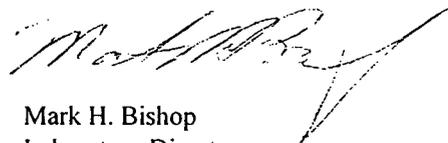
RETEC PROJECT #: 3-0947-330

Prepared for:

Remediation Technologies, Inc.
9 Pond Lane
Concord, MA 01742

Report Date: 23 AUGUST 1994

Reviewed by:



Mark H. Bishop
Laboratory Director

NEW ENGLAND TESTING LABORATORY, INC.

1254 Douglas Avenue, North Providence, Rhode Island 02904-5392 • 401-353-3420

SAMPLES SUBMITTED and REQUESTED ANALYSES:

Table 1 details samples submitted to New England Testing Laboratory and reported in this document. Custody records for the samples are included in this report.

TABLE 1A SOIL SAMPLES

SAMPLE ID	Date Sampled	Date Received
WSA4-01-0/2	12-Aug-94	15-Aug-94
WSA4-01-2/4	12-Aug-94	15-Aug-94
WSA4-02-0/2	12-Aug-94	15-Aug-94
WSA4-02-2/4	12-Aug-94	15-Aug-94
WSA4-03-0/2	12-Aug-94	15-Aug-94
WSA4-03-2/4	12-Aug-94	15-Aug-94
WSA4-04-0/2	12-Aug-94	15-Aug-94

These samples were submitted for the analysis of the following parameters:

Parameter	Required Reporting Limit, mg/kg
Total lead, mg/kg	320
PESTICIDES, mg/kg	
Chlordane	3.07
4,4-DDT	11.0
cPAHs, mg/kg	
Benzo(a)anthracene	0.049
Benzo(b)fluoranthene	0.049
Benzo(k)fluoranthene	0.049
Benzo(a)pyrene	0.049
Chrysene	0.049
Dibenz(a,h)anthracene	0.049
Indeno(1,2,3-c,d)perlyene	0.049
PCB Aroclors, mg/kg	
1016	0.074
1221	0.074
1232	0.074
1242	0.074
1248	0.074
1254	0.074
1260	0.074

ANALYTICAL METHODS:

Total lead:

Total lead was determined by acid digestion followed by Inductively Coupled Plasma Atomic Emission Spectroscopy. The analytical method used was EPA Method 3550/6010 as documented in:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, USEPA/OSW, 3rd ed.

Semivolatile organics:

The cPAHs were analyzed by Low Level Sonication Extraction-GC/MS. The analytical method used was EPA Method 3550/8270 as documented in:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, USEPA/OSW, 3rd ed.

Pesticides and PCBs:

Chlordane, DDT and PCBs were analyzed by Low Level Sonication Extraction-GPC/Florisil clean-up followed by electron capture gas chromatography. The analytical method used was EPA Method 3550/3640/3620/3660/8080 as documented in:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, USEPA/OSW, 3rd ed.

QUALITY ASSURANCE/CONTROL STATEMENTS

All samples were found to be properly preserved/cooled upon receipt. All analyses were performed within EPA designated holding-times. Procedure/calibration checks required by the designated protocols were within control limits.

MS/MSD analysis was performed on sample 01-0/2. The results are presented on the following pages.

LEAD:

Sample Conc.=8.9

Spike added=75

MS Result=81

MSD Result=82

Recovery=96

RPD=1

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Matrix Spike - Sample No.: 01-0/2

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC. LIMITS REC.
1,4-Dichlorobenzene	2966	0	1716	58	28-104
N-Nitroso-di-n-prop.(1)	2966	0	1817	61	41-126
1,2,4-Trichlorobenzene	2966	0	1821	61	38-107
Acenaphthene	2966	0	1883	63	31-137
2,4-Dinitrotoluene	2966	0	1526	51	28- 89
Pyrene	2966	0	1599	54	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	QC RPD	LIMITS REC.
1,4-Dichlorobenzene	2967	2171	73	23	27	28-104
N-Nitroso-di-n-prop.(1)	2967	2419	82	29	38	41-126
1,2,4-Trichlorobenzene	2967	2267	76	22	23	38-107
Acenaphthene	2967	2017	68	8	19	31-137
2,4-Dinitrotoluene	2967	2156	73	35	47	28- 89
Pyrene	2967	2196	74	31	36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

RPD: 0 out of 6 outside limits
 Spike Recovery: 0 out of 12 outside limits

COMMENTS: _____

3F
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: NEW ENGLAND TESTING LAB

Contract: NETL 16

Lab Code: RI010 Case No.: E0815-01

Matrix Spike - EPA Sample No.: 01-0/2

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	#	QC LIMITS REC.
gamma-BHC(Lindane)						46-127
Heptachlor						35-130
Aldrin						34-132
Dieldrin						31-134
Endrin						42-139
4,4'-DDT	67	10	56	73		23-134

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	#	% RPD	#	RPD	QC LIMITS REC.
gamma-BHC(Lindane)							50	46-127
Heptachlor							31	35-130
Aldrin							43	34-132
Dieldrin							38	31-134
Endrin							45	42-139
4,4'-DDT	67	52	68			7	50	23-134

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

ANALYTICAL RESULTS

NETL-16				
SAMPLE NUMBER	WSA4-01-0/2		WSA4-01-2/4	
LAB SAMPLE NUMBER	WSA4-01-0/2		WSA4-01-2/4	
Date Sampled	8/12/94		8/12/94	
Date Received	8/15/94		8/15/94	
Date Extracted - Pest/PCBs	8/18/94		8/18/94	
Date Extracted PNAs	8/20/94		8/20/94	
Date Analyzed Lead	8/19/94		8/19/94	
Date Analyzed Pests/PCBs	8/18/94		8/18/94	
Date Analyzed PNAs	8/23/94		8/23/94	
Total lead, mg/kg	8.9		< 5.0	U
PESTICIDES, mg/kg				
Chlordane	0.028	J	< 0.05	U
4,4-DDT	0.01		< 0.005	U
cPAHs, mg/kg				
Benzo(a)anthracene	< 0.04	U	< 0.04	U
Benzo(b)fluoranthene	0.05		< 0.04	U
Benzo(k)fluoranthene	< 0.04	U	< 0.04	U
Benzo(a)pyrene	< 0.04	U	< 0.04	U
Chrysene	< 0.04	U	< 0.04	U
Dibenz(a,h)anthracene	< 0.04	U	< 0.04	U
Indeno(1,2,3-c,d)perlyene	< 0.04	U	< 0.04	U
PCB Aroclors, mg/kg				
1016	< 0.05	U	< 0.05	U
1221	< 0.05	U	< 0.05	U
1232	< 0.05	U	< 0.05	U
1242	< 0.05	U	< 0.05	U
1248	< 0.05	U	< 0.05	U
1254	< 0.05	U	< 0.05	U
1260	< 0.05	U	< 0.05	U

NETL-16					
SAMPLE NUMBER		WSA4-02-0/2		WSA4-02-2/4	
LAB SAMPLE NUMBER		WSA4-02-0/2		WSA4-02-2/4	
Date Sampled		8/12/94		8/12/94	
Date Received		8/15/94		8/15/94	
Date Extracted - Pest/PCBs		8/18/94		8/18/94	
Date Extracted PNAs		8/20/94		8/20/94	
Date Analyzed Lead		8/19/94		8/19/94	
Date Analyzed Pests/PCBs		8/18/94		8/18/94	
Date Analyzed PNAs		8/23/94		8/23/94	
Total lead, mg/kg		< 5.0	U	< 5.0	U
PESTICIDES, mg/kg					
Chlordane		< 0.05	U	0.04	J
4,4-DDT		0.003	J	< 0.005	U
cPAHs, mg/kg					
Benzo(a)anthracene		< 0.04	U	< 0.04	U
Benzo(b)fluoranthene		< 0.04	U	< 0.04	U
Benzo(k)fluoranthene		< 0.04	U	< 0.04	U
Benzo(a)pyrene		< 0.04	U	< 0.04	U
Chrysene		< 0.04	U	< 0.04	U
Dibenz(a,h)anthracene		< 0.04	U	< 0.04	U
Indeno(1,2,3-c,d)perlyene		< 0.04	U	< 0.04	U
PCB Aroclors, mg/kg					
1016		< 0.05	U	< 0.05	U
1221		< 0.05	U	< 0.05	U
1232		< 0.05	U	< 0.05	U
1242		< 0.05	U	< 0.05	U
1248		< 0.05	U	< 0.05	U
1254		< 0.05	U	< 0.05	U
1260		< 0.05	U	< 0.05	U

NETL-16					
SAMPLE NUMBER		WSA4-03-0/2		WSA4-03-2/4	
LAB SAMPLE NUMBER		WSA4-03-0/2		WSA4-03-2/4	
Date Sampled		8/12/94		8/12/94	
Date Received		8/15/94		8/15/94	
Date Extracted - Pest/PCBs		8/18/94		8/18/94	
Date Extracted PNAs		8/20/94		8/20/94	
Date Analyzed Lead		8/19/94		8/19/94	
Date Analyzed Pests/PCBs		8/18/94		8/18/94	
Date Analyzed PNAs		8/23/94		8/23/94	
Total lead, mg/kg		34.0		< 5.0	U
PESTICIDES, mg/kg					
Chlordane		0.53		< 0.05	U
4,4-DDT		0.033		< 0.005	U
cPAHs, mg/kg					
Benzo(a)anthracene		0.085		< 0.04	U
Benzo(b)fluoranthene		0.125		< 0.04	U
Benzo(k)fluoranthene		< 0.04	U	< 0.04	U
Benzo(a)pyrene		0.113		< 0.04	U
Chrysene		0.079		< 0.04	U
Dibenz(a,h)anthracene		< 0.04	U	< 0.04	U
Indeno(1,2,3-c,d)perylene		0.059		< 0.04	U
PCB Aroclors, mg/kg					
1016		< 0.05	U	< 0.05	U
1221		< 0.05	U	< 0.05	U
1232		< 0.05	U	< 0.05	U
1242		< 0.05	U	< 0.05	U
1248		< 0.05	U	< 0.05	U
1254		< 0.05	U	< 0.05	U
1260		0.19		< 0.05	U

NETL-16			
SAMPLE NUMBER		WSA4-04-0/2	
LAB SAMPLE NUMBER		WSA4-04-0/2	
Date Sampled		8/12/94	
Date Received		8/15/94	
Date Extracted - Pest/PCBs		8/18/94	
Date Extracted PNAs		8/20/94	
Date Analyzed Lead		8/19/94	
Date Analyzed Pests/PCBs		8/18/94	
Date Analyzed PNAs		8/23/94	
Total lead, mg/kg		< 5.0	U
PESTICIDES, mg/kg			
Chlordane		< 0.05	U
4,4-DDT		< 0.005	U
cPAHs, mg/kg			
Benzo(a)anthracene		< 0.04	U
Benzo(b)fluoranthene		< 0.04	U
Benzo(k)fluoranthene		< 0.04	U
Benzo(a)pyrene		< 0.04	U
Chrysene		< 0.04	U
Dibenz(a,h)anthracene		< 0.04	U
Indeno(1,2,3-c,d)perlyene		< 0.04	U
PCB Aroclors, mg/kg			
1016		< 0.05	U
1221		< 0.05	U
1232		< 0.05	U
1242		< 0.05	U
1248		< 0.05	U
1254		< 0.05	U
1260		< 0.05	U

CUSTODY RECORDS

NEW ENGLAND TESTING LABORATORY, INC.
 1254 Douglas Avenue
 North Providence, RI 02904

CHAIN OF CUSTODY RECORD

PROJ. NO. 3-0947-712		PROJECT NAME Wildwood		NO. OF CONTAINERS	TESTS	REMARKS
CLIENT						
SAMPLE I.D.	DATE	TIME	COMP	GRAB	STATION LOCATION	
WSA4-01-0/4	8-12	1:30	X		Area 4 0'-2' station 1	1
WSA4-01-2/4	8-12		X		Area 4 2'-4' station 1	1
WSA4-01-0/2	8-12		X		Area 4 0'-2' station 2	1
WSA4-02-2/4	8-12		X		Area 4 2'-4' station 2	1
WSA4-03-0/2	8-12		X		Area 4 0'-2' station 3	1
WSA4-03-2/4	8-12		X		Area 4 2'-4' station 3	1
WSA4-01-0/2	8-12		X		Area 4 0'-2' station 4	1

Relinquished by: (Signature) <i>[Signature]</i>	Date/Time 8-12-94	Received by: (Signature) VIA Ted Ex.	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature) S. Rogers	Date/Time 8-15-94	Remarks	

US EPA ARCHIVE DOCUMENT

6081021

APPENDIX O

**INCINERATED MIXED-CONTAMINANT SOIL
CHARACTERIZATION**

MIXED SOIL CHARACTERIZATION

On June 28, 1993, the mixed contaminant soils were sampled to characterize them for disposal purposes. A total of seven composite samples were taken. One composite sample each was taken from mixed soils Areas 1, 3 and 4. Three additional samples were taken from Area 2, one from the PCB's > 50 ppm contour and two from the remainder of Area 2. Each composite sample was made up of four aliquots. Figure 1 presents the aliquot and sample locations. Aliquot locations were surveyed and staked into the field prior to sampling activities. Aliquots for each sample were taken over a 0 to 2 foot depth from hand shoveled holes. The aliquots for each were placed into a steel mixing bowl, mixed thoroughly, and a composite sample was taken from this mixture. The six composite samples were sent to New England Testing Labs (NETL) for the following analyses: full TCLP, RCRA characteristics, pesticides/PCBs, TPH by GC, total halogens, BTU content, ash content, moisture content, and grain size analysis. One additional composite sample was taken. This sample was composited from Areas 1, 3 and Area 2 outside the PCB's > 50 ppm contour. This sample was sent to NETL for semi-volatile and metals analyses. This sample was taken to determine a representative concentration of these constituents in the mixed-contaminant soils areas. Table 1 presents the results from all seven of the samples.

The analysis of the composite sample taken from Area 1 determined that the soils in area are not characteristically hazardous due to Toxicity, Ignitability, Corrosivity, or Reactivity. The only contaminants of concern that were detected in this sample were PCBs at a concentration of 0.93 mg/Kg. This concentration is less than the site clean-up criteria for PCBs, 1.04 mg/Kg. Total petroleum hydrocarbons were detected at 40 mg/Kg in this area also. Total Halogens and Pesticides were not detected in the sample. BTU content, ash content, and moisture content for this sample were < 500 BTU/lb, 80%, and 17%, respectively.

The analysis of the two composite samples taken from Area 2BCD determined that the soils in area are not characteristically hazardous due to Toxicity, Ignitability, Corrosivity, or Reactivity. The only contaminants of concern that were detected in these samples were PCBs at a concentration of 13.0 mg/Kg in one of the samples. The other sample had no detectable PCBs. This concentration is greater than the site clean-up criteria for PCBs, 1.04 mg/Kg. Total petroleum hydrocarbons were detected at an average of 26 mg/Kg in these samples. Total Halogens and Pesticides were not detected in either sample. BTU content, ash content, and moisture content for these samples averaged 1078 BTU/lb, 82%, and 14%, respectively.

The analysis of the composite sample taken from Area 2A determined that the soils in area are not characteristically hazardous due to Toxicity, Ignitability, Corrosivity, or Reactivity. The only contaminants of concern that were detected in this sample were PCBs at a concentration of 31.0 mg/Kg. This concentration is greater than the site clean-up criteria for PCBs, 1.04 mg/Kg. Total petroleum hydrocarbons were detected at 33 mg/Kg in this area also. Total Halogens and Pesticides were not detected in the sample. BTU content, ash content, and moisture content for this sample were 1460 BTU/lb, 83 % and 14 %, respectively.

The analysis of the composite sample taken from Area 3 determined that the soils in area are not characteristically hazardous due to Toxicity, Ignitability, Corrosivity, or Reactivity. Total petroleum hydrocarbons were detected at 21 mg/Kg in this area also. Total Halogens, Pesticides and PCBs were not detected in this sample. BTU content, ash content, and moisture content for this sample were 1070 BTU/lb, 78 %, and 18 %, respectively.

The analysis of the composite sample taken from Area 4 determined that the soils in area are not characteristically hazardous due to Toxicity, Ignitability, Corrosivity, or Reactivity. Total petroleum hydrocarbons were detected at 493 mg/Kg in this area also. Total Halogens, Pesticides and PCBs were not detected in this sample. BTU content, ash content, and moisture content for this sample were 2800 BTU/lb, 85 % and 13 %, respectively.

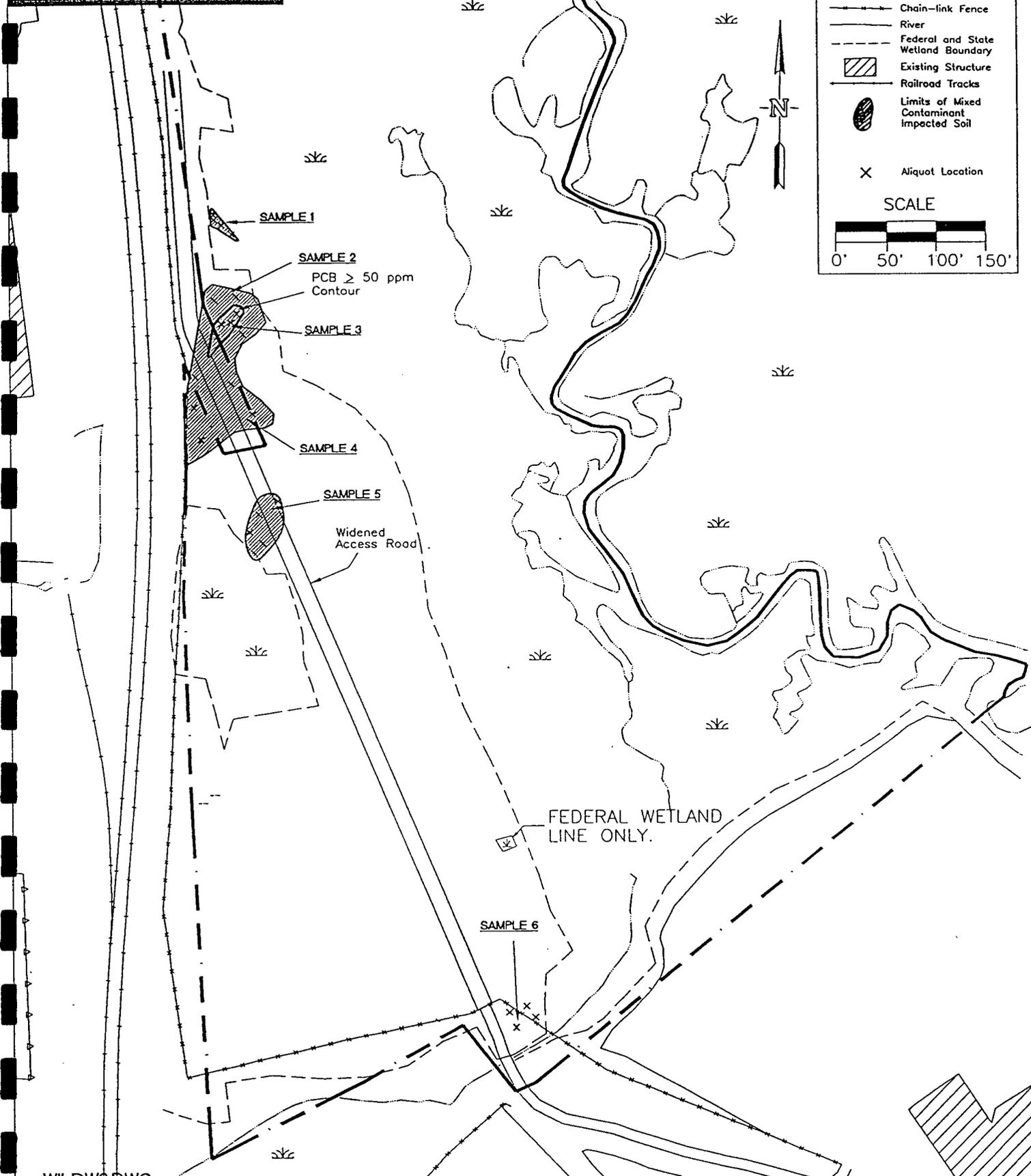
The sample taken to determine a representative concentration of semi-volatile organics and metals constituents in the mixed-contaminant soils areas determined total metals at a concentration of 502 mg/Kg. Semi-volatile organics were not detected in the sample.

LEGEND

- Property Line
- - - Chain-link Fence
- River
- - - Federal and State Wetland Boundary
- ▨ Existing Structure
- Railroad Tracks
- Limits of Mixed Contaminant Impacted Soil
- X Aliquot Location

SCALE

0' 50' 100' 150'



WILDW3.DWG

SOIL CHARACTERIZATION SAMPLE LOCATION MAP

FIGURE
0-1

TABLE O-1
Mixed Contaminants (mg/Kg)
Compliance Sample Summary

Compound	Target concentratio	Area 1			Area 2					
		MS-1A 10/04/94	MS-1B 10/04/94	MS-1C 10/04/94	MS-2A 10/04/94	MS-2B 10/04/94	MS-2C 10/04/94	MS-2D 10/04/94	MS-2E 10/04/94	MS-2F 10/11/94
Lead	640	6.4	12.2	2.4	5.9	6.7	6.1	4.4	212	6.1
Chlordane	6.14	0.004	0.005	0.001	0.017	0.004	0.003	0.003	0.143	0.004
4, 4 - DDT	23.5	0.004	0.005	0.004	0.004	0.004	0.003	0.003	0.209	0.003
cPAHs	0.69	0.268	0.395	0.286	0.284	0.276	0.251	0.271	0.283	0.256
PCBs	1.04	0.049	0.109	0.052	0.735	0.300	0.274	0.272	0.177	0.269
STATUS		pass								

Compound	Target concentratio	Area 3		Area 4			Area 5		Standard Deveation	Mean Concentra
		MS-3A 10/11/94	MS-3B 10/11/94	MS-4A 10/04/94	MS-4B 10/04/94	MS-4C 10/04/94	MS-5A 10/11/94	MS-5B 10/11/94		
Lead	640	6.5	6.5	6.0	6.5	2.1	6.6	6.3	52.1	18.9
Chlordane	6.14	0.009	0.004	0.002	0.004	0.003	0.046	0.28	0.075	0.033
4, 4 - DDT	23.5	0.002	0.004	0.003	0.004	0.003	0.007	0.003	0.052	0.017
cPAHs	0.69	0.264	0.273	0.253	0.268	0.257	0.273	0.262	0.040	0.276
PCBs	1.04	0.289	0.297	0.273	0.291	0.279	0.295	0.284	0.155	0.265
STATUS		pass	pass							

REPORT OF ANALYTICAL RESULTS

Case Number: D0629-05

Prepared for:

Remediation Technologies, Inc.
9 Pond Lane
Concord, MA 01742
Attn: Andy Gates

Prepared by:

New England Testing Laboratory, Inc.
1254 Douglas Avenue
North Providence, RI 02904

Date Reported: 15 JULY 1993

Reviewed By:


Mark H. Bishop
Laboratory Director

NEW ENGLAND TESTING LABORATORY, INC.

1254 Douglas Avenue, North Providence, Rhode Island 02904-5392 • 401-353-3420

Sample Description

The following samples were submitted to New England Testing Laboratory on 29 JUNE 1993:

"Wells G&H - Wildwood Property"

1. MSC 1-1
2. MSC 2-1
3. MSC 2-2
4. MSC 2-A
5. MSC 3-1
6. MSC 4-1
7. MSC-A

The Custody record is included in this report. The samples were assigned an internal identification code (case number) for laboratory information management purposes. The case number for this sample submission is as follows:

Case Number: D0629-05

Request for Analysis

The following table details the analyses performed on the samples:

<u>Sample</u>	<u>Analysis</u>	<u>Method*</u>
D0629-05:		
1. MSC 1-1	Moisture	SW846
2. MSC 2-1	Ash	160.4
3. MSC 2-2	BTU's	2382-76
4. MSC 2-A	Grain Size	D422
5. MSC 3-1	Total Halogens	E442
6. MSC 4-1	Total Petroleum Hydrocarbons	3550/8015
	Corrosivity-pH	9040
	Reactivity-CN	Section 7.3.3.2
	-S	Section 7/3/4/1
	Ignitability	1010
	Pesticides/PCB's	8080
	TCLP Extraction	1311
	TC Volatiles	8240
	TC Semivolatiles	8270
	TC Pesticides	8080
	TC Herbicides	8150
	Arsenic	7060
	Barium	6010
	Cadmium	6010
	Chromium	6010
	Lead	6010
	Mercury	7470
	Selenium	7740
	Silver	6010
7. MSC-A	Arsenic	7060
	Barium	6010
	Cadmium	6010
	Chromium	6010
	Lead	6010
	Mercury	7470
	Selenium	7740
	Silver	6010
	Semivolatiles	8270

*Note: These methods are documented in:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, USEPA.

ASTM, Section 9 and Section 15

Quality Assurance/Control Statements

All samples were found to be properly preserved/cooled upon receipt. All analyses were performed within EPA designated holding times. Procedure/calibration checks required by the designated protocols were within control limits.

Matrix Spike Analysis

Matrix: MSC 2-1

METALS

	Spike, mg/l	Result, mg/l	Recovery, %
Arsenic	0.200	0.181	90
Barium	2.00	1.97	99
Cadmium	2.00	2.07	104
Chromium	2.00	2.15	101
Lead	2.00	1.97	99
Mercury	0.005	0.0053	106
Selenium	0.200	0.232	116
Silver	2.00	1.98	99

VOLATILE ORGANIC COMPOUNDS

	Spike, mg/l	Result, mg/l	Recovery, %
1,1-Dichloroethene	0.2	0.150	75
Trichloroethene	0.2	0.149	74
Benzene	0.2	0.185	92
Chlorobenzene	0.2	0.202	101
Carbon Tetrachloride	0.2	0.185	93
Chloroform	0.2	0.176	88
1,2-Dichloroethane	0.2	0.213	106
Methyl Ethyl Ketone	0.4	0.470	117
Tetrachloroethylene	0.2	0.220	113
Vinyl Chloride	0.4	0.490	123
1,4-Dichlorobenzene	0.2	0.200	100

Matrix: MSC 2-A

SEMIVOLATILE ORGANIC COMPOUNDS

	Spike, mg/l	Result, mg/l	Recovery, %
Hexachlorobenzene	0.156	0.135	87
Hexachloro-1,3-butadiene	0.156	0.077	49
Hexachloroethane	0.156	0.043	28
Nitrobenzene	0.164	0.084	54
Pyridine	0.160	0.067	42
2,4-Dinitrotoluene	0.160	0.075	47
1,4-Dichlorobenzene	0.152	0.063	41
o-Cresol	0.164	0.092	56
m-Cresol	0.348	0.144	41
p-Cresol	0.348	0.144	41
Pentachlorophenol	0.200	0.146	73
2,4,5-Trichlorophenol	0.156	0.124	79
2,4,6-Trichlorophenol	0.152	0.128	84

Matrix Spike Analysis

Matrix: MSC 2-1

PESTICIDES/HERBICIDES

	Spike, ppb	Result, ppb	Recovery, %
Lindane	1.0	0.72	72
Endrin	1.0	0.77	77
Heptachlor	1.0	0.71	71
Methoxychlor	1.0	0.67	67
2,4-D	2.0	2.6	131
2,4,5-TP Silvex	2.0	1.9	93

ANALYTICAL RESULTS

MSC 1-1

<u>Parameter</u>	<u>Result, mg/Kg</u>
Reactivity	
Sulfide	<1
Cyanide	<0.3
Corrosivity	
pH, S.U.	4.9
Ignitability, Deg. F	>200
Grain Size	Attached
Moisture, %	17
Ash, %	80
BTU's/lb	<500
Total Halogens	<0.01
Total Petroleum Hydrocarbons	40
Pesticides/PCB's	Attached
TCLP Extractables	Attached

Sample: MSC 1-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Analyzed*: 7/6/93

<u>TCLP Extractable Metals:</u>	<u>Result, mg/L</u>	<u>Regulatory Limit, mg/L</u>
Arsenic	<0.1	5.0
Barium	2.0	100.0
Cadmium	<0.05	1.0
Chromium	0.05	5.0
Lead	<0.2	5.0
Mercury	<0.005	0.2
Selenium	<0.1	1.0
Silver	<0.05	5.0

* Date Completed

Sample: MSC 1-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Analyzed: 7/6/93

TCLP Volatile Organic Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Benzene	<0.02	0.5
Carbon Tetrachloride	<0.02	0.5
Chlorobenzene	<0.02	100.0
Chloroform	<0.02	6.0
1,4-Dichlorobenzene	<0.02	7.5
1,2-Dichloroethane	<0.02	0.5
1,1-Dichloroethylene	<0.02	0.7
Methyl Ethyl Ketone (MEK)	<0.5	200.0
Tetrachloroethylene	<0.02	0.7
Trichloroethylene	0.03	0.5
Vinyl Chloride	<0.04	0.2

Surrogates:

	<u>% Recovery</u>	<u>Limits</u>
Toluene d8	96	88-110
1,2-Dichloroethane-d4	111	76-114
4-Bromofluorobenzene	112	86-115

Sample: MSC 1-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/15/93

TCLP Extractable Pesticides/Herbicides:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Chlordane	<0.01	0.03
2,4-D	<0.05	10.0
Endrin	<0.001	0.02
Heptachlor	<0.001	0.008
Heptachlor Epoxide	<0.001	0.008
Lindane	<0.001	0.4
Methoxychlor	<0.005	10.0
Toxaphene	<0.01	0.5
2,4,5-TP Silvex	<0.05	1.0

Sample: MSC 1-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/13/93

TCLP Semivolatile Base/Neutral Extractable Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
1,4-Dichlorobenzene	<0.05	7.5
Hexachlorobenzene	<0.05	0.13
Hexachloro-1,3-butadiene	<0.05	0.5
Hexachloroethane	<0.05	3.0
Nitrobenzene	<0.05	2.0
Pyridine	<0.05	5.0
2,4-Dinitrotoluene	<0.05	0.13

TCLP Semivolatile Acid Extractable Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
o-Cresol	<0.1	200.0
m-Cresol	<0.1	200.0
p-Cresol	<0.1	200.0
Pentachlorophenol	<0.1	100.0
2,4,5-Trichlorophenol	<0.1	400.0
2,4,6-Trichlorophenol	<0.1	2.0

<u>Surrogates:</u>	<u>% Recovery</u>	<u>Limits</u>
Nitrobenzene d5	64	35-114
2-Fluorobiphenyl	73	43-116
p-Terphenyl d14	93	33-141
Phenol d6	56	10-94
2-Fluorophenol	65	21-100
2,4,6-Tribromophenol	42	10-123

Sample: MSC 1-1

Case No. D0629-05
Date Analyzed: 7/15/93

Subject: Pesticides and PCB's
Method: EPA 8080

<u>Compound</u>	<u>Concentration mg/Kg (ppm)</u>	<u>Reporting Limit</u>
Aldrin	N.D.	<0.1
alpha-BHC	N.D.	<0.1
beta-BHC	N.D.	<0.1
delta-BHC	N.D.	<0.1
gamma-BHC	N.D.	<0.1
Chlordane	N.D.	<0.5
4,4'-DDD	N.D.	<0.1
4,4'-DDE	N.D.	<0.1
4,4'-DDT	N.D.	<0.1
Dieldrin	N.D.	<0.1
Endosulfan I	N.D.	<0.2
Endosulfan II	N.D.	<0.2
Endosulfan sulfate	N.D.	<0.2
Endrin	N.D.	<0.1
Endrin aldehyde	N.D.	<0.1
Heptachlor	N.D.	<0.1
Heptachlor epoxide	N.D.	<0.1
Methoxychlor	N.D.	<0.2
Toxaphene	N.D.	<0.5
PCB-1016	N.D.	<0.5
PCB-1221	N.D.	<0.5
PCB-1232	N.D.	<0.5
PCB-1242	N.D.	<0.5
PCB-1248	N.D.	<0.5
PCB-1254	0.93	<0.5
PCB-1260	N.D.	<0.5

Thu Jul 15 09:43:38 1993

GEOTECHNICAL LABORATORY TEST DATA

Project : D0629-05
Project No. : GIX-375
Boring No. : ---
Sample No. : FPG 1-1
Location : ---
Soil Description : Brown sand
Remarks : ---

Depth : ---
Test Date : 7/12/93
Test Method : ASTM D422

Filename : MSC1-1
Elevation : ---
Tested by : krk
Checked by : gtt

HYDROMETER

Hydrometer ID : hyl
Weight of air-dried soil = 37.59 gm
Specific Gravity = 2.65

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
1.00	7.30	23.60	2.89	0.051	7	0.051
2.00	6.80	23.60	2.39	0.036	6	0.036
4.00	6.10	23.60	1.69	0.026	4	0.026
8.00	6.00	23.60	1.59	0.018	4	0.018
15.00	6.00	23.60	1.59	0.013	4	0.013
30.00	5.70	23.60	1.29	0.009	3	0.009
60.00	5.10	23.60	0.69	0.007	2	0.007

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.375	0.374	9.51	0.00	0.00	100
#4	0.187	4.75	0.63	0.63	98
#10	0.079	2.00	0.51	1.14	97
#20	0.033	0.84	1.52	2.66	93
#40	0.017	0.42	3.98	6.64	83
#60	0.010	0.25	9.14	15.78	60
#100	0.006	0.15	8.86	24.64	37
#200	0.003	0.07	5.97	30.61	22
Fan			16.35	46.96	0

Total Dry Weight of Sample = 46.96

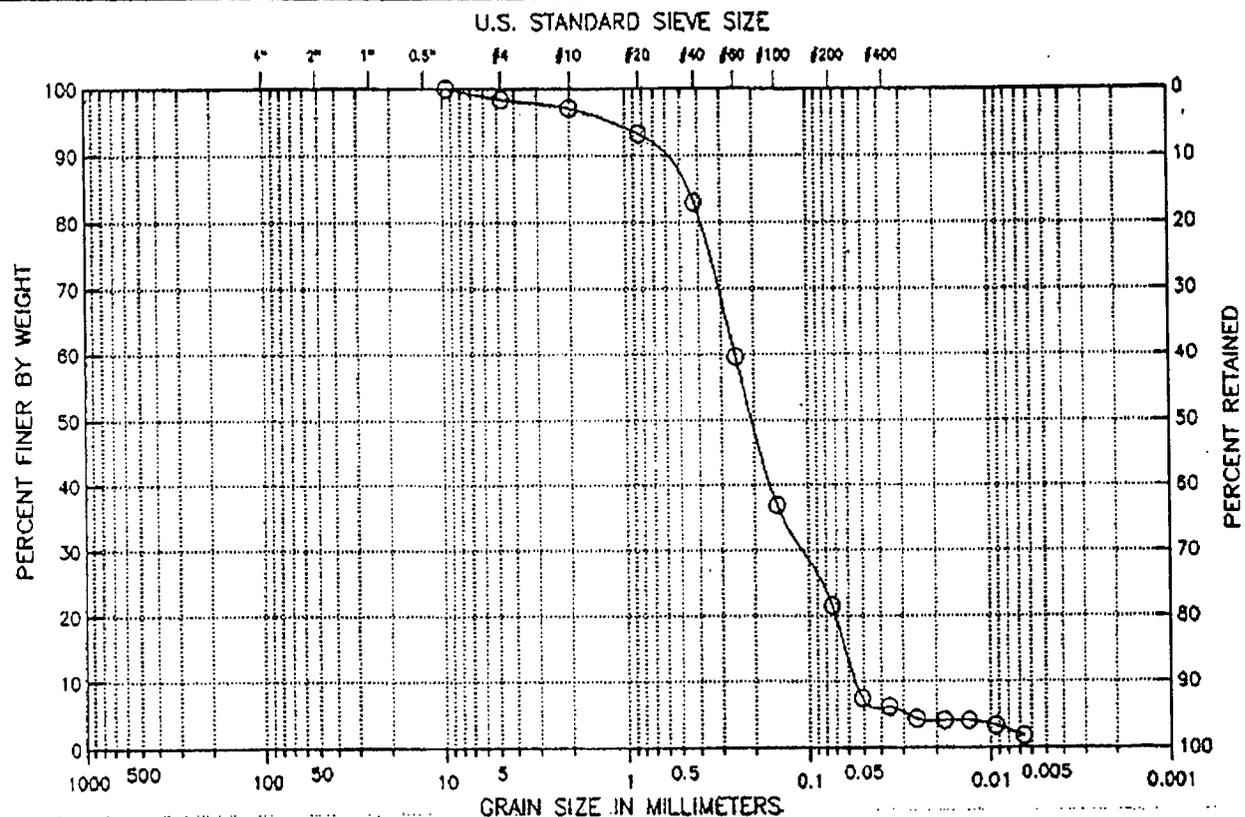
- D85 : 0.4817 mm
- D60 : 0.2524 mm
- D50 : 0.2010 mm
- D30 : 0.1088 mm
- D15 : 0.0621 mm
- D10 : 0.0543 mm

Soil Classification

ASTM Group Symbol : SM
ASTM Group Name : Silty sand
ASTM Group Symbol : A-2-4(0)
ASTM Group Name : Silty Gravel and Sand

Express
Dorward, MA

Boring No.: ---	Project : DD629-05
Sample No: MSC 1-1	Project No.: GTX-375
Tested by : krk	Location: ---
Filename : MSC1-1	Date : Thu Jul 15 1993



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :
 (SM) Silty sand
 Visual Description :
 Brown sand

Remarks :

Figure 13

Case No. D0629-05

MSC 2-1

<u>Parameter</u>	<u>Result, mg/Kg</u>
Reactivity	
Sulfide	<1
Cyanide	<0.3
Corrosivity	
pH, S.U.	5.6
Ignitability, Deg. F	>200
Grain Size	Attached
Moisture, %	10
Ash, %	87
BTU's/lb	516
Total Halogens	<0.01
Total Petroleum Hydrocarbons	39
Pesticides/PCB's	Attached
TCLP Extractables	Attached

Sample: MSC 2-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Analyzed*: 7/6/93

<u>TCLP Extractable Metals:</u>	<u>Result, mg/L</u>	<u>Regulatory Limit, mg/L</u>
Arsenic	<0.1	5.0
Barium	<0.5	100.0
Cadmium	<0.05	1.0
Chromium	0.13	5.0
Lead	<0.2	5.0
Mercury	<0.005	0.2
Selenium	<0.1	1.0
Silver	<0.05	5.0

* Date Completed

Sample: MSC 2-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Analyzed: 7/6/93

TCLP Volatile Organic Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Benzene	<0.02	0.5
Carbon Tetrachloride	<0.02	0.5
Chlorobenzene	<0.02	100.0
Chloroform	<0.02	6.0
1,4-Dichlorobenzene	<0.02	7.5
1,2-Dichloroethane	<0.02	0.5
1,1-Dichloroethylene	<0.02	0.7
Methyl Ethyl Ketone (MEK)	<0.5	200.0
Tetrachloroethylene	<0.02	0.7
Trichloroethylene	<0.02	0.5
Vinyl Chloride	<0.04	0.2

<u>Surrogates:</u>	<u>% Recovery</u>	<u>Limits</u>
Toluene d8	90	88-110
1,2-Dichloroethane-d4	110	76-114
4-Bromofluorobenzene	112	86-115

Sample: MSC 2-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/15/93

TCLP Extractable Pesticides/Herbicides:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Chlordane	<0.01	0.03
2,4-D	<0.05	10.0
Endrin	<0.001	0.02
Heptachlor	<0.001	0.008
Heptachlor Epoxide	<0.001	0.008
Lindane	<0.001	0.4
Methoxychlor	<0.005	10.0
Toxaphene	<0.01	0.5
2,4,5-TP Silvex	<0.05	1.0

Sample: MSC 2-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/13/93

TCLP Semivolatile Base/Neutral Extractable Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
1,4-Dichlorobenzene	<0.05	7.5
Hexachlorobenzene	<0.05	0.13
Hexachloro-1,3-butadiene	<0.05	0.5
Hexachloroethane	<0.05	3.0
Nitrobenzene	<0.05	2.0
Pyridine	<0.05	5.0
2,4-Dinitrotoluene	<0.05	0.13

TCLP Semivolatile Acid Extractable Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
o-Cresol	<0.1	200.0
m-Cresol	<0.1	200.0
p-Cresol	<0.1	200.0
Pentachlorophenol	<0.1	100.0
2,4,5-Trichlorophenol	<0.1	400.0
2,4,6-Trichlorophenol	<0.1	2.0

Surrogates:

	<u>% Recovery</u>	<u>Limits</u>
Nitrobenzene d5	62	35-114
2-Fluorobiphenyl	74	43-116
p-Terphenyl d14	84	33-141
Phenol d6	55	10-94
2-Fluorophenol	67	21-100
2,4,6-Tribromophenol	33	10-123

Sample: MSC 2-1

Case No. D0629-05
Date Analyzed: 7/15/93

Subject: Pesticides and PCB's
Method: EPA 8080

<u>Compound</u>	<u>Concentration</u> <u>mg/Kg (ppm)</u>	<u>Reporting</u> <u>Limit</u>
Aldrin	N.D.	<0.1
alpha-BHC	N.D.	<0.1
beta-BHC	N.D.	<0.1
delta-BHC	N.D.	<0.1
gamma-BHC	N.D.	<0.1
Chlordane	N.D.	<0.5
4,4'-DDD	N.D.	<0.1
4,4'-DDE	N.D.	<0.1
4,4'-DDT	N.D.	<0.1
Dieldrin	N.D.	<0.1
Endosulfan I	N.D.	<0.2
Endosulfan II	N.D.	<0.2
Endosulfan sulfate	N.D.	<0.2
Endrin	N.D.	<0.1
Endrin aldehyde	N.D.	<0.1
Heptachlor	N.D.	<0.1
Heptachlor epoxide	N.D.	<0.1
Methoxychlor	N.D.	<0.2
Toxaphene	N.D.	<0.5
PCB-1016	N.D.	<0.5
PCB-1221	N.D.	<0.5
PCB-1232	N.D.	<0.5
PCB-1242	N.D.	<0.5
PCB-1248	N.D.	<0.5
PCB-1254	13	<0.5
PCB-1260	N.D.	<0.5

GEOTECHNICAL LABORATORY TEST DATA

Project : D0629-05
 Project No. : OEX-375
 Boring No. : ---
 Sample No. : MSC 2-1
 Location : ---
 Soil Description : Dark-brown granular sand with twigs
 Remarks : ---

Depth : ---
 Test Date : 7/9/93
 Test Method : ASTM D422

Filename : MSC2-1
 Elevation : ---
 Tested by : krk
 Checked by : gtt

HYDROMETER

Hydrometer ID : hyl
 Weight of air-dried soil = 35.49 gm
 Specific Gravity = 2.65

Hydroscopic Moisture Content :
 Weight of Wet Soil = 0 gm
 Weight of Dry Soil = 0 gm
 Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
1.00	7.80	21.50	2.65	0.052	6	0.052
2.00	7.40	21.50	2.25	0.037	5	0.037
4.00	7.00	21.50	1.85	0.026	5	0.026
8.00	6.70	21.60	1.59	0.018	4	0.018
15.00	6.10	21.90	1.09	0.013	3	0.013
30.00	5.70	21.70	0.62	0.010	2	0.010

Sieve Mesh	Sieve Openings		Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
	Inches	Millimeters			
0.375"	0.374	9.51	0.00	0.00	100
#4	0.187	4.75	3.23	3.23	92
#10	0.079	2.00	2.61	5.84	86
#20	0.033	0.84	4.36	10.20	76
#40	0.017	0.42	5.45	15.65	63
#60	0.010	0.25	8.45	24.10	43
#100	0.006	0.15	6.83	30.93	27
#200	0.003	0.07	3.16	34.09	19
Pan			16.21	50.30	0

Total Dry Weight of Sample = 50.3

- D85 : 1.8204 mm
- D60 : 0.3905 mm
- D50 : 0.3016 mm
- D30 : 0.1665 mm
- D15 : 0.0661 mm
- D10 : 0.0574 mm

Soil Classification

ASTM Group Symbol : SM
 ASTM Group Name : Silty sand
 AASHTO Group Symbol : A-2-4(0)
 AASHTO Group Name : Silty Gravel and Sand

Soil Testing Express
 Concord, MA

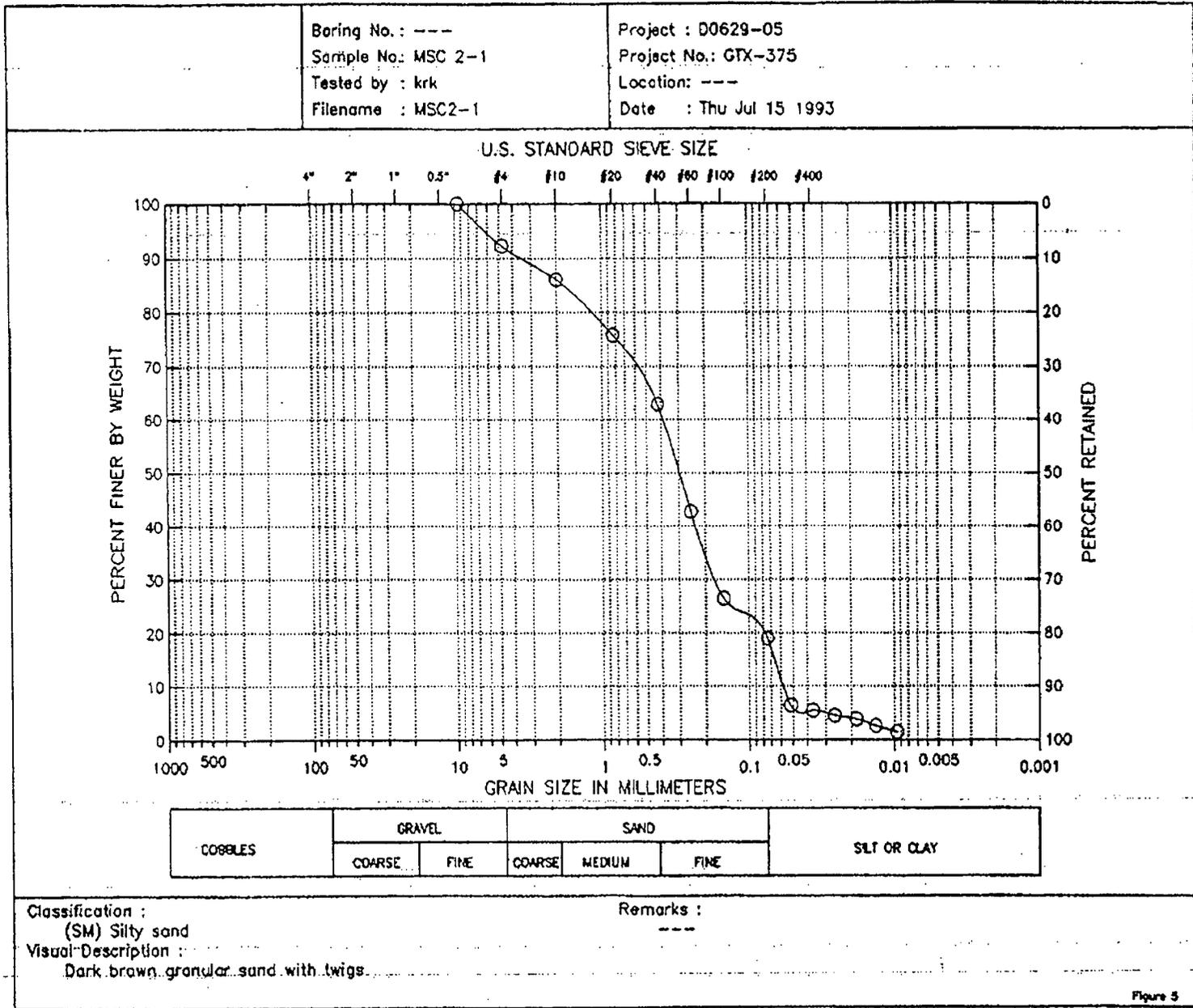


Figure 5

Case No. D0629-05

MSC 2-2

<u>Parameter</u>	<u>Result, mg/Kg</u>
Reactivity	
Sulfide	<1
Cyanide	<0.3
Corrosivity	
pH, S.U.	4.8
Ignitability, Deg. F	>200
Grain Size	Attached
Moisture, %	17
Ash, %	76
BTU's/lb	1640
Total Halogens	<0.01
Total Petroleum Hydrocarbons	13
Pesticides/PCB's	Attached
TCLP Extractables	Attached

Sample: MSC 2-2

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Analyzed*: 7/6/93

<u>TCLP Extractable Metals:</u>	<u>Result, mg/L</u>	<u>Regulatory Limit, mg/L</u>
Arsenic	<0.1	5.0
Barium	<0.5	100.0
Cadmium	<0.05	1.0
Chromium	<0.05	5.0
Lead	<0.2	5.0
Mercury	<0.005	0.2
Selenium	<0.1	1.0
Silver	<0.05	5.0

* Date Completed

Sample: MSC 2-2

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Analyzed: 7/6/93

TCLP Volatile Organic Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Benzene	<0.02	0.5
Carbon Tetrachloride	<0.02	0.5
Chlorobenzene	<0.02	100.0
Chloroform	<0.02	6.0
1,4-Dichlorobenzene	<0.02	7.5
1,2-Dichloroethane	<0.02	0.5
1,1-Dichloroethylene	<0.02	0.7
Methyl Ethyl Ketone (MEK)	<0.5	200.0
Tetrachloroethylene	<0.02	0.7
Trichloroethylene	<0.02	0.5
Vinyl Chloride	<0.04	0.2

<u>Surrogates:</u>	<u>% Recovery</u>	<u>Limits</u>
Toluene d8	96	88-110
1,2-Dichloroethane-d4	113	76-114
4-Bromofluorobenzene	113	86-115

Sample: MSC 2-2

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/15/93

TCLP Extractable Pesticides/Herbicides:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Chlordane	<0.01	0.03
2,4-D	<0.05	10.0
Endrin	<0.001	0.02
Heptachlor	<0.001	0.008
Heptachlor Epoxide	<0.001	0.008
Lindane	<0.001	0.4
Methoxychlor	<0.005	10.0
Toxaphene	<0.01	0.5
2,4,5-TP Silvex	<0.05	1.0

Sample: MSC 2-2

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/15/93

TCLP Semivolatile Base/Neutral Extractable Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
1,4-Dichlorobenzene	<0.05	7.5
Hexachlorobenzene	<0.05	0.13
Hexachloro-1,3-butadiene	<0.05	0.5
Hexachloroethane	<0.05	3.0
Nitrobenzene	<0.05	2.0
Pyridine	<0.05	5.0
2,4-Dinitrotoluene	<0.05	0.13

TCLP Semivolatile Acid Extractable Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
o-Cresol	<0.1	200.0
m-Cresol	<0.1	200.0
p-Cresol	<0.1	200.0
Pentachlorophenol	<0.1	100.0
2,4,5-Trichlorophenol	<0.1	400.0
2,4,6-Trichlorophenol	<0.1	2.0

Surrogates:

	<u>% Recovery</u>	<u>Limits</u>
Nitrobenzene d5	56	35-114
2-Fluorobiphenyl	61	43-116
p-Terphenyl d14	70	33-141
Phenol d6	51	10-94
2-Fluorophenol	64	21-100
2,4,6-Tribromophenol	25	10-123

Sample: MSC 2-2

Case No. D0629-05
Date Analyzed: 7/15/93

Subject: Pesticides and PCB's
Method: EPA 8080

<u>Compound</u>	<u>Concentration mg/Kg (ppm)</u>	<u>Reporting Limit</u>
Aldrin	N.D.	<0.1
alpha-BHC	N.D.	<0.1
beta-BHC	N.D.	<0.1
delta-BHC	N.D.	<0.1
gamma-BHC	N.D.	<0.1
Chlordane	N.D.	<0.5
4,4'-DDD	N.D.	<0.1
4,4'-DDE	N.D.	<0.1
4,4'-DDT	N.D.	<0.1
Dieldrin	N.D.	<0.1
Endosulfan I	N.D.	<0.2
Endosulfan II	N.D.	<0.2
Endosulfan sulfate	N.D.	<0.2
Endrin	N.D.	<0.1
Endrin aldehyde	N.D.	<0.1
Heptachlor	N.D.	<0.1
Heptachlor epoxide	N.D.	<0.1
Methoxychlor	N.D.	<0.2
Toxaphene	N.D.	<0.5
PCB-1016	N.D.	<0.5
PCB-1221	N.D.	<0.5
PCB-1232	N.D.	<0.5
PCB-1242	N.D.	<0.5
PCB-1248	N.D.	<0.5
PCB-1254	N.D.	<0.5
PCB-1260	N.D.	<0.5

GEOTECHNICAL LABORATORY TEST DATA

Project : D0629-05
 Project No. : GTX-375
 Boring No. : ---
 Sample No. : MSC 2-2
 Location : ---
 Soil Description : Dark brown sand
 Remarks : ---

Depth : ---
 Test Date : 7/9/93
 Test Method : ASTM D422

Filename : MSC22
 Elevation : ---
 Tested by : krk
 Checked by : gtt

HYDROMETER

Hydrometer ID : hyl
 Weight of air-dried soil = 31.46 gm
 Specific Gravity = 2.65

Hydrosopic Moisture Content :
 Weight of Wet Soil = 0 gm
 Weight of Dry Soil = 0 gm
 Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
1.00	6.10	23.50	1.65	0.051	5	0.051
2.00	5.80	23.50	1.35	0.036	4	0.036
4.00	5.50	23.50	1.05	0.026	3	0.026
8.00	5.20	23.60	0.79	0.018	2	0.018
15.00	5.00	23.50	0.55	0.013	2	0.013

Sieve Mesh	Sieve Openings		FINE SIEVE SET		
	Inches	Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.375"	0.374	9.51	0.00	0.00	100
#4	0.187	4.75	0.32	0.32	99
#10	0.079	2.00	1.55	1.87	94
#20	0.033	0.84	1.98	3.85	88
#40	0.017	0.42	4.02	7.87	76
#60	0.010	0.25	8.86	16.73	49
#100	0.006	0.15	7.28	24.01	27
#200	0.003	0.07	2.53	26.54	20
Pan			14.34	40.88	0

Total Dry Weight of Sample = 40.88

- D85 : 0.6948 mm
- D60 : 0.3071 mm
- D50 : 0.2531 mm
- D30 : 0.1586 mm
- D15 : 0.0658 mm
- D10 : 0.0581 mm

Soil Classification

ASTM Group Symbol : SM
 ASTM Group Name : Silty sand
 AASHTO Group Symbol : A-2-4(0)
 AASHTO Group Name : Silty Gravel and Sand

Post-It™ brand fax transmittal memo 7671 # of pages 2

To	hymnsmith	From	Tina
Co.	NET	Co.	G.I.X.
Dept.		Phone #	
Fax #	401-354-8951	Fax #	

Collecting Express
 Concord, MA

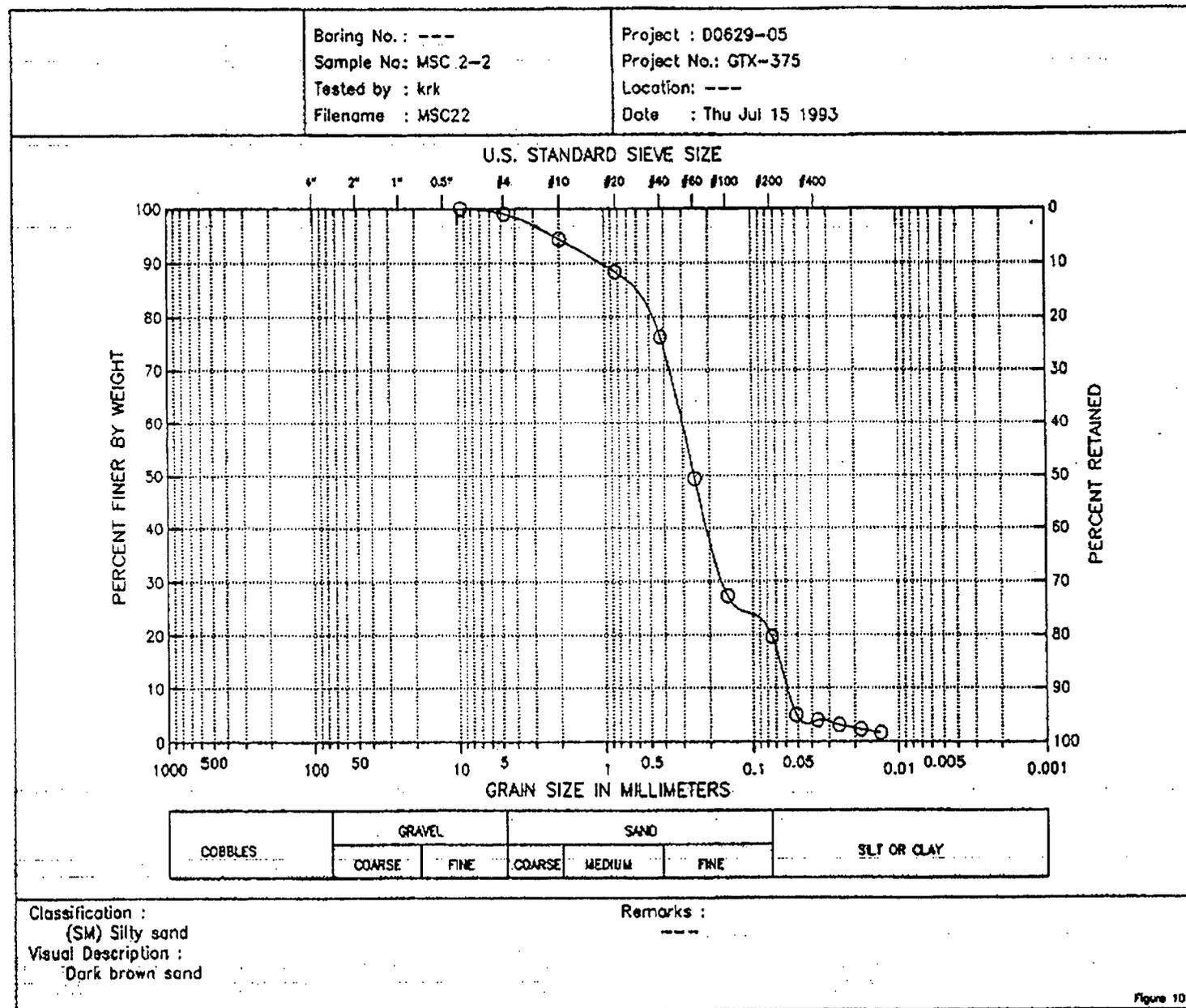


Figure 10

Case No. D0629-05

MSC 2-A

<u>Parameter</u>	<u>Result, mg/Kg</u>
Reactivity	
Sulfide	<1
Cyanide	<0.3
Corrosivity	
pH, S.U.	5.6
Ignitability, Deg. F	>200
Grain Size	Attached
Moisture, %	14
Ash, %	83
BTU's/lb	1460
Total Halogens	<0.01
Total Petroleum Hydrocarbons	33
Pesticides/PCB's	Attached
TCLP Extractables	Attached

Sample: MSC 2-A

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Analyzed*: 7/6/93

<u>TCLP Extractable Metals:</u>	<u>Result, mg/L</u>	<u>Regulatory Limit, mg/L</u>
Arsenic	<0.1	5.0
Barium	0.58	100.0
Cadmium	<0.05	1.0
Chromium	0.11	5.0
Lead	<0.2	5.0
Mercury	<0.005	0.2
Selenium	<0.1	1.0
Silver	<0.05	5.0

* Date Completed

Sample: MSC 2-A

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Analyzed: 7/6/93

TCLP Volatile Organic Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Benzene	0.03	0.5
Carbon Tetrachloride	<0.02	0.5
Chlorobenzene	<0.02	100.0
Chloroform	<0.02	6.0
1,4-Dichlorobenzene	<0.02	7.5
1,2-Dichloroethane	<0.02	0.5
1,1-Dichloroethylene	<0.02	0.7
Methyl Ethyl Ketone (MEK)	<0.5	200.0
Tetrachloroethylene	<0.02	0.7
Trichloroethylene	<0.02	0.5
Vinyl Chloride	<0.04	0.2
<u>Surrogates:</u>	<u>% Recovery</u>	<u>Limits</u>
Toluene d8	90	88-110
1,2-Dichloroethane-d4	105	76-114
4-Bromofluorobenzene	107	86-115

Sample: MSC 2-A

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/15/93

TCLP Extractable Pesticides/Herbicides:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Chlordane	<0.01	0.03
2,4-D	<0.05	10.0
Endrin	<0.001	0.02
Heptachlor	<0.001	0.008
Heptachlor Epoxide	<0.001	0.008
Lindane	<0.001	0.4
Methoxychlor	<0.005	10.0
Toxaphene	<0.01	0.5
2,4,5-TP Silvex	<0.05	1.0

Sample: MSC 2-A

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/13/93

TCLP Semivolatile Base/Neutral Extractable Compounds:

<u>Compound</u>	<u>Concentration</u> <u>mg/L (ppm)</u>	<u>Regulatory</u> <u>Limit, mg/L (ppm)</u>
1,4-Dichlorobenzene	<0.05	7.5
Hexachlorobenzene	<0.05	0.13
Hexachloro-1,3-butadiene	<0.05	0.5
Hexachloroethane	<0.05	3.0
Nitrobenzene	<0.05	2.0
Pyridine	<0.05	5.0
2,4-Dinitrotoluene	<0.05	0.13

TCLP Semivolatile Acid Extractable Compounds:

<u>Compound</u>	<u>Concentration</u> <u>mg/L (ppm)</u>	<u>Regulatory</u> <u>Limit, mg/L (ppm)</u>
o-Cresol	<0.1	200.0
m-Cresol	<0.1	200.0
p-Cresol	<0.1	200.0
Pentachlorophenol	<0.1	100.0
2,4,5-Trichlorophenol	<0.1	400.0
2,4,6-Trichlorophenol	<0.1	2.0

Surrogates:

	<u>% Recovery</u>	<u>Limits</u>
Nitrobenzene d5	60	35-114
2-Fluorobiphenyl	72	43-116
p-Terphenyl d14	74	33-141
Phenol d6	48	10-94
2-Fluorophenol	57	21-100
2,4,6-Tribromophenol	32	10-123

Sample: MSC 2-A

Case No. D0629-05
Date Analyzed: 7/15/93

Subject: Pesticides and PCB's
Method: EPA 8080

<u>Compound</u>	<u>Concentration</u> <u>mg/Kg (ppm)</u>	<u>Reporting</u> <u>Limit</u>
Aldrin	N.D.	<0.1
alpha-BHC	N.D.	<0.1
beta-BHC	N.D.	<0.1
delta-BHC	N.D.	<0.1
gamma-BHC	N.D.	<0.1
Chlordane	N.D.	<0.5
4,4'-DDD	N.D.	<0.1
4,4'-DDE	N.D.	<0.1
4,4'-DDT	N.D.	<0.1
Dieldrin	N.D.	<0.1
Endosulfan I	N.D.	<0.2
Endosulfan II	N.D.	<0.2
Endosulfan sulfate	N.D.	<0.2
Endrin	N.D.	<0.1
Endrin aldehyde	N.D.	<0.1
Heptachlor	N.D.	<0.1
Heptachlor epoxide	N.D.	<0.1
Methoxychlor	N.D.	<0.2
Toxaphene	N.D.	<0.5
PCB-1016	N.D.	<0.5
PCB-1221	N.D.	<0.5
PCB-1232	N.D.	<0.5
PCB-1242	N.D.	<0.5
PCB-1248	N.D.	<0.5
PCB-1254	31	<0.5
PCB-1260	N.D.	<0.5

Thu Jul 15 09:43:26 1993

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GEOTECHNICAL LABORATORY TEST DATA

Project : D0629-05
 Project No. : GTX-375
 Boring No. : ---
 Sample No. : MSC 2-A
 Location : ---
 Soil Description : Brown silty sand
 Remarks : ---

Depth : ---
 Test Date : 7/12/93
 Test Method : ASTM D422

Filename : MSC2A
 Elevation : ---
 Tested by : kkk
 Checked by : gtt

HYDROMETER

Hydrometer ID : hyl
 Weight of air-dried soil = 38.3 gm
 Specific Gravity = 2.65

Hydroscopic Moisture Content :
 Weight of Wet Soil = 0 gm
 Weight of Dry Soil = 0 gm
 Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
1.00	7.30	24.00	3.03	0.051	8	0.051
2.00	6.90	24.00	2.63	0.036	7	0.036
4.00	6.30	24.00	2.03	0.025	5	0.025
8.00	6.00	24.00	1.73	0.018	4	0.018
15.00	5.60	24.00	1.33	0.013	3	0.013
30.00	5.00	24.00	0.73	0.009	2	0.009

Sieve Mesh	Sieve Openings		FINE SIEVE SET		Percent Finer (%)
	Inches	Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	
0.375"	0.374	9.51	0.00	0.00	100
#4	0.187	4.75	0.36	0.36	99
#10	0.079	2.00	1.17	1.53	96
#20	0.033	0.84	2.19	3.72	91
#40	0.017	0.42	5.07	8.79	78
#60	0.010	0.25	10.87	19.66	51
#100	0.006	0.15	8.82	28.48	29
#200	0.003	0.07	3.92	32.40	19
Pan			16.08	48.48	0

Total Dry Weight of Sample = 48.48

- D85 : 0.6139 mm
- D60 : 0.2970 mm
- D50 : 0.2442 mm
- D30 : 0.1525 mm
- D15 : 0.0644 mm
- D10 : 0.0547 mm

Soil Classification
 ASTM Group Symbol : SM
 ASTM Group Name : Silty sand
 AASHTO Group Symbol : A-2-4(0)
 AASHTO Group Name : Silty Gravel and Sand

MSC 3-1

<u>Parameter</u>	<u>Result, mg/Kg</u>
Reactivity	
Sulfide	<1
Cyanide	<0.3
Corrosivity	
pH, S.U.	5.2
Ignitability, Deg. F	>200
Grain Size	Attached
Moisture, %	18
Ash, %	78
BTU's/lb	1070
Total Halogens	<0.01
Total Petroleum Hydrocarbons	21
Pesticides/PCB's	Attached
TCLP Extractables	Attached

Sample: MSC 3-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93
Date Analyzed*: 7/6/93

<u>TCLP Extractable Metals:</u>	<u>Result, mg/L</u>	<u>Regulatory Limit, mg/L</u>
Arsenic	<0.1	5.0
Barium	<0.5	100.0
Cadmium	<0.05	1.0
Chromium	<0.05	5.0
Lead	0.20	5.0
Mercury	<0.005	0.2
Selenium	<0.1	1.0
Silver	<0.05	5.0

* Date Completed

Sample: MSC 3-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Analyzed: 7/11/93

TCLP Volatile Organic Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Benzene	<0.02	0.5
Carbon Tetrachloride	<0.02	0.5
Chlorobenzene	<0.02	100.0
Chloroform	<0.02	6.0
1,4-Dichlorobenzene	<0.02	7.5
1,2-Dichloroethane	<0.02	0.5
1,1-Dichloroethylene	<0.02	0.7
Methyl Ethyl Ketone (MEK)	<0.5	200.0
Tetrachloroethylene	<0.02	0.7
Trichloroethylene	0.04	0.5
Vinyl Chloride	<0.04	0.2

Surrogates:

	<u>% Recovery</u>	<u>Limits</u>
Toluene d8	96	88-110
1,2-Dichloroethane-d ₂	102	76-114
4-Bromofluorobenzene	97	86-115

Sample: MSC 3-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/15/93

TCLP Extractable Pesticides/Herbicides:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Chlordane	<0.01	0.03
2,4-D	<0.05	10.0
Endrin	<0.001	0.02
Heptachlor	<0.001	0.008
Heptachlor Epoxide	<0.001	0.008
Lindane	<0.001	0.4
Methoxychlor	<0.005	10.0
Toxaphene	<0.01	0.5
2,4,5-TP Silvex	<0.05	1.0

Sample: MSC 3-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/13/93

TCLP Semivolatile Base/Neutral Extractable Compounds:

<u>Compound</u>	<u>Concentration</u> <u>mg/L (ppm)</u>	<u>Regulatory</u> <u>Limit, mg/L (ppm)</u>
1,4-Dichlorobenzene	<0.05	7.5
Hexachlorobenzene	<0.05	0.13
Hexachloro-1,3-butadiene	<0.05	0.5
Hexachloroethane	<0.05	3.0
Nitrobenzene	<0.05	2.0
Pyridine	<0.05	5.0
2,4-Dinitrotoluene	<0.05	0.13

TCLP Semivolatile Acid Extractable Compounds:

<u>Compound</u>	<u>Concentration</u> <u>mg/L (ppm)</u>	<u>Regulatory</u> <u>Limit, mg/L (ppm)</u>
o-Cresol	<0.1	200.0
m-Cresol	<0.1	200.0
p-Cresol	<0.1	200.0
Pentachlorophenol	<0.1	100.0
2,4,5-Trichlorophenol	<0.1	400.0
2,4,6-Trichlorophenol	<0.1	2.0

Surrogates:

	<u>% Recovery</u>	<u>Limits</u>
Nitrobenzene d5	68	35-114
2-Fluorobiphenyl	77	43-116
p-Terphenyl d14	81	33-141
Phenol d6	54	10-94
2-Fluorophenol	65	21-100
2,4,6-Tribromophenol	39	10-123

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GEOTECHNICAL LABORATORY TEST DATA

Project : D0629-05
 Project No. : GTX-375
 Boring No. : ---
 Sample No. : MSC 3-1
 Location : ---
 Soil Description : Brown sand
 Remarks : ---

Depth : ---
 Test Date : 7/12/93
 Test Method : ASTM D422

Filename : MSC31
 Elevation : ---
 Tested by : krk
 Checked by : gtt

HYDROMETER

Hydrometer ID : hyl
 Weight of air-dried soil = 32.03 gm
 Specific Gravity = 2.65

Hydroscopic Moisture Content :
 Weight of Wet Soil = 0 gm
 Weight of Dry Soil = 0 gm
 Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
1.00	7.90	23.60	3.49	0.051	9	0.051
2.00	7.20	23.60	2.79	0.036	7	0.036
4.00	6.90	23.60	2.49	0.025	6	0.025
8.00	6.50	23.50	2.05	0.018	5	0.018
15.00	6.00	23.50	1.55	0.013	4	0.013
30.00	5.20	23.50	0.75	0.009	2	0.009

Sieve Mesh	Sieve Openings		FINE SIEVE SET		Percent Finer (%)
	Inches	Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	
0.375"	0.374	9.51	0.00	0.00	100
#4	0.187	4.75	3.18	3.18	92
#10	0.079	2.00	4.32	7.50	81
#20	0.033	0.84	5.32	12.82	69
#40	0.017	0.42	5.30	18.12	55
#60	0.010	0.25	5.95	24.07	40
#100	0.006	0.15	5.46	29.53	26
#200	0.003	0.07	2.83	32.36	19
Pan			15.40	47.76	0

Total Dry Weight of Sample = 47.76

- D85 : 2.7080 mm
- D60 : 0.5571 mm
- D50 : 0.3579 mm
- D30 : 0.1733 mm
- D15 : 0.0638 mm
- D10 : 0.0528 mm

Soil Classification

ASTM Group Symbol : SM
 ASTM Group Name : Silty sand
 AASHTO Group Symbol : A-2-4(0)
 AASHTO Group Name : Silty Gravel and Sand

Geotechnical Engineering Express
 Springfield, MA

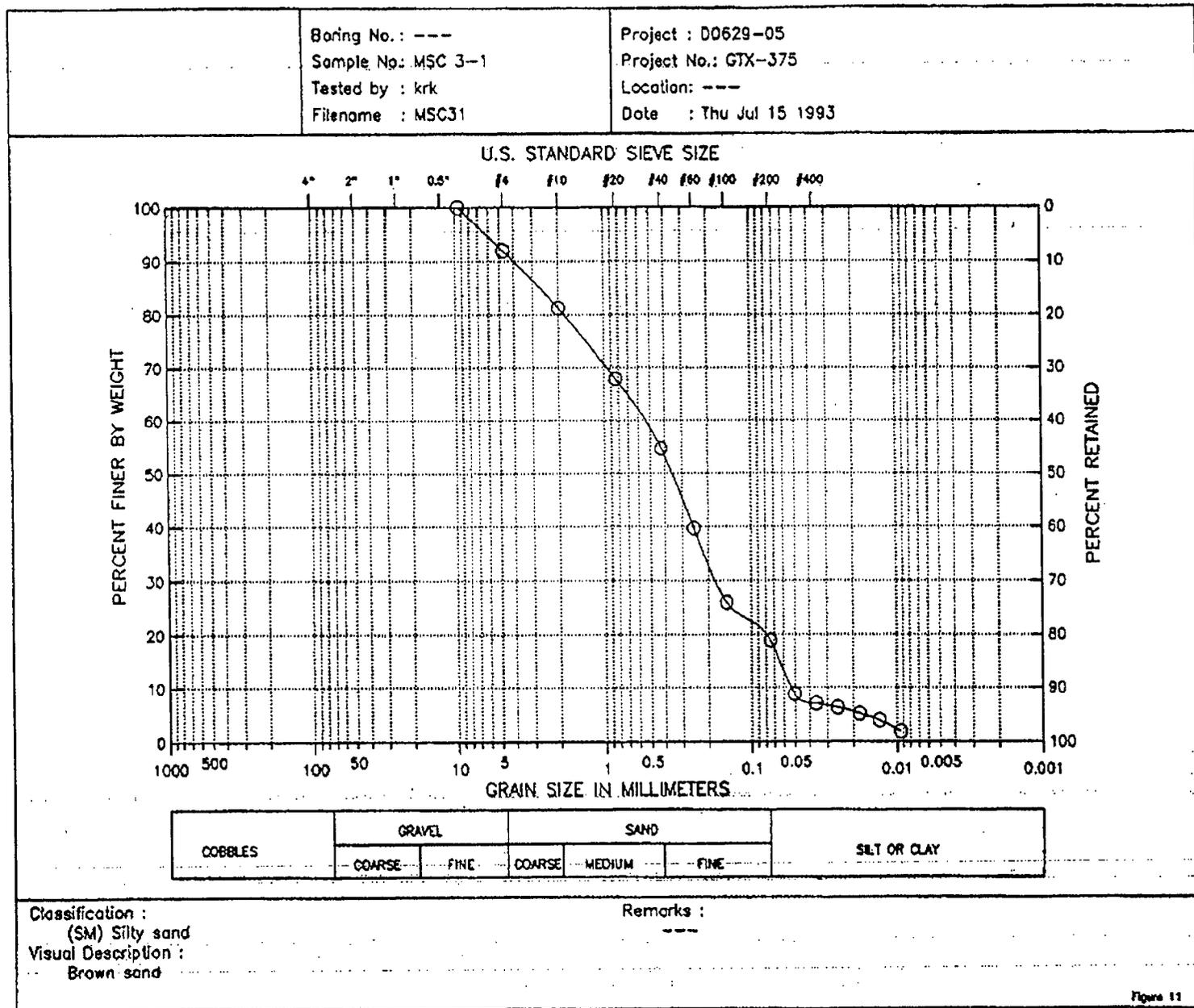


Figure 11

Case No. D0629-05

MSC 4-1

<u>Parameter</u>	<u>Result, mg/Kg</u>
Reactivity	
Sulfide	<1
Cyanide	<0.3
Corrosivity	
pH, S.U.	5.8
Ignitability, Deg. F	>200
Grain Size	Attached
Moisture, %	13
Ash, %	85
BTU's/lb	2800
Total Halogens	<0.01
Total Petroleum Hydrocarbons	493
Pesticides/PCB's	Attached
TCLP Extractables	Attached

Sample: MSC 4-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93
Date Analyzed*: 7/6/93

<u>TCLP Extractable Metals:</u>	<u>Result, mg/L</u>	<u>Regulatory Limit, mg/L</u>
Arsenic	<0.1	5.0
Barium	1.2	100.0
Cadmium	<0.05	1.0
Chromium	<0.05	5.0
Lead	<0.2	5.0
Mercury	<0.005	0.2
Selenium	<0.1	1.0
Silver	<0.05	5.0

* Date Completed

Sample: MSC 4-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Analyzed: 7/11/93

TCLP Volatile Organic Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Benzene	<0.02	0.5
Carbon Tetrachloride	<0.02	0.5
Chlorobenzene	<0.02	100.0
Chloroform	<0.02	6.0
1,4-Dichlorobenzene	<0.02	7.5
1,2-Dichloroethane	<0.02	0.5
1,1-Dichloroethylene	<0.02	0.7
Methyl Ethyl Ketone (MEK)	<0.5	200.0
Tetrachloroethylene	<0.02	0.7
Trichloroethylene	<0.02	0.5
Vinyl Chloride	<0.04	0.2

Surrogates:

	<u>% Recovery</u>	<u>Limits</u>
Toluene d8	95	88-110
1,2-Dichloroethane-d4	114	76-114
4-Bromofluorobenzene	93	86-115

Sample: MSC 4-1

Case No. D0629-05

Date TCLP Extracted: 6/29/93

Date Prep Extracted: 7/6/93

Date Analyzed: 7/15/93

TCLP Extractable Pesticides/Herbicides:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Chlordane	<0.01	0.03
2,4-D	<0.05	10.0
Endrin	<0.001	0.02
Heptachlor	<0.001	0.008
Heptachlor Epoxide	<0.001	0.008
Lindane	<0.001	0.4
Methoxychlor	<0.005	10.0
Toxaphene	<0.01	0.5
2,4,5-TP Silvex	<0.05	1.0

Sample: MSC 4-1

Case No. D0629-05
Date Analyzed: 7/15/93

Subject: Pesticides and PCB's
Method: EPA 8080

<u>Compound</u>	<u>Concentration mg/Kg (ppm)</u>	<u>Reporting Limit</u>
Aldrin	N.D.	<0.1
alpha-BHC	N.D.	<0.1
beta-BHC	N.D.	<0.1
delta-BHC	N.D.	<0.1
gamma-BHC	N.D.	<0.1
Chlordane	N.D.	<0.5
4,4'-DDD	N.D.	<0.1
4,4'-DDE	N.D.	<0.1
4,4'-DDT	N.D.	<0.1
Dieldrin	N.D.	<0.1
Endosulfan I	N.D.	<0.2
Endosulfan II	N.D.	<0.2
Endosulfan sulfate	N.D.	<0.2
Endrin	N.D.	<0.1
Endrin aldehyde	N.D.	<0.1
Heptachlor	N.D.	<0.1
Heptachlor epoxide	N.D.	<0.1
Methoxychlor	N.D.	<0.2
Toxaphene	N.D.	<0.5
PCB-1016	N.D.	<0.5
PCB-1221	N.D.	<0.5
PCB-1232	N.D.	<0.5
PCB-1242	N.D.	<0.5
PCB-1248	N.D.	<0.5
PCB-1254	N.D.	<0.5
PCB-1260	N.D.	<0.5

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GEOTECHNICAL LABORATORY TEST DATA

Project : D0629-05
 Project No. : GTX-375
 Boring No. : ---
 Sample No. : MSC 4-1
 Location : ---
 Soil Description : Dark brown sand
 Remarks : ---

Depth : ---
 Test Date : 7/12/93
 Test Method : ASTM D422

Filename : MSC41
 Elevation : ---
 Tested by : krk
 Checked by : gtt

HYDROMETER

Hydrometer ID : hyl
 Weight of air-dried soil = 37.58 gm
 Specific Gravity = 2.65
 Hydrosopic Moisture Content :
 Weight of Wet Soil = 0 gm
 Weight of Dry Soil = 0 gm
 Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
1.00	5.80	23.60	1.39	0.051	4	0.051
2.00	5.20	23.60	0.79	0.036	2	0.036
4.00	5.10	23.60	0.69	0.026	2	0.026
8.00	5.00	23.50	0.55	0.018	1	0.018

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
#4	0.187	4.75	0.00	0.00	100
#10	0.079	2.00	0.18	0.18	100
#20	0.033	0.84	0.72	0.90	98
#40	0.017	0.42	2.92	3.82	90
#60	0.010	0.25	10.68	14.50	61
#100	0.006	0.15	12.48	26.98	28
#200	0.003	0.07	4.60	31.58	16
Pan			13.74	45.32	0

Total Dry Weight of Sample = 45.32

- D85 : 0.3851 mm
- D60 : 0.2453 mm
- D50 : 0.2101 mm
- D30 : 0.1541 mm
- D15 : 0.0728 mm
- D10 : 0.0623 mm

Soil Classification

ASTM Group Symbol : SM
 ASTM Group Name : Silty sand
 AASHTO Group Symbol : A-2-4(0)
 AASHTO Group Name : Silty Gravel and Sand

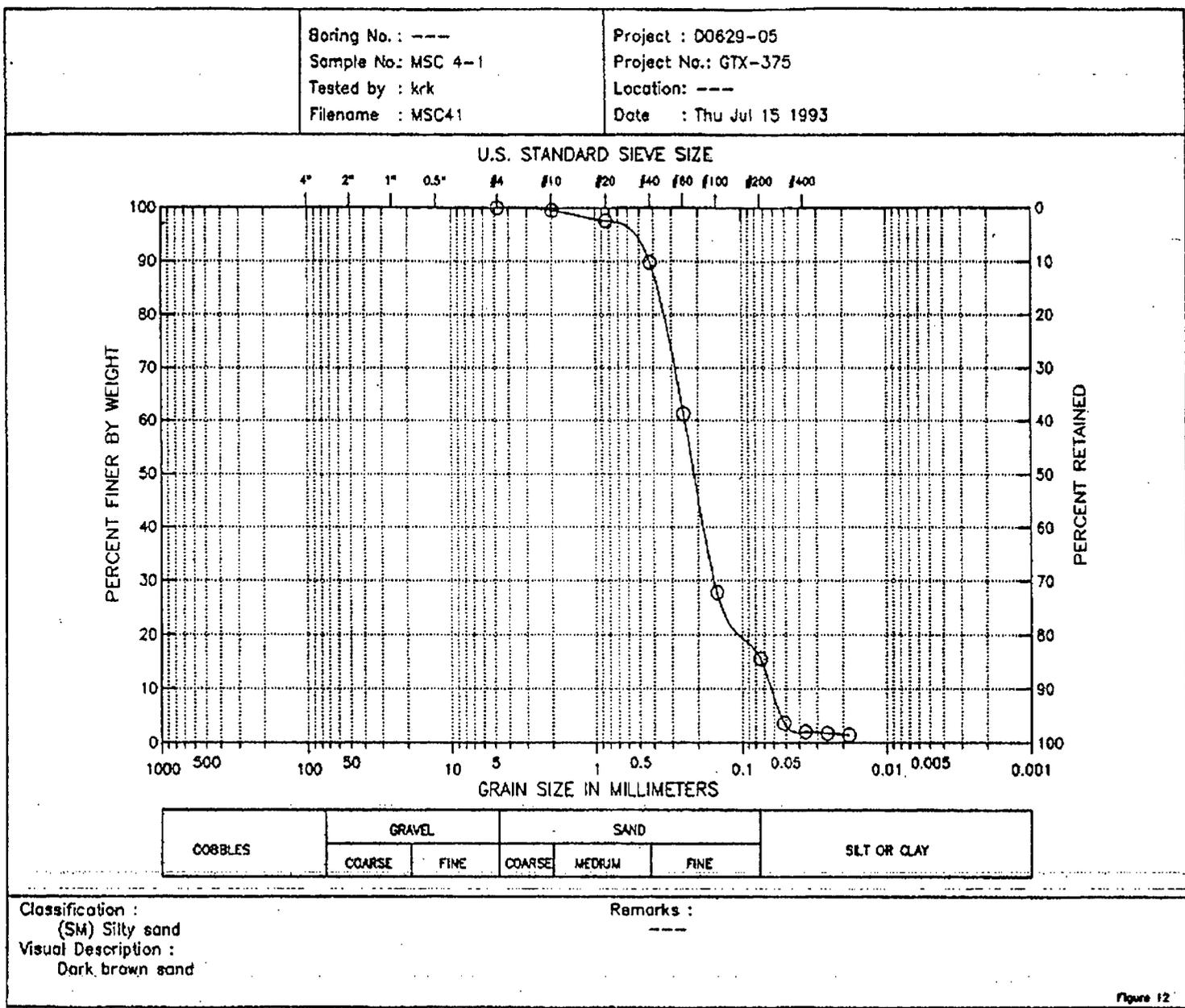


Figure 12

Case No. D0629-05

MSC-A

<u>Parameter</u>	<u>Result, mg/Kg</u>
Total Metals:	
Arsenic	2.6
Barium	206
Cadmium	<2.0
Chromium	250
Lead	43
Mercury	0.06
Selenium	<1
Silver	<2
Semivolatiles	Attached

Sample: MSC-A

Case No. D0629-05

Date Extracted: 7/9/93

Date Analyzed: 7/13/93

Subject: Semivolatile Base/Neutral Extractable Compounds

Method: EPA 8270

<u>Compound</u>	<u>Concentration, mg/Kg (ppm)</u>	<u>Reporting Limit</u>
Acenaphthene	N.D.	2
Acenaphthylene	N.D.	2
Acetophenone	N.D.	10
4-Aminobiphenyl	N.D.	10
Aniline	N.D.	10
Anthracene	N.D.	2
Benzidine	N.D.	30
Benzo(a)anthracene	N.D.	2
Benzo(b)fluoranthene	N.D.	10
Benzo(k)fluoranthene	N.D.	10
Benzoic acid	N.D.	40
Benzo(g,h,i)perylene	N.D.	10
Benzo(a)pyrene	N.D.	10
Benzyl alcohol	N.D.	4
Bis(2-chloroethyl)ether	N.D.	4
Bis(2-chloroisopropyl)ether	N.D.	4
Bis(2-chloroethoxy)methane	N.D.	4
Bis(2-ethylhexyl) phthalate	N.D.	2
4-Bromophenyl phenyl ether	N.D.	4
Butyl benzyl phthalate	N.D.	4
4-Chloroaniline	N.D.	4
1-Chloronaphthalene	N.D.	4
2-Chloronaphthalene	N.D.	4
4-Chlorophenyl phenyl ether	N.D.	4
Chrysene	N.D.	4
Dibenz(a,j)acridine	N.D.	40
Dibenz(a,h)anthracene	N.D.	20
Dibenzofuran	N.D.	4
Di-n-butylphthalate	N.D.	2
1,2-Dichlorobenzene	N.D.	2
1,3-Dichlorobenzene	N.D.	2
1,4-Dichlorobenzene	N.D.	2
3,3'-Dichlorobenzidine	N.D.	20
Diethyl phthalate	N.D.	2
p-Dimethylaminoazobenzene	N.D.	4
7,12-Dimethylbenz(a)anthracene	N.D.	20
Dimethylphenethylamine	N.D.	4
Dimethyl phthalate	N.D.	2
2,4-Dinitrotoluene	N.D.	4
2,6-Dinitrotoluene	N.D.	4
Di(n)octyl phthalate	N.D.	2
Diphenylamine	N.D.	20
1,2-Diphenylhydrazine	N.D.	20
Ethyl methanesulfonate	N.D.	4
Fluoranthene	N.D.	2
Fluorene	N.D.	2
Hexachlorobenzene	N.D.	10
Hexachlorobutadiene	N.D.	4
Hexachlorocyclopentadiene	N.D.	30
Hexachloroethane	N.D.	4
Indeno(1,2,3-cd)pyrene	N.D.	10

Sample: MSC-A

Case No. D0629-05

<u>Compound</u>	<u>Concentration, mg/Kg (ppm)</u>	<u>Reporting Limit</u>
Isophorone	N.D.	10
3-Methylcholanthrene	N.D.	20
Methyl methanesulfonate	N.D.	4
2-Methylnaphthalene	N.D.	2
Naphthalene	N.D.	2
1-Naphthylamine	N.D.	10
2-Naphthylamine	N.D.	10
2-Nitroaniline	N.D.	4
3-Nitroaniline	N.D.	4
4-Nitroaniline	N.D.	4
Nitrobenzene	N.D.	4
N-Nitrosodibutylamine	N.D.	10
N-Nitrosodimethylamine	N.D.	10
N-Nitrosodiphenylamine	N.D.	20
N-Nitroso-di-n-propylamine	N.D.	10
N-Nitrosopiperidine	N.D.	10
Pentachlorobenzene	N.D.	4
Pentachloronitrobenzene	N.D.	20
Phenacetin	N.D.	20
Phenanthrene	N.D.	2
2-Picoline	N.D.	10
Pronamide	N.D.	20
Pyrene	N.D.	2
1,2,4,5-Tetrachlorobenzene	N.D.	4
1,2,4-Trichlorobenzene	N.D.	2

Semivolatile Acid Extractable Compounds

<u>Compound</u>	<u>Concentration, mg/Kg (ppm)</u>	<u>Reporting Limit</u>
4-Chloro-3-methylphenol	N.D.	10
2-Chlorophenol	N.D.	2
2,4-Dichlorophenol	N.D.	10
2,6-Dichlorophenol	N.D.	10
2,4-Dimethylphenol	N.D.	2
4,6-Dinitro-2-methylphenol	N.D.	40
2,4-Dinitrophenol	N.D.	40
2-Methylphenol	N.D.	2
4-Methylphenol	N.D.	2
2-Nitrophenol	N.D.	20
4-Nitrophenol	N.D.	20
Pentachlorophenol	N.D.	20
Phenol	N.D.	2
2,3,4,6-Tetrachlorophenol	N.D.	10
2,4,5-Trichlorophenol	N.D.	10
2,4,6-Trichlorophenol	N.D.	10

Surrogates:

<u>Compound</u>	<u>% Recovery</u>	<u>Limits</u>
Nitrobenzene d5	63	23-120
2-Fluorobiphenyl	82	30-115
p-Terphenyl d14	77	18-137
Phenol d6	78	24-113
2,4,6-Tribromophenol	36	19-122
2-Fluorophenol	81	25-121

CUSTODY RECORD

Sent to NITL
 1234 Duster Ave
 N. Providence, RI 02904
 401-353-3420

CHAIN OF CUSTODY RECORD

DOCS

PROJ. NO. 3-0447-711		PROJECT NAME Wells G: H Wickford Property		NO. OF CONTAINERS	ANALYSES										REMARKS
SAMPLERS: (Signature) <i>[Signature]</i>					Full TCLP	Pest/PCBs	RODA Characterstics	TRH (BY GC)	Total Halogens	βTO Content	Ash Content	Moisture Content	Grain Size	Semi Volatiles	
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION												
MSC 1-1	6/7/93	-	Mixed Soils Area 1	1	X	X	X	X	X	X	X	X			
MSC 2-1	6/28/93	-	Mixed Soils Area 2	1	X	X	X	X	X	X	X	X			
MSC 2-2	6/28/93	-	Mixed Soils Area 2	1	X	X	X	X	X	X	X	X			+ Hole
MSC 2-3	6/28/93	-	Mixed Soils Area 2	1	X	X	X	X	X	X	X	X			
MSC 2-A	6/28/93	-	Mixed Soils Area 2A	1	X	X	X	X	X	X	X	X			
MSC 3-1	6/28/93	-	Mixed Soils Area 3	1	X	X	X	X	X	X	X	X			
MSC 4-1	6/28/93	-	Mixed Soils Area 4	1	X	X	X	X	X	X	X	X	X	X	
MSC -A	6/28/93	-	Mixed Soils Areas 1, 2, 3	1									X	X	

Relinquished by: (Signature) <i>[Signature]</i>	Date / Time 6/28/93 3:00	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) <i>[Signature]</i>	Date / Time 6/29/93		

REMARKS:
 Work Order # NITL 004

RELEC REMEDIATION TECHNOLOGIES
 REMEDIATION TECHNOLOGIES INC
 Damonmill Square
 9 Pond Lane
 Concord, MA 01742

Attachment 0-1

Non TSCA Soil Waste Profile Sheet

PROFILE CODE #: 2532

10214

GIANT RESOURCE RECOVERY, INC.

Material Profile

(Please print in blue ink or type)
(All signatures must be in blue ink)

A. GENERATOR INFORMATION

BEATRICE CO., CT Corporation

MP 6179355523

Generator Name

US EPA ID#

208 South LaSalle Street

Chicago, IL 60604

Street Address / P.O. Box

City / State / Zip

James Greacen Agent for BEATRICE

(508) 371-1422

Contact Person

Telephone Number

B. BILLING INFORMATION

RETEC 9 Pond Lane

Concord, MA 01742

Street Address / P.O. Box

City / State / Zip

James Greacen Agent for BEATRICE

(508) 371-1422

Contact Person

Telephone Number

C. BROKER INFORMATION (if applicable)

Name of Broker

Contact Person / Phone #

Street Address / P.O. Box

City / State Zip

II. WASTE DESCRIPTION (Check One)

- () Hazardous Liquid () Hazardous Solid () Hazardous Soil () Regulated
() Non-Haz Liquid () Non-Haz Solid (x) Non-Haz Soil () Non-Regulated

A. Name of Material: Contaminated Soil

B. Generating Process: Site Remediation

(Should be complete enough to compare with process descriptions in 40 CFR 261.31 and 261.32)

C. Principal Contaminants: TPH, PCBS

D. Annual quantity generated: 2900 gals drums lbs. X tons

E. Frequency of Shipments: (X) one time () continuous, specify frequency:

III. SHIPPING INFORMATION:

A. EPA Hazardous Waste: Yes No X No US EPA Codes: NA

B. DOT Hazardous Material: Yes No X No Hazard Class: NA

C. DOT Description: NA UN/NA No.: NA

D. Shipping Method: DRUM - Size X Bulk Solid Bulk Liquid Rail

E. CERCLA reportable quantity (RQ): NA Units NA LBS

IV. PHYSICAL DESCRIPTION

A. Color: Brown Odor: Yes No X No Describe:

B. Physical state @ 70 degrees F.: Solid Specific Gravity:

C. X Multi-layered Bi-layered Multi phased / Liquid % Sludge % Solid %

D. Liquid Flashpoint X >140°F <140°F <100°F None Open Cup Closed Cup

E. Ph 4.8 to 7.6 or Not Applicable Btu value 580 / lb Water 15% Ash 82%

F. % of this waste that will pass through a 1/8" screen: 96%

V. CHEMICAL COMPOSITION (Include all organic and inorganic and attach any available analysis)

A. Soil	84.95 %	_____ %	_____ %	_____ %
PCBS	0.002 %	_____ %	_____ %	_____ %
TPH	0.05 %	_____ %	_____ %	_____ %
_____	_____ %	_____ %	_____ %	Water 15 %
Total % 100		Total Nitrogen _____ %		Total Halogens 0 %

C. Does this waste contain:

▶ 50ppm PCB: No Yes Dioxin: No Yes

Radioactives: No Yes Pathogens: No Yes

Water Reactives: No Yes Carcinogens: No Yes (Specify) _____

VI. SAMPLING DATA

A. Source Composite Samples from Ground Date Sampled: June 28, 1993

B. Samplers Name/Company: Andrew Gates RETEC

C. Generators Agent Supervising Sampling: Andrew Gates

VII. GENERATOR CERTIFICATION

I represent and warrant as evidenced by my signature below that, as the generator's authorized representative, the information contained herein is true, accurate and all relevant information in the possession of the generator regarding known or suspected hazards has been disclosed.

Signature: James R Greacen Date: 10-25-93
(Blue Ink)

Print Name: James Greacen Agent for BEATRICE Title: Project Manager

VIII. ADDITIONAL COMMENTS FROM GENERATOR:

Constituents reported on the Air Toxics Survey form are reported as ranges, If more than one sample was analyzed for that constituent.

IX. COMMENTS BY GIANT:

X. HANDLING INSTRUCTIONS:

Attachment 0-2

TSCA Soil Waste Profile Sheet

A Westinghouse Company

APTUS WASTE PROFILE SHEET

0090972

1. GENERATOR INFORMATION

Apus Contact: Chat Alka
Generator: Weston Co.
Address: 708 S. LaSalle St, Chicago, IL 60604
Technical Contact: James Keenan
Phone Number: 508 871 1422
Facility EPA ID #: MF61793565L3
State ID #:

2. GENERAL INFORMATION

Billing Name: Weston Co. on behalf of RETEC
Address: 9 Bond Lane, Concord, MA 01742

Company Contact: James Keenan
Phone Number: 508 871 1422
Generating Process: Site Remediation

Common Name of Waste: Contaminated soil
Rate of Generation: 300 tons per one time

3. CHEMICAL COMPOSITION (no trade names)

(totals must add up to 100%)
Soil 86%
Water 14%
Total 100%

4. TOXICITY CHARACTERISTICS (mg/L) Other

PESTICIDES: Endrin <0.001, Dieldrin <0.001, Methoxychlor <0.005, Toxaphene <0.01, 2,4-D <0.05, 2,4,5-TP (Silvex) <0.05, Heptachlor <0.001, Chlordane <0.01
BASE NEUTRALS: 1,4-Dichlorobenzene <0.05, Hexachloro 1,3-Benzenediol <0.05, Hexachlorocyclopentadiene <0.05, Nitrobenzene <0.05, Pyridine <0.05, 2,4-Dinitrotoluene <0.05, Hexachlorobenzene <0.05

ACID EXTRACTABLES

O-Cresol <0.1, m-Cresol <0.1, p-Cresol <0.1, Cresol <0.1, Pentachlorophenol <0.1, 2,4,6-Trichlorophenol <0.1, 2,4,6-Trichlorophenol <0.1

VOLATILES

Aroclor 1248 <0.03, Carbon Tetrachloride <0.01, Chlorobenzene <0.01, Chloroform <0.02, 1,2-Dichloroethane <0.02, 1,1-Dichloroethylene <0.02, Methyl Ethyl Ketone <0.5, Tetrachloroethylene <0.02, Trichloroethylene <0.02, Vinyl Chloride <0.04

5. TRANSPORTATION INFORMATION

Proper DOT Shipping Name: polychlorinated biphenyls
Material Class: 9
RD: 1 lb
OPNA: 2315
EPA Waste Number(s):
Container Size: Type:
Pickup Site: 248 Salem St, Woburn, MA
Transporter:
EPA ID #:
Contact:
Phone Number:

7. PHYSICAL DESCRIPTION

Organic () Inorganic ()
Physical State: () liquid () semi-solid (X) solid
Phases/Layering: (X) single layer () layers () multilayer
% Free Liquid: Total Solids (wt%): 100
Color: none

9. FUEL BLENDING/INCINERATION PARAMETERS

BTU/lb: 1460
% Water (by wt): 14
Flash Point (°F): 2720
Total Organic Halogen (%): 3.001
Total Organic Sulfur:
Miscibility With Water: NO

6. METALS EP Toxicity Test

Arsenic <0.1, Barium 0.58, Cadmium <0.05, Chromium 0.11, Lead <0.2, Mercury <0.005, Copper <0.05, Silver <0.05, Selenium <0.10, Thallium <0.05, Beryllium <0.05, Antimony <0.05, Nickel <0.05, Manganese <0.05, Other:

8. OTHER HAZARDOUS PROPERTIES

Explosive NO, Flammable NO, Reactive NO, Infectious NO, Radioactive NO, Shear Sensitive NO

10. INORGANICS (mg/L or ppm)

Cyanides <0.3, Fluorides <1, Sulfides <1, Iodides, Hexamite:

11. ATTACHMENTS

Reference: Lab Analysis, MSDS, Other:

12. CERTIFICATION: I hereby certify that the enclosed sample and/or analytical data is representative of the waste and that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omission of composition or properties exists, and that all known or suspected hazards have been disclosed. I authorize Aptus to act as the Generator's agent in matters concerning management of the aforementioned waste.

Date: 12-3-93
Authorized Signature: James R. Keenan
Title: Agent for Westing

COMMENTS:

WHITE ENVIRONMENTAL APTUS, YELLOW OPERATIONS, ppm SALES, GOLD CUSTOMER

Please sign and date the certification. Keep the gold copy and send all other copies with your waste sample kit.

Printed on Recycled Paper

278 Salem St. Rear Woburn, MA 01801

APPENDIX P

**NON TSCA INCINERATED SOIL
TRANSPORTATION AND DISPOSAL**

**MIXED CONTAMINANT SOIL
SHIPPING SUMMARY**

Load #	Arrival Date	Manifested Amount
1	10-4-94	22.32 tons
2	10-4-94	19.36 tons
3	10-4-94	21.94 tons
4	10-4-94	21.75 tons
5	10-4-94	20.57 tons
6	10-4-94	22.96 tons
7	10-4-94	21.66 tons
8	10-4-94	21.77 tons
9	10-4-94	21.49 tons
10	10-5-94	23.30 tons
11	10-5-94	24.75 tons
12	10-5-94	23.18 tons
13	10-5-94	22.34 tons
14	10-5-94	21.32 tons
15	10-5-94	21.63 tons
16	10-6-94	22.67 tons
17	10-6-94	22.90 tons
18	10-6-94	23.80 tons
19	10-6-94	21.21 tons
20	10-6-94	22.56 tons
21	10-6-94	22.20 tons
22	10-6-94	22.83 tons
23	10-6-94	23.13 tons
24	10-6-94	22.99 tons
25	10-6-94	22.24 tons
26	10-6-94	22.29 tons
27	10-6-94	23.16 tons
28	10-7-94	24.57 tons
29	10-7-94	23.06 tons
30	10-7-94	21.11 tons
31	10-7-94	23.45 tons
32	10-7-94	21.86 tons
33	10-7-94	22.80 tons
34	10-7-94	23.75 tons
35	10-7-94	22.11 tons
36	10-7-94	24.65 tons
37	10-7-94	21.57 tons
38	10-8-94	22.03 tons
39	10-8-94	21.53 tons
40	10-8-94	23.08 tons

Load #	Arrival Date	Manifested Amount
41	10-8-94	22.17 tons
42	10-8-94	21.15 tons
43	10-8-94	22.15 tons
44	10-9-94	23.25 tons
45	10-10-94	27.13 tons
46	10-10-94	22.66 tons
47	10-10-94	23.96 tons
48	10-10-94	23.27 tons
49	10-10-94	23.57 tons
50	10-10-94	23.11 tons
51	10-11-94	22.10 tons
52	10-11-94	22.92 tons
53	10-11-94	23.34 tons
54	10-11-94	24.06 tons
55	10-11-94	23.03 tons
56	10-11-94	23.03 tons
57	10-12-94	21.32 tons
58	10-12-94	23.33 tons
59	10-12-94	23.22 tons
60	10-12-94	23.42 tons
61	10-12-94	21.78 tons
62	10-12-94	22.42 tons
63	10-12-94	21.94 tons
64	10-12-94	22.60 tons
65	10-12-94	22.63 tons
66	10-12-94	22.98 tons
67	10-18-94	22.88 tons
68	10-12-94	23.73 tons
69	10-12-94	23.30 tons
70	10-18-94	20.94 tons
71	10-13-94	22.90 tons
72	10-13-94	21.17 tons
73	10-13-94	22.82 tons
74	10-13-94	28.24 tons
75	10-13-94	20.57 tons
76	10-17-94	21.85 tons
77	11-16-94	21.06 tons
78	11-16-94	23.81 tons
79	11-16-94	20.43 tons
80	11-18-94	22.10 tons

TOTAL

1,810.23 Tons

**MIXED CONTAMINANT SOIL
SHIPPING SUMMARY**

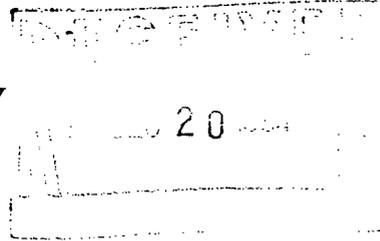
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7	10-4-94	21.66 tons
8	10-4-94	21.77 tons
9	10-4-94	21.49 tons
10	10-5-94	23.30 tons
11	10-5-94	24.75 tons
12	10-5-94	23.18 tons
13	10-5-94	22.34 tons
14	10-5-94	21.32 tons
15	10-5-94	21.63 tons
16	10-6-94	22.67 tons
17	10-6-94	22.90 tons
18	10-6-94	23.80 tons
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20	10-6-94	22.56 tons
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52	10-11-94	22.92 tons
53	10-11-94	23.34 tons
54	10-11-94	24.06 tons
55	10-11-94	23.03 tons
56	10-11-94	23.03 tons
57	10-12-94	21.32 tons
58	10-12-94	23.33 tons
59	10-12-94	23.22 tons
60	10-12-94	23.42 tons
61	10-12-94	21.78 tons
62	10-12-94	22.42 tons
63	10-12-94	21.94 tons
64	10-12-94	22.60 tons
65	10-12-94	22.63 tons
66	10-12-94	22.98 tons
67	10-12-94	22.88 tons
68	10-12-94	23.73 tons
69	10-12-94	23.30 tons
70	10-12-94	20.94 tons
71	10-13-94	22.90 tons
72	10-13-94	21.17 tons
73	10-13-94	22.82 tons
74	10-13-94	28.24 tons
75	10-13-94	20.57 tons
76	10-17-94	21.85 tons
77	11-16-94	21.06 tons
78	11-16-94	23.81 tons
79	11-18-94	20.43 tons
80	11-29-94	22.10 tons

TOTAL 1,810.23 Tons



GIANT CEMENT COMPANY
 Post Office Box 218
 Harleyville, South Carolina 29448



Corporate & Sales:
 (803) 496-7880
 Plant:
 (803) 496-5033

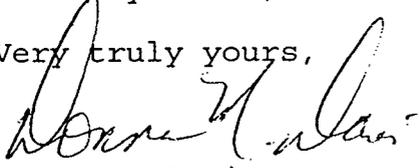
 * CERTIFICATE OF MATERIALS REUSE *

December 1, 1994

This certificate is to serve as evidence of total recovery of the material received from your company as follows:

	<u>DATE</u>	<u>MAN NO</u>	<u>QUANTITY</u>	<u>POUNDS</u>
T0850 / CONT. SOIL				
Beatrice Co., CT Corporation				
	94/11/16	00103	21.06	42120.00
	94/11/16	00101	20.43	40860.00
	94/11/16	00102	23.81	47620.00
	94/11/18	00105	22.10	44200.00
=====				
TOTAL	4		87.40	174800.00

This recovered material was used as a raw material supplement in our cement manufacturing, after first being thermally treated in our resource recovery kilns, resulting in its complete destruction.

Very truly yours,

 Donna M. Davis
 Facility Sales Manager

VCD/tlo

cc: Grr!

 * CERTIFICATE OF MATERIALS REUSE *

November 8, 1994

This certificate is to serve as evidence of total recovery of the material received from your company as follows:

<u>DATE</u>	<u>MAN NO</u>	<u>QUANTITY</u>	<u>POUNDS</u>
94/10/13	-----	28.24	56480.00
94/10/17	-----	21.85	43700.00
94/10/18	-----	22.88	45760.00
94/10/18	-----	20.94	41880.00
=====			
TOTAL	76	1722.83	3445660.00

This recovered material was used as a raw material supplement in our cement manufacturing, after first being thermally treated in our resource recovery kilns, resulting in its complete destruction.

Very truly yours,

Donna M. Davis
 Donna M. Davis
 Facility Sales Manager

VCD/tlo

cc: Grr!

 * CERTIFICATE OF MATERIALS REUSE *

November 8, 1994

This certificate is to serve as evidence of total recovery of the material received from your company as follows:

<u>DATE</u>	<u>MAN NO</u>	<u>QUANTITY</u>	<u>POUNDS</u>
94/10/07	-----	22.11	44220.00
94/10/07	-----	21.86	43720.00
94/10/08	-----	22.03	44060.00
94/10/08	-----	21.53	43060.00
94/10/08	-----	21.15	42300.00
94/10/08	-----	22.17	44340.00
94/10/08	-----	22.15	44300.00
94/10/08	-----	23.08	46160.00
94/10/09	-----	23.25	46500.00
94/10/10	-----	22.66	45320.00
94/10/10	-----	23.27	46540.00
94/10/10	-----	23.57	47140.00
94/10/10	-----	23.11	46220.00
94/10/10	-----	23.96	47920.00
94/10/10	-----	27.13	54260.00
94/10/11	-----	22.10	44200.00
94/10/11	-----	22.92	45840.00
94/10/11	-----	23.34	46680.00
94/10/11	-----	24.06	48120.00
94/10/11	-----	23.03	46060.00
94/10/11	-----	23.03	46060.00
94/10/12	-----	22.60	45200.00
94/10/12	-----	23.30	46600.00
94/10/12	-----	22.63	45260.00
94/10/12	-----	23.73	47460.00
94/10/12	-----	22.98	45960.00
94/10/12	-----	21.94	43880.00
94/10/12	-----	21.32	42640.00
94/10/12	-----	23.22	46440.00
94/10/12	-----	23.33	46660.00
94/10/12	-----	22.42	44840.00
94/10/12	-----	21.78	43560.00
94/10/12	-----	23.42	46840.00
94/10/13	-----	20.57	41140.00
94/10/13	-----	22.82	45640.00
94/10/13	-----	21.17	42340.00
94/10/13	-----	22.90	45800.00



GIANT CEMENT COMPANY
 Post Office Box 218
 Harleyville, South Carolina 29448

Corporate & Sales:
 (803) 496-7880
 Plant:
 (803) 496-5033

 * CERTIFICATE OF MATERIALS REUSE *

November 8, 1994

This certificate is to serve as evidence of total recovery of the material received from your company as follows:

	<u>DATE</u>	<u>MAN NO</u>	<u>QUANTITY</u>	<u>POUNDS</u>
T0850 / CONT. SOIL				
Beatrice Co., CT Corporation				
	94/10/04	-----	21.75	43500.00
	94/10/04	-----	21.94	43880.00
	94/10/04	-----	20.57	41140.00
	94/10/04	-----	22.96	45920.00
	94/10/04	-----	21.66	43320.00
	94/10/04	-----	21.77	43540.00
	94/10/04	-----	21.49	42980.00
	94/10/04	-----	22.32	44640.00
	94/10/04	-----	19.36	38720.00
	94/10/05	-----	23.30	46600.00
	94/10/05	-----	21.63	43260.00
	94/10/05	-----	23.18	46360.00
	94/10/05	-----	24.75	49500.00
	94/10/05	-----	21.32	42640.00
	94/10/05	-----	22.34	44680.00
	94/10/06	-----	22.90	45800.00
	94/10/06	-----	21.21	42420.00
	94/10/06	-----	22.67	45340.00
	94/10/06	-----	23.16	46320.00
	94/10/06	-----	22.24	44480.00
	94/10/06	-----	23.80	47600.00
	94/10/06	-----	22.56	45120.00
	94/10/06	-----	22.99	45980.00
	94/10/06	-----	23.13	46260.00
	94/10/06	-----	22.20	44400.00
	94/10/06	-----	22.83	45660.00
	94/10/06	-----	22.29	44580.00
	94/10/07	-----	24.57	49140.00
	94/10/07	-----	21.11	42220.00
	94/10/07	-----	23.45	46900.00
	94/10/07	-----	21.57	43140.00
	94/10/07	-----	23.06	46120.00
	94/10/07	-----	22.80	45600.00
	94/10/07	-----	23.75	47500.00
	94/10/07	-----	24.65	49300.00

APPENDIX Q

TSCA SOIL TRANSPORTATION AND DISPOSAL

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE

One Winter Street
Boston, Massachusetts 02108

DPU CERT,
18297

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MP617935552300053		Manifest Number 00053		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.			
3. Generator's Name and Mailing Address REMEDATION TECHNOLOGIES <i>RETRKE Co. of REMEDIATION Technologies</i> 9 POND LANE, DAMON HILL SQUARE, CONCORD, MA 278 SALEM ST 4. Generator's Phone (508) 935-5523 WOBURN MA 01891				A. State Manifest Document Number MA 1825247		B. Generator ID 248 SALEM STREET WOBURN, MA		C. Generator's Phone 508-935-5523			
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC. MA D 084814136				6. US EPA ID Number MAD084814136		D. Transporter's Phone 508-884-6151		E. State Trans ID			
7. Transporter 2 Company Name Wills Trucking				8. US EPA ID Number 0181016189113141019		F. Transporter's Phone 616-655-9381		G. State Facility ID Not Required			
9. Designated Facility Name and Site Address APTUS HIGHWAY 169N COFFEYVILLE, KS 67337				10. US EPA ID Number KSD981496156		H. Facility's Phone 316-251-6180		I. State Facility ID			
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)						12. Containers No.	13. Total Quantity	14. Unit Wt/Vol	15. Waste No.		
PCB, POLYCHLORINATED BIPHENYLS, UN2315, PG II, (ERG 31)						1	DT00015 k		PCB 2 MAD 2		
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code) PCB SOIL - 50 PPM a. CODE: PAP107197						K. Handling Codes for Wastes Listed Above D 8 A 2 15					
15. Special Handling Instructions and Additional Information "OUT OF SERVICE DATE 9/20/94" ADN# KF62B EMERGENCY CONTACT: INFOTRAC 800-535-5053 WO# 730585											
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.											
17. Transporter 1 Acknowledgment of Receipt of Materials Printed/Typed Name: <i>John D. Smith</i> Signature: <i>John D. Smith</i> Date: 10/14/94				18. Transporter 2 Acknowledgment of Receipt of Materials Printed/Typed Name: <i>John D. Smith</i> Signature: <i>John D. Smith</i> Date: 10/14/94				Date		Date	
19. Discrepancy Indication Space Discrepancies ok'd w/Jamie Greaver 10/14/94 11a) 1 DT = 20445 k.											
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.								Date			
Printed/Typed Name: MICKY MEANS				Signature: <i>Micky Means</i>				Date: 11/01/94			

MA H375E41 COPY>3: FACILITY MAILS TO GENERATOR

P.O. Box 1328
Coffeyville, KS 67337
(316) 251-6323

October 20, 1994

APTUS

CERTIFICATE OF DISPOSAL

NO. 24754

BEATRICE CO.
C/O REMEDIATION TECHNOLOGIES
278 SALEM STREET REAR
WOBURN, MA 01801-

A. THIS IS TO CERTIFY THAT THE HAZARDOUS SUBSTANCE MANIFESTED TO APTUS ON APTUS DOCUMENT #KF62B WAS DISPOSED OF IN ACCORDANCE WITH 40 CFR 761 (AND 40 CFR 264 IF APPLICABLE) AS OF 10/15/94. ATTACHED, IS A DETAIL REPORT WHICH IDENTIFIES THE DATE(S) OF DISPOSAL AND THE PROCESS UTILIZED FOR EACH WASTE LISTED.

B. UNDER CIVIL AND CRIMINAL PENALTIES OF LAW FOR THE MAKING OR SUBMISSION OF FALSE OR FRAUDULENT STATEMENTS OR REPRESENTATIONS (18 U.S. C. 1001 AND 15 U.S. C. 2615), I CERTIFY THAT THE INFORMATION CONTAINED IN OR ACCOMPANYING THIS DOCUMENT IS TRUE, ACCURATE AND COMPLETE. AS TO THE IDENTIFIED SECTIONS(S) (A.) OF THIS DOCUMENT FOR WHICH I CANNOT PERSONALLY VERIFY TRUTH AND ACCURACY, I CERTIFY AS THE COMPANY OFFICIAL HAVING SUPERVISORY RESPONSIBILITY FOR THE PERSONS WHO, ACTING UNDER MY DIRECT INSTRUCTIONS, MADE THE VERIFICATION THAT THIS INFORMATION IS TRUE, ACCURATE, AND COMPLETE.

APTUS
EPA ID # KSD981506025

Peter D. Hanley
PETER D. HANLEY, P.E.
MANAGER, ENVIRONMENTAL AFFAIRS



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE

One Winter Street
Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MP617935552B00052		Manifest Number 00052		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address REMEDIAL TECHNOLOGIES		4. Generator's Phone 508 935-5523		5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.		6. State Manifest Document Number MA H375244		7. State Facility ID 248 SALEM STREET WOBURN, MA	
9. Designated Facility Name and Site Address APTUS HIGHWAY 169N COFFEYVILLE, KS 67337		8. US EPA ID Number 08D068913409		10. US EPA ID Number 506025		8. Transporter's Phone 508 304-6151		9. State Facility ID 3112	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
a. RQ, POLYCHLORINATED BIPHENYLS, UN2315, PG II, (ERG 31)		No. 001 Type DT		00015		5		PCB 2 MAOR	
J. Additional Descriptions for Material Listed Above (include physical state and hazard code)		K. Handling Codes (for Wastes Listed Above)		D8 H (12)					
15. Special Handling Instructions and Additional Information "OUT OF SERVICE DATE 9/20/94" HDN# KF63B		EMERGENCY CONTACT: INFOTRAC 800-535-5053		WO 720585					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.		17. Transporter 1 Acknowledgement of Receipt of Materials		18. Transporter 2 Acknowledgement of Receipt of Materials		Date		Date	
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.		Printed/Typed Name Wayne Graham		Signature <i>Wayne Graham</i>		Month Day Year 10/10/94		Date	
19. Discrepancy Indication Space Discrepancies ok'd w/Jamie Greacer 10/14/94		Printed/Typed Name MICKEY MEANS		Signature <i>Mickey Means</i>		Month Day Year 10/11/94		Date	
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.		Printed/Typed Name MICKEY MEANS		Signature <i>Mickey Means</i>		Month Day Year 10/11/94		Date	

MA H375244 COPY>3: FACILITY MAILS TO GENERATOR

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

Aptus, Inc.
Environmental Services

P.O. Box 1328
Colleyville, KS 67337
(316) 251-6380

October 26, 1994

CERTIFICATE OF DISPOSAL

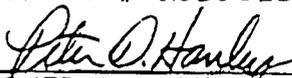
NO. 24844

BEATRICE CO.
C/O REMEDIATION TECHNOLOGIES
278 SALEM STREET REAR
WOBURN, MA 01801-

- A. THIS IS TO CERTIFY THAT THE HAZARDOUS SUBSTANCE MANIFESTED TO APTUS ON APTUS DOCUMENT #KFG3B WAS DISPOSED OF IN ACCORDANCE WITH 40 CFR 761 (AND 40 CFR 264 IF APPLICABLE) AS OF 10/24/94. ATTACHED, IS A DETAIL REPORT WHICH IDENTIFIES THE DATE(S) OF DISPOSAL AND THE PROCESS UTILIZED FOR EACH WASTE LISTED.
- B. UNDER CIVIL AND CRIMINAL PENALTIES OF LAW FOR THE MAKING OR SUBMISSION OF FALSE OR FRAUDULENT STATEMENTS OR REPRESENTATIONS (18 U.S. C. 1001 AND 15 U.S. C. 2615), I CERTIFY THAT THE INFORMATION CONTAINED IN OR ACCOMPANYING THIS DOCUMENT IS TRUE, ACCURATE AND COMPLETE. AS TO THE IDENTIFIED SECTIONS(S) (A.) OF THIS DOCUMENT FOR WHICH I CANNOT PERSONALLY VERIFY TRUTH AND ACCURACY, I CERTIFY AS THE COMPANY OFFICIAL HAVING SUPERVISORY RESPONSIBILITY FOR THE PERSONS WHO, ACTING UNDER MY DIRECT INSTRUCTIONS, MADE THE VERIFICATION THAT THIS INFORMATION IS TRUE, ACCURATE, AND COMPLETE.

APTUS

EPA ID # KSD981506025


PETER D. HANLEY, P.E.

MANAGER, ENVIRONMENTAL AFFAIRS

APPENDIX R

TAILINGS AND STUMPS TRANSPORTATION AND DISPOSAL

**TAILINGS
SHIPPING SUMMARY**

Load #	Arrival Date	Manifested Amount
1	10-18-94	22.94 tons
2	10-18-94	22.66 tons
3	10-18-94	24.33 tons
4	10-18-94	21.73 tons
5	10-18-94	23.01 tons
6	10-18-94	23.45 tons
7	10-18-94	21.78 tons
8	10-18-94	21.21 tons
9	10-19-94	21.91 tons
10	10-19-94	21.44 tons
11	10-19-94	23.34 tons
12	11-17-94	24.84 tons
13	11-18-94	21.55 tons
14	11-18-94	23.47 tons
15	12-16-94	18.68 tons
16	12-16-94	15.76 tons

TOTAL 352.1



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE

One Winter Street
Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MA P 6 1 7 9 3 5 5 5 2 3 0 0 1 0 8		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.					
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742						A. State Manifest Document Number MA H375030							
4. Generator's Phone (508) 371-1422						B. State Gen. ID BEATRICE COMPANY 248 SALEM ST., WOBURN, MA							
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.			6. US EPA ID Number MA D 0 8 4 8 1 4 1 3 6			C. State Trans. ID 37975 MA							
7. Transporter 2 Company Name			8. US EPA ID Number			D. Transporter's Phone 508 384-6151							
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 875 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43616-7571			10. US EPA ID Number OH 10 10 4 5 12 13 7 10 16			E. State Trans. ID							
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)						12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RQ(CHLORDANE, DOC, DO20), (ERG#31)						001 DIT 00015 Y						D 0 0 8 D 0 2 0	
b.													
c.													
d.													
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL a. 15698-001 S						K. Handling Codes for Wastes Listed Above a. SCLT b. DB1							
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053						15.76 T							
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.										Date Month Day Year XZX 58 14			
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.													
17. Transporter 1 Acknowledgement of Receipt of Materials						Signature Kevin Burt		Date Month Day Year 12/1/94					
18. Transporter 2 Acknowledgement of Receipt of Materials						Signature		Date					
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.										Date Month Day Year 12/1/94			
Printed/Typed Name Bob Solacki						Signature		Date					

In case of emergency or spill, immediately call the National Response Center at 1-800-424-9322.

GENERATOR

TRANSPORTER

FACILITY

MA H375030 COPY>3: FACILITY MAILLS TO GENERATOR

CERTIFICATE OF DISPOSAL

MP 617935523

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# _____

Manifest Document No. 00108

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698003	12 16 94	D81	1 TR	15.76

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE _____
TITLE Dale M. Partner

DATE 12-16-94

SCALE MASTER

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PINK — EPA

CERTIFICATE OF DISPOSAL

MP 0179355525

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# _____
Manifest Document No. 00107

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698 003	12 16 94	D81	1 TR	18.68

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE _____
TITLE Dale M. Pirtner
SCALE MASTER

DATE 12-16-94

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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE
One Winter Street
Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MP 5179355523	Manifest Document No. 00706	2. Page 1 of 4	Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742				A. State Manifest Document Number MA H375032		
4. Generator's Phone (508) 371-1422				B. State Gen. ID BEATRICE COMPANY 48 SALEM ST., WOBURN, MA		
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.		US EPA ID Number MA 0814814136		C. State Trans. ID MA 8303		
7. Transporter 2 Company Name		8. US EPA ID Number		D. Transporter's Phone 608 384-6151		
9. Designated Facility Name and Site Address ENVIOSAFE SERVICES OF OHIO 879 OTTER CREEK RD., P.O. BOX 16751 OPELON, OHIO 43515-7571		10. US EPA ID Number OH 104151214371015		E. State Trans. ID		
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				12. Containers No.	13. Total Quantity	14. Unit Wt/Vol
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RO(CHLORDANE, DO08, DO20), (ERG/31)				001	1000	Y
b.						
c.						
d.						
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL a. 15598-001				K. Handling Codes for Wastes Listed Above <i>[Handwritten Signature]</i>		
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 2155T 43100P.						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.						
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature <i>[Signature]</i>		Date 11/17/94		
18. Transporter 2 Acknowledgement of Receipt of Materials		Signature <i>[Signature]</i>		Date 11/17/94		
19. Discrepancy Indication Space						
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.				Date		
Printed/Typed Name EDD LITTLE		Signature <i>[Signature]</i>		Date 11/17/94		

MA H375032 COPY>3 FACILITY MAILS TO GENERATOR

ESOI/Envirosafe Services of Ohio, Inc.
Associated Chemical and Environmental Services, Inc.
876 Otter Creek Rd., P.O. Box 167571
Oregon, Ohio 43616-7571

USEPA ID # 3706
Ohio EPA C 31

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# _____
Manifest Document No. 00106

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698003	11 18 94	D81	1 TR	21.55

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE Dale M. Partner DATE 11-18-94

TITLE SCALE MASTER

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Form 101



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE
One Winter Street
Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MP6179355523000000	Manifest Document No. 000000	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742				A. State Manifest Document Number MA H374891		
4. Generator's Phone (508) 371-1422				B. State Gen. ID BEATRICE CO 24 SALEM ST., WOBURN, MA		
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.		6. US EPA ID Number MA D084814136		C. State Trans. ID OH T561KE		
7. Transporter 2 Company Name WILLS TRUCKING		8. US EPA ID Number OH D068913A9		D. Transporter's Phone (508) 384-6451		
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 876 OTTER CREEK ROAD, P.O. BOX 16751 OREGON, OH 43616-7571		10. US EPA ID Number OH D045243706		E. State Trans. ID OH T561KE		
				F. Transporter's Phone (508) 384-6237		
				G. State Facility's ID Not Required		
				H. Facility's Phone (419) 255-5100		
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				12. Containers No.	13. Total Quantity	14. Unit Wt/Vol
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT) RQ(CHLORDANE, D008, D020), (ERG#31)						0008
b.						0020
c.						
d.						
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL: 15698-001				K. Handling Codes for Wastes Listed Above <i>[Handwritten codes]</i>		
15. Special Handling Instructions and Additional Information: EMERGENCY CONTACT: INFOTRAC 800-535-5053						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.						
Printed/Typed Name <i>[Signature]</i>				Signature <i>[Signature]</i>		Date 11/16/94
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature <i>[Signature]</i>		Date 11/16/94
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature <i>[Signature]</i>		Date 11/16/94
19. Discrepancy Indication Space						
Printed/Typed Name <i>[Signature]</i>				Signature <i>[Signature]</i>		Date 11/16/94

In case of emergency or spill, immediately call the National Response Center (800) 424-8802.

GENERATOR

TRANSPORTER

FACILITY

Form Approved OMB No. 2050-0039. Expires 9-30-94

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY>3: FACILITY MAILES TO GENERATOR

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# MP6179355523

Manifest Document No. 00104

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698 003	11, 18, 94	D811	1 TR	23.47

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE Dale M. Pentner
TITLE SCALE MASTER

DATE 11-18-94

DISTRIBUTION OF COPIES
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PINK — EPA



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE
One Winter Street
Boston, Massachusetts 02108

RECEIVED
NOV 23 1994

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MIP6117935552300000	Manifest Document No. 000000	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742				A. State Manifest Document Number MA H374892		
4. Generator's Phone (508) 371-1422				B. State Gen. ID 24 SALEM ST., WOBURN, MA		
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.		6. US EPA ID Number MA D 0 8 4 8 1 4 1 3 6		C. State Trans. ID OH T 9 7 2 K A		
7. Transporter 2 Company Name WILLS TRUCKING		8. US EPA ID Number OH D 1 0 6 8 9 1 3 4 9		D. Transporter's Phone 508-384-6151		
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 876 OTTER CREEK ROAD, P.O. BOX 16751 OREGON, OH 43616-7571				E. State Trans. ID 800-800-6237		
				F. Transporter's Phone ()		
				G. State Facility's ID Not Required		
				H. Facility's Phone (419) 255-5100		
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				12. Containers No.	13. Total Quantity	14. Unit Wt/Vol
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT) RQ(CHLORDANE, D008, D020), (ERG#31)						
b.						
c.						
d.						
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL:				K. Handling Codes for Wastes Listed Above		
a. 15698-001/3				a. D 1 5 Y		
b.				b.		
c.				c.		
d.				d.		
15. Special Handling Instructions and Additional Information: EMERGENCY CONTACT: INFOTRAC 800-535-5053 2484T 49680P						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.						
Printed/Typed Name A. K. Williams (Agent for Beatrice)				Signature <i>[Signature]</i>		Date 11/15/94
17. Transporter 1 Acknowledgement of Receipt of Materials						
Printed/Typed Name Buck Ford				Signature <i>[Signature]</i>		Date 11/15/94
18. Transporter 2 Acknowledgement of Receipt of Materials						
Printed/Typed Name				Signature		Date
19. Discrepancy Indication Space						
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.						
Printed/Typed Name JERRY KAE				Signature <i>[Signature]</i>		Date 11/15/94

GENERATOR

TRANSPORTER

FACILITY

MA H374892 COPY>3: FACILITY MAILLS TO GENERATOR

ESOI/Envirosafe Services of Ohio, Inc.
Associated Chemical and Environmental Services, Inc.
876 Otter Creek Rd., P.O. Box 167571
Columbus, Ohio 43616-7571

USEPA ID OHD-045848706
Ohio EPA 03-48-0092 23

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# MP 6174555523

Manifest Document No. 00100

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698003	11 17 94	DR	1 TR	24.84

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE Dale M Partner
TITLE SCALE MASTER

DATE 11-17-94

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Form 101

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE

One Winter Street
Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MA P 15 11 17 19 3 5 5 5 2 3 100089		Manifest Document No. 100089	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.			
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742 4. Generator's Phone (508) 371-1422					A. State Manifest Document Number MA H375033				
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.					6. US EPA ID Number MA D 10 12 14 18 11 14 11 2 15				
7. Transporter 2 Company Name WILLS TRUCKING, INC					8. US EPA ID Number OH D 10 16 8 8 1 3 4 0 9				
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 876 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43615-7571					10. US EPA ID Number OH D 10 14 15 12 14 13 17 10 15				
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)					12. Containers		13. Total Quantity	14. Unit Wt/Vol	15. Waste No.
					No.	Type			
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RO(CHLORDANE, D009, D020), (ERG#31)					20	1	00015	Y	0008 0020
b.									
c.									
d.									
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL a. 15698-001					K. Handling Codes for Wastes Listed Above <i>[Signature]</i>				
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INEQTRAC 800-535-5053 2334T 4680P.									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name <i>[Signature]</i>					Signature <i>[Signature]</i>		Date 10/17/94		
17. Transporter 1 Acknowledgement of Receipt of Materials					Signature <i>[Signature]</i>		Date 10/17/94		
18. Transporter 2 Acknowledgement of Receipt of Materials					Signature <i>[Signature]</i>		Date 10/17/94		
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.					Signature <i>[Signature]</i>		Date 10/17/94		

GENERATOR

TRANSPORTER

FACILITY

MA H375033 COPY>3: FACILITY MAILLS TO GENERATOR

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# MP6174355523
Manifest Document No. 00087

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698001	10, 19, 94	DR!	1 TR	23.34T

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE Dale M. Pentner DATE 10.19.94
TITLE _____

SCALE MASTER

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PINK — EPA



COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF HAZARDOUS WASTE
 One Winter Street
 Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MA P 6 1 1 7 9 3 5 5 5 2 3 0 0 0 8 8		Manifest Document No. 00088		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.					
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742						A. State Manifest Document Number MA H375037							
4. Generator's Phone (508) 371-1422						B. State Gen. ID BEATRICE COMPANY 248 SALEM ST., WOBURN, MA							
5. Transporter 1 Company Name EPANKLIA ENVIRONMENTAL SERV., INC.			6. US EPA ID Number MA D 0 8 4 0 1 1 4 1 2 1 6			C. State Trans. ID PHV 0 7-912-HE							
7. Transporter 2 Company Name WILLS TRUCKING INC			8. US EPA ID Number 0 H 0 0 6 8 9 1 3 7 0 9			D. Transporter's Phone (508) 384-6151							
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 876 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43616-7571						10. US EPA ID Number OH 11 D 10 1 4 1 6 1 2 1 4 1 2 7 1 0 1 6							
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)						12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RO(CHLORDANE, 0000, D020), (ERG#31)						No. Type		Quantity		Wt/Vol		Waste No.	
						001 011		00015		Y		0008 0020	
b.													
c.													
d.													
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL a. 15698-001						K. Handling Codes for Wastes Listed Above							
b.						c.							
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 2144T 42880P						Signature: <i>[Handwritten Signature]</i>							
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.										Date: 10/17/94			
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.										Date: 10/17/94			
17. Transporter 1 Acknowledgement of Receipt of Materials						Printed/Typed Name DONALD A NELSON		Signature <i>[Handwritten Signature]</i>		Date 10/17/94			
18. Transporter 2 Acknowledgement of Receipt of Materials						Printed/Typed Name		Signature		Date			
19. Discrepancy Indication Space										Date			
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.										Date: 10/17/94			
Printed/Typed Name ERRY ICKE						Signature <i>[Handwritten Signature]</i>		Date 10/17/94					

Form Approved OMB No. 2050-0039. Expires 9-30-94

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY>3: FACILITY MAILS TO GENERATOR

MA H375037 COPY>3: FACILITY MAILS TO GENERATOR

ESOI/Envirosafe Services of Ohio, Inc.
Associated Chemical and Environmental Services, Inc.
876 Otter Creek Rd., P.O. Box 167571
Oregon, Ohio 43616-7571

USEPA ID OHD 045243706
Ohio EPA 03-48-0092

20

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# MP6179355523
Manifest Document No. 00088

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698 001	10, 19, 94	D81	1 TR	21.401

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

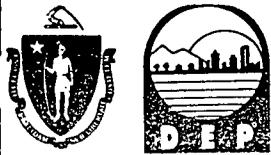
I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE Dale M. Partner
TITLE SCALE MASTER

DATE 10-19-94

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CANARY — Generator
PINK — EPA

ESOI C/D 56-1650-3P
Form 101



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE
One Winter Street
Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MP617935552360087		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.					
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742						A. State Manifest Document Number MA H375038							
4. Generator's Phone (508) 371-1422						B. State Gen. ID BEATRICE COMPANY 248 SALEM ST., WOBURN, MA							
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.			6. US EPA ID Number MA8108481111316			C. State Trans. ID 1780510 RA							
7. Transporter 2 Company Name WILLS TRUCKING, INC			8. US EPA ID Number OHAP68913909			D. Transporter's Phone 608 384-6151							
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 875 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43616-7571						E. State Trans. ID							
10. US EPA ID Number OH101041512412171016						F. Transporter's Phone ()							
						G. State Facility's ID Not Required							
						H. Facility's Phone 419 255-5100							
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)						12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RQ(CHLORDANE, 0008, 0020), (ERG#31)						001 DIT		0015		Y		0008 0020	
b.													
c.													
d.													
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL						K. Handling Codes for Wastes Listed Above							
a. 15698-001						a.							
b.						b.							
c.						c.							
d.						d.							
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 2191T 43820P.													
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.													
Printed/Typed Name Paul Laguidara (Agent for Beatrice)								Signature <i>Paul Laguidara</i>		Date 10/1/94			
17. Transporter 1 Acknowledgement of Receipt of Materials				Printed/Typed Name Bill Lutz				Signature <i>Bill Lutz</i>		Date 10/1/94			
18. Transporter 2 Acknowledgement of Receipt of Materials				Printed/Typed Name				Signature		Date			
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.													
Printed/Typed Name Eddy Pierce								Signature <i>Eddy Pierce</i>		Date 1/11/94			

MA H375038 COPY>3: FACILITY MAILS TO GENERATOR

ESOI/Envirosafe Services of Ohio, Inc.
Associated Chemical and Environmental Services, Inc.
876 Otter Creek Rd., P.O. Box 167571
Oregon, Ohio 43616-7571

USEPA ID C/D 56-1650-3P 23
Ohio EPA 03-48-0092

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# MP617955523

Manifest Document No. 00087

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698001	10 19 94	D81	1 TR	21.91T

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

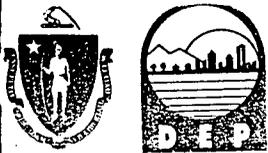
SIGNATURE _____
TITLE Dale M. Peatner

DATE 10-19-94

SCALE MASTER

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PINK — EPA

ESOI C/D 56-1650-3P
Form 101



**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE
One Winter Street
Boston, Massachusetts 02108**

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MA P 6 1 7 9 3 5 5 5 2 3 0 0 8 6		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.			
		3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742 4. Generator's Phone (508) 371-1422						A. State Manifest Document Number MA H375039		B. State Gen. ID BEATRICE COMPANY 248 SALEM ST., WOBURN, MA	
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.				6. US EPA ID Number MA D 1 0 8 4 8 1 1 4 1 3 6		C. State Trans. ID 37977MA		D. Transporter's Phone (508) 384-6151		E. State Trans. ID	
7. Transporter 2 Company Name				8. US EPA ID Number		F. Transporter's Phone ()		G. State Facility's ID Not Required		H. Facility's Phone (419) 255-5100	
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 875 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43616-7571				10. US EPA ID Number OH D 1 0 4 1 5 1 4 3 7 0 1 6		12. Containers		13. Total Quantity		14. Unit Wt/Vol	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)						No.		Type		Waste No.	
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RQ (CHLORDANE, D008, D020), (ERG 31)						001		DIT		00015 Y 0008 0020	
b.											
c.											
d.											
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL a. 15698-001						K. Handling Codes for Wastes Listed Above SCLF D80		c.		f. f.	
b.						d.		e.		f.	
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 42420P 21.2IT											
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.											
Printed/Typed Name M. Adrichm (Beatrice)						Signature <i>[Signature]</i>			Date 10/17/94		
17. Transporter 1 Acknowledgement of Receipt of Materials						Signature <i>[Signature]</i>			Date 10/17/94		
Printed/Typed Name Phil Provost						Signature <i>[Signature]</i>			Date 10/17/94		
18. Transporter 2 Acknowledgement of Receipt of Materials						Signature			Date		
Printed/Typed Name						Signature			Date		
19. Discrepancy Indication Space											
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.											
Printed/Typed Name Bob Sobecti						Signature <i>[Signature]</i>			Date 10/18/94		

MA H375039 COPY>3: FACILITY MAILS TO GENERATOR

ESOI/Envirosafe Services of Ohio, Inc.
Associated Chemical and Environmental Services, Inc.
876 Otter Creek Rd., P.O. Box 167571
Oregon, Ohio 43616-7571

USEPA ID ~~OH-045243706~~ 40
Ohio EPA 03-48-0092

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name BEATRICE MPG17935523
Generator USEPA ID# _____

Manifest Document No. 00086

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698001	10, 18, 94	D081	1 TR	21.21

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

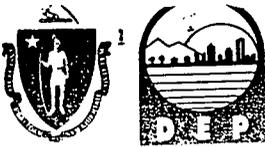
I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE _____ DATE 10.18.94
TITLE Dale M. Partner

SCALE MASTER

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ESOI C/D 56-1650-3P
Form 101



COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF HAZARDOUS WASTE
 One Winter Street
 Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MA P 6 1 7 9 3 5 5 5 2 3 0 0 0 0 5		Manifest Document No. 000005		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.					
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742						A. State Manifest Document Number MA H375034							
4. Generator's Phone (508) 371-1422						B. State Gen. ID BEATRICE COMPANY 248 SALEM ST., WOBURN, MA							
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.			6. US EPA ID Number MA D 0 8 4 8 1 4 1 3 6			C. State Trans. ID 37978-MA							
7. Transporter 2 Company Name			8. US EPA ID Number			D. Transporter's Phone 508-384-6151							
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 875 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43616-7571			10. US EPA ID Number OH D 0 4 5 2 4 3 7 0 6			E. State Trans. ID							
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)						12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RQ (CHLORDANE, DOB, DO20), (ERG/31)						201 DIT 00015		Y		0008		0020	
b. PR													
c.													
d.													
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL						K. Handling Codes for Wastes Listed Above							
a. 15698-001						a. SCL F							
b.						b. D8 @							
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053						43560P 21.78T							
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.										If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.			
17. Transporter 1 Acknowledgement of Receipt of Materials						Printed/Typed Name Paul Lacivina (Agent for Beatrice)		Signature <i>[Signature]</i>		Date 10/17/94			
18. Transporter 2 Acknowledgement of Receipt of Materials						Printed/Typed Name STEPHEN S. VIUGI		Signature <i>[Signature]</i>		Date 10/17/94			
19. Discrepancy Indication Space						Printed/Typed Name		Signature		Date			
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.						Printed/Typed Name		Signature		Date			

Form Approved OMB No. 2050-0039. Expires 9-30-94

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY>3: FACILITY MAILS TO GENERATOR

In case of emergency of spill, immediately call the National Response Center (800) 424-9222.

FACILITY MAILS TO GENERATOR

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name

BEATRICE

Generator USEPA ID#

MP 6179355523

Manifest Document No.

000 85

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
<u>15698001</u>	<u>10 18 94</u>	<u>D81</u>	<u>1 TR</u>	<u>21.78 T</u>

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE

Dale M. Portner

DATE

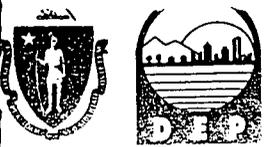
10.18.94

TITLE

SCALE MASTER

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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE

One Winter Street
Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MA P 5 1 7 9 3 5 5 5 2 3 0007		Manifest Document No. 0007		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.					
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742				A. State Manifest Document Number MA H375035		B. State Gen. ID BEATRICE COMPANY 248 SALEM ST., WOBURN, MA							
4. Generator's Phone (508) 371-1422				C. State Trans. ID		D. Transporter's Phone 608 384-6151							
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.		6. US EPA ID Number MA ID 0 8 4 0 1 4 1 3 6		E. State Trans. ID		F. Transporter's Phone ()							
7. Transporter 2 Company Name		8. US EPA ID Number		G. State Facility's ID Not Required		H. Facility's Phone 419 255-5100							
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 876 OTTER CREEK RD., P.O. BOX 16701 OREGON, OHIO 43616-7571				10. US EPA ID Number OH ID 0 1 4 3 2 4 3 7 0 1 6									
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)						12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RQ (CHLORDANE, BOB, D020), (ERG/31)						201		1000		Y		0008 0020	
b. (K)													
c.													
d.													
J. Additional Descriptions for Materials Listed Above (include physical state and hazard class) HAZARDOUS CONTAMINATED SOIL						K. Handling Codes for Wastes Listed Above							
a. 15698-001			c.			a.			c.				
b.						b. (Signature)							
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 23.45T 46900P.													
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.													
Printed/Typed Name Vincent Adams (Agent for Beatrice)						Signature (Signature)		Date Month Day Year 10/17/94					
17. Transporter 1 Acknowledgement of Receipt of Materials						Signature (Signature)		Date Month Day Year 10/17/94					
Printed/Typed Name Vincent Adams						Signature (Signature)		Date Month Day Year 10/17/94					
18. Transporter 2 Acknowledgement of Receipt of Materials						Signature (Signature)		Date Month Day Year 10/17/94					
Printed/Typed Name						Signature		Date Month Day Year					
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.													
Printed/Typed Name ERRY PICKER						Signature (Signature)		Date Month Day Year 10/18/94					

Form Approved OMB No. 2050-0039. Expires 9-30-94

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY>3: FACILITY FAILS TO GENERATOR

MA H375035 COPY>3: FACILITY FAILS TO GENERATOR

ESOI/Envirosafe Services of Ohio, Inc.
Associated Chemical and Environmental Services, Inc.
876 Otter Creek Rd., P.O. Box 167571
Oregon, Ohio 43616-7571

USEPA ID ~~04523706~~ 43
Ohio EPA 03-48-0092

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name Beatrice Co. Generator USEPA ID# MP6179355523
Manifest Document No. 00084

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698-001	10/18/94	D081	1 TR	23.45T

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

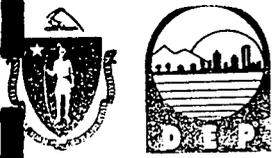
SIGNATURE _____
TITLE _____
Dale M. Bertner

DATE 10/18/94

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ESOI C/D 56-1650-3P
Form 101



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE

One Winter Street
Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. M P 6 1 7 9 3 5 5 2 3	Manifest Document No. 0008 B	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742				A. State Manifest Document Number MA H375036		
4. Generator's Phone (508) 371-1422				B. State Gen. ID BEATRICE COMPANY 248 SALEM ST., WOBURN, MA		
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.		6. US EPA ID Number M A D 0 8 4 8 1 4 1 3 6		C. State Trans. ID 18 B 6 B 0 1 M E		
7. Transporter 2 Company Name		8. US EPA ID Number		D. Transporter's Phone (508) 384-6151		
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 876 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43516-7571		10. US EPA ID Number O H I O 1 2 4 5 1 2 1 3 7 1 6		E. State Trans. ID		
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				12. Containers No.	13. Total Quantity	14. Unit Wt/Vol
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RQ (CHLORDANE, DOB, DO20), (ERG#31) CR				001	1000 L	0008
b.						0020
c.						
d.						
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL				K. Handling Codes for Wastes Listed Above		
a. 15698-001		c.		a. SCLF		
b.		d.		b. D80		
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 46020P 23.01T						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.						
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature		Date
Printed/Typed Name Paul Lavichina				[Signature]		Month Day Year 11 17 94
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date
Printed/Typed Name Paul Lavichina				[Signature]		Month Day Year 10 11 94
19. Discrepancy Indication Space				Signature		Date
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.				Signature		Date
Printed/Typed Name Bob Sabecki				[Signature]		Month Day Year 10 18 94

MA H375036 COPY>3: FACILITY MAILS TO GENERATOR

ESOI/Envirosafe Services of Ohio, Inc.
Associated Chemical and Environmental Services, Inc.
876 Otter Creek Rd., P.O. Box 167571
Oregon, Ohio 43616-7571

USEPA ID OHD 045243706
Ohio EPA ~~03-48-0092~~

31

CERTIFICATE OF DISPOSAL

M P 6179355523

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# _____

Manifest Document No. 00083

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15678 001	10 18 94	D81	1 TR	23.017

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE _____ DATE 10.18.94

TITLE Dale M. Portner
SCALE MASTER

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COMMONWEALTH OF MASSACHUSETTS
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF HAZARDOUS WASTE
 One Winter Street
 Boston, Massachusetts 02108

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UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MA P 16 1 1 7 9 3 5 5 5 2 1 3 0 0 0 6 2		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.			
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742				6. US EPA ID Number MA 1 D 1 0 3 1 4 8 1 1 4 1 1 3 1 5		A. State Manifest Document Number MA H375040					
4. Generator's Phone (508) 371-1422				7. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.		B. State Gen. ID BEATRICE COMPANY 248 SALEM ST., WOBURN, MA					
5. Transporter 1 Company Name				8. US EPA ID Number		C. State Trans. ID MA 6 3 0 3					
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 875 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43615-7571				10. US EPA ID Number 10 1 4 1 0 1 0 1 4 1 5 1 2 1 4 1 3 1 7 1 0 1 0		D. Transporter's Phone (508) 384-6151					
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				12. Containers		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RC(CHLORDANE, D008, D020), (ERG#31)				001		DIT		0015		0008 0020	
b.											
c.											
d.											
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL a. 15698-001				c.		K. Handling Codes for Wastes Listed Above a. b. c. d.					
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053				20667		45320					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.				Printed/Typed Name Mr. Alan Davis (Asst. Gen. Manager)		Signature [Signature]		Date 10/17/84			
17. Transporter 1 Acknowledgment of Receipt of Materials				Printed/Typed Name Bradley S. Brigham Jr.		Signature Bradley S. Brigham Jr.		Date 10/17/84			
18. Transporter 2 Acknowledgment of Receipt of Materials				Printed/Typed Name		Signature		Date			
19. Discrepancy Indication Space											
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.				Printed/Typed Name [Signature]		Signature [Signature]		Date 10/18/84			

Form Approved OMB No. 2050-0039, Expires 9-30-94

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY>3: FACILITY MAILLS TO GENERATOR

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FACILITY

ESOI/Envirosafe Services of Ohio, Inc.
Associated Chemical and Environmental Services, Inc.
876 Otter Creek Rd., P.O. Box 167571
Oregon, Ohio 43616-7571

USEPA ID# OH 035243706
Ohio EPA 03-48-0092

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name Beatrice Company Generator USEPA ID# MP61793555
Manifest Document No. 00082

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698001	10 18 94	D081	1 TR	22.66T

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE Dale M. Postner
TITLE SCALE MASTER

DATE 10/18/94

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE**
One Winter Street
Boston, Massachusetts 02108

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UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MA P 16 1 7 9 3 5 5 5 2 3 8 0 0 8 7		Manifest Document No. 87		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742				6. US EPA ID Number MA J D 10 8 1 4 8 1 1 4 1 1 3 1 5		A. State Manifest Document Number MA H375043		B. State Gen. ID BEATRICE COMPANY 248 SALEM ST., WOBURN, MA	
4. Generator's Phone (508) 371-1422				5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.		C. State Trans. ID 38544 MA		D. Transporter's Phone 508 384-6151	
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 876 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43616-7571				10. US EPA ID Number OH 10 10 14 15 12 14 13 17 10 16		E. State Trans. ID		F. Transporter's Phone ()	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				12. Containers		13. Total Quantity		14. Unit Wt/Vol	
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), PO(CHLORDANE, D000, D020), (EPC#31)				No. Type		Quantity		Waste No.	
								0008 0020	
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL a. 15698-001				K. Handling Codes for Wastes Listed Above					
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 2294T 45880P?									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.									
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature		Date		Month Day Year	
Printed/Typed Name CML LACIVONA (Agent for Beatrice)				Signature		Date		10 17 94	
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date		Month Day Year	
Printed/Typed Name BRADLEY R. RICHMOND				Signature		Date		10 17 94	
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.									
Printed/Typed Name JERRY LICKLE				Signature		Date		10 17 94	

GENERATOR

TRANSPORTER

FACILITY

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ESOI/Envirosafe Services of Ohio, Inc.
Associated Chemical and Environmental Services, Inc.
876 Otter Creek Rd., P.O. Box 167571
Oregon, Ohio 43616-7571

USEPA ID 5243706
Ohio EPA 03-48-0092

20

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# MP6179355523

Manifest Document No. 00081

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698001	10 18 94	D81	1 TR	22.947

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

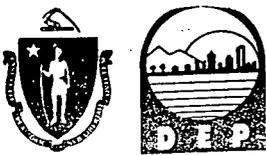
SIGNATURE Dale M. Partner

DATE 10-18-94

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE
One Winter Street
Boston, Massachusetts 02108**

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UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MA P 16 1 7 9 3 5 5 5 2 3 0 0 0 8 0		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.					
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742						A. State Manifest Document Number MA H375041							
4. Generator's Phone (508) 371-1422						B. State Gen. ID BEATRICE COMPANY 48 SALEM ST., WOBURN, MA							
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.				6. US EPA ID Number MA 10 10 18 14 18 11 14 11 13 15		C. State Trans. ID							
7. Transporter 2 Company Name				8. US EPA ID Number		D. Transporter's Phone 508-384-6151							
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 876 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43516-7571						10. US EPA ID Number OH 00 14 15 12 14 13 17 10 15							
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RO(CHLORDANE, 0009, 0020), (ERG#31)						12. Containers No. Type		13. Total Quantity		14. Unit Wt/Vol		15. Waste No.	
						001 0 1 1		00015		Y		0008 0020	
b.													
c.													
d.													
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL a. 15698-001						K. Handling Codes for Wastes Listed Above a. SCFF b. P80							
b.						c.							
c.						d.							
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 L1346OP 21.73T													
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.													
Printed/Typed Name Ann L Aquilino (Agent for Beatrice)						Signature <i>[Signature]</i>		Date 10/17/94					
17. Transporter 1 Acknowledgement of Receipt of Materials						Signature Edward Stumbaugh		Date 10/17/94					
Printed/Typed Name Edward Stumbaugh						Signature <i>[Signature]</i>		Date 10/17/94					
18. Transporter 2 Acknowledgement of Receipt of Materials						Signature		Date					
Printed/Typed Name						Signature		Date					
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.													
Printed/Typed Name Bob Sobeki						Signature <i>[Signature]</i>		Date 11/04/94					

MA H375041 COPY>3: FACILITY MAILS TO GENERATOR

ESOI/Envirosafe Services of Ohio, Inc.
 Associated Chemical and Environmental Services, Inc.
 876 Otter Creek Rd., P.O. Box 167571
 Oregon, Ohio 43616-7571

USEPA ID OHD 045243706
 Ohio EPA 03-48-0092

17

CERTIFICATE OF DISPOSAL

PART A — Generator Information

Generator Name BEATRICE CO Generator USEPA ID# MP6179355523
 Manifest Document No. 00080

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698001	10 18 94	D81	1 TR	21.73

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE Dale M. Pertner

DATE 10-18-94

TITLE _____

SCALE MASTER

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DIVISION OF HAZARDOUS WASTE
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UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. MP 51793552300079		Manifest Document No. 0079		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address BEATRICE COMPANY C/O RETEC 9 POND LANE, CONCORD, MA 01742				6. US EPA ID Number MA 0084811136		A. State Manifest Document Number MA H375042		B. State Gen. ID BEATRICE COMPANY 248 SALEM ST., WOBURN, MA	
4. Generator's Phone (508) 371-1422				7. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.		C. State Trans. ID		D. Transporter's Phone 608-384-6151	
5. Transporter 1 Company Name FRANKLIN ENVIRONMENTAL SERV., INC.				8. US EPA ID Number		E. State Trans. ID		F. Transporter's Phone ()	
9. Designated Facility Name and Site Address ENVIROSAFE SERVICES OF OHIO 876 OTTER CREEK RD., P.O. BOX 16751 OREGON, OHIO 43616-7571				10. US EPA ID Number OH 0452437015		G. State Facility's ID Not Required		H. Facility's Phone 419 255-5100	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)						12. Containers No.	13. Total Quantity	14. Unit Wt/Vol	15. Waste No.
a. HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III (MARINE POLLUTANT), RQ (CHLORDANE, 0008, D020), (ERG#31)						0010100015	Y	0008	0020
b.									
c.									
d.									
J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.) HAZARDOUS CONTAMINATED SOIL						K. Handling Codes for Wastes Listed Above			
a. 15698-001						b. SC1A		c.	
b.						D&P		d.	
15. Special Handling Instructions and Additional Information EMERGENCY CONTACT: INFOTRAC 800-535-5053 48660P 24.33T									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.									
17. Transporter 1 Acknowledgement of Receipt of Materials						Signature		Date	
Printed/Typed Name Ant Laquidra (Agent for Beatrice)						[Signature]		Month Day Year 10/17/94	
18. Transporter 2 Acknowledgement of Receipt of Materials						Signature		Date	
Printed/Typed Name Buck Ford						[Signature]		Month Day Year 10/17/94	
19. Discrepancy Indication Space						Signature		Date	
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.						Signature		Date	
Printed/Typed Name Bob Sabocki						[Signature]		Month Day Year 10/18/94	

In case of emergency or spill, immediately call the National Response Center (800) 424-9332.

GENERATOR

TRANSPORTER

FACILITY

MA H375042 CPT123 FACILITY MAILS TO GENERATOR

ESOI/Envirosafe Services of Ohio, Inc.
Associated Chemical and Environmental Services, Inc.
876 Otter Creek Rd., P.O. Box 167571
Oregon, Ohio 43616-7571

USEPA ID: OHD 045243706
Ohio EPA 03-48-0092

19

CERTIFICATE OF DISPOSAL

MP6179355523

PART A — Generator Information

Generator Name BEATRICE Generator USEPA ID# _____

Manifest Document No. 00079

PART B — Waste Disposal Information

Product Code Number	Disposal Date Mo. Day Year	Disposal Method	Container No. Type	Weight
15698001	10, 18, 94	D811	1 TR	24,337

Disposal Method = D081-Landfill; D082-Landfarm; T04-Treatment

Container Types = DR-Drum; TR-Truck; CT-Cargo Tanker; VT-Vacuum Tanker; RO-Rolloff

I certify receipt and disposal of the above identified wastes at this facility. I certify that the above described wastes were disposed according to all applicable state & federal permits and requirements imposed by the generator.

SIGNATURE Dale M. Portner DATE 10.18.94
TITLE SCALE MASTER

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APPENDIX S

MIXED CONTAMINANT SOIL

COMPLIANCE SAMPLING PLAN

This appendix was originally presented in the 100% Design Report Mixed Contaminant Soils as Appendix H.

Table of Contents

No.	Section	Page No.
1.0	Introduction	1
2.0	Compliance Sampling	1
3.0	References	8

List of Figures

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Attachments

- H-1 Variance Calculations
- H-2 Number of Compliance Sample Calculations
- H-3 Random Coordinate Calculations

1.0 INTRODUCTION

Compliance sampling of the soil is necessary to ensure the mixed-contaminant soil has been remediated to site clean-up levels. This Compliance Sampling Plan is a supplemental document to the Design Report for Mixed Contaminant Soils at the Wildwood property. Refer to the Design Report for site history and background.

Compliance samples will be collected to verify that the excavation levels specified in the Consent Decree for mixed contaminant soils are attained in the areas of excavation. The clean-up levels are as follows:

Mixed Contaminant Soil Cleanup Goals

COMPOUND	BASIS	TARGET SOIL CONCENTRATION (ppm)
Chlordane	R	6.140
4,4-DDT	R	23.500
*ΣcPAHs	R	0.690
PCBs	R	1.040
Lead	B	640.0

(Source: EPA, 1990, Consent Decree, Appendix II, Pg.5)

*The cPAHs are: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)perylene. This level refers to the total of all cPAHs at any one location.

2.0 COMPLIANCE SAMPLING

The methods developed in this compliance sampling plan are based on the EPA guidance document "Methods for Evaluating the Attainment of Cleanup Standards" (EPA, 1989). The EPA guidance document describes a statistical method for determining with a specified level of confidence whether site remediation has achieved the cleanup standards. Compliance samples will be collected after all possible impacted soils have been excavated in each area. These samples will demonstrate that the mean concentrations of each of the mixed contaminants in the areas of excavation are below soil action levels established in the Consent Decree. The mean concentration was chosen to demonstrate that the concentration of the mixed contaminants in the areas of excavation are below the cleanup standards because the areas of concern are small and fairly uniform in contaminant concentration. The larger uncontaminated areas outside the areas of excavation are excluded from the mean calculation ensuring that an inaccurate dilution of the mean concentration does not occur.

The EPA guidance document describes a methodology that includes calculating the number of compliance samples necessary to determine if the site remediation has achieved the cleanup standards, based on the variability of contaminant concentrations. Once the number of compliance samples has been determined, and the samples collected, the guidance document provides a method for determining with a specified level of confidence whether the site has achieved the cleanup standards for each particular contaminant. If the site is declared below cleanup levels for all mixed contaminants, no further excavation of soils is necessary. If, however, the site is declared above cleanup criteria with respect to a particular contaminant, further excavation and sampling will be necessary to conclude the site is clean.

2.1 Determining the Number of Compliance Samples

The procedures followed to determine the number of compliance samples are described in Chapter Six of the EPA guidance document. The number of samples depends on the anticipated variability of the soil measurements. An estimate of this sample variability, or variance (σ^2), of the soil contamination levels must be obtained. Section 6.3.1.1 of the guidance document describes how data obtained from previous studies at the site can be used to obtain an estimate of the variance, or alternatively the standard deviation (σ), of the contamination levels.

Mixed-contaminant data from the Remedial Investigation and the Predesign Investigation were used to estimate the variance of each mixed contaminant at the site. The data set was chosen to best describe the inherent variability of mixed-contaminant levels at the site once the areas of mixed-contaminant soils have been excavated. For each mixed contaminant, the data set included all samples with concentrations below the cleanup standard. Because the soils above the cleanup standards will have been removed during excavation, this data set provides the best estimate of the variability of the remaining soils. All samples with concentrations below the detection limit were taken as one-half of the detection limit. No detection limits were available for data from the Remedial Investigation. For these data, an average of the detection limits available from the Predesign Investigation was used. For chlordane, cPAHs, and PCBs, which are mixed contaminants with multiple constituents, the detection limits of the individual constituents were summed. For these same mixed contaminants, the detected concentrations were summed to establish a concentration for the groups of constituents.

Calculations of variance for each mixed contaminant are presented in Attachment H-1. Over 20 observations were used to calculate the variance for each mixed contaminant. The equation for calculating variance is provided in the EPA guidance document as equation 6.2.

Once the variance of each mixed contaminant was determined, the procedures in Section 6.3.2 of the EPA guidance document were used to determine the number of compliance samples. Sample number calculations are presented in Attachment H-2. The number of samples required in each area to demonstrate the attainment of cleanup standards was based on a 5% probability of a true mean soil concentration being above its cleanup standard when the sample mean is equal to 57% of the cleanup standard. The probability of declaring the site above cleanup standards when it is actually below was chosen to be 20%. The selection of these probabilities was based on standard values used in the guidance document.

When the EPA guidance document procedure was followed, only one sample was calculated to be necessary to show compliance in each area. One sample in each area, however, will not accurately determine the mean and standard deviation of the compliance sample data set. As a result, more compliance samples will be collected from each area to ensure an adequate number of data points with which to calculate compliance.

Fourteen samples were distributed between Areas 1, 2, 3, and 4. The area in which compliance samples are to be collected was 20% larger than the area of mixed-contaminant soils to assure compliance at the horizontal boundaries. Three samples were assigned to Area 1. Three samples were also assigned to Area 4. The remaining eight samples were distributed between Areas 2 and 3 based on a weighting determined by their respective areas. This weighting

determined that six samples will be collected in Area 2 and two samples will be obtained in Area 3.

The Predesign Investigation established four separate areas where soils contained mixed contaminants above cleanup standards. Between Areas 2 and 3 is an area where a multitude of drums has been found, and where mixed-contaminant soils may exist. Therefore a fifth area, Area 5, has been added to the mixed-contaminant soil remediation and compliance sampling program. The number of mixed-contaminant compliance samples to be collected in Area 5 was determined by calculating the density of samples in the combined Areas 2 and 3 (i.e. the area/number of samples), and assigning the same density of samples to Area 5. Two compliance samples will be obtained from Area 5. Therefore, the total number of compliance samples to be obtained after the excavation of the mixed-contaminant soils is 16.

2.2 Determining Sample Locations

Once the number of compliance samples was determined for each of the five excavation areas, the locations of the compliance samples was determined. The procedures for locating compliance samples outlined in Section 5.3 of the guidance document were used. A random starting coordinate (X,Y) was calculated within the area. A systematic grid was then constructed over the area in which the compliance samples are to be collected. The spacing of samples inside the grid was based on the size of the area and the number of samples required. Sample points are located on the systematic grid nodes. This procedure was repeated for each of the five areas. Random coordinate calculations are presented in Attachment H-3. The locations of the compliance samples are presented in Figure 1-1.

2.3 Compliance Sampling

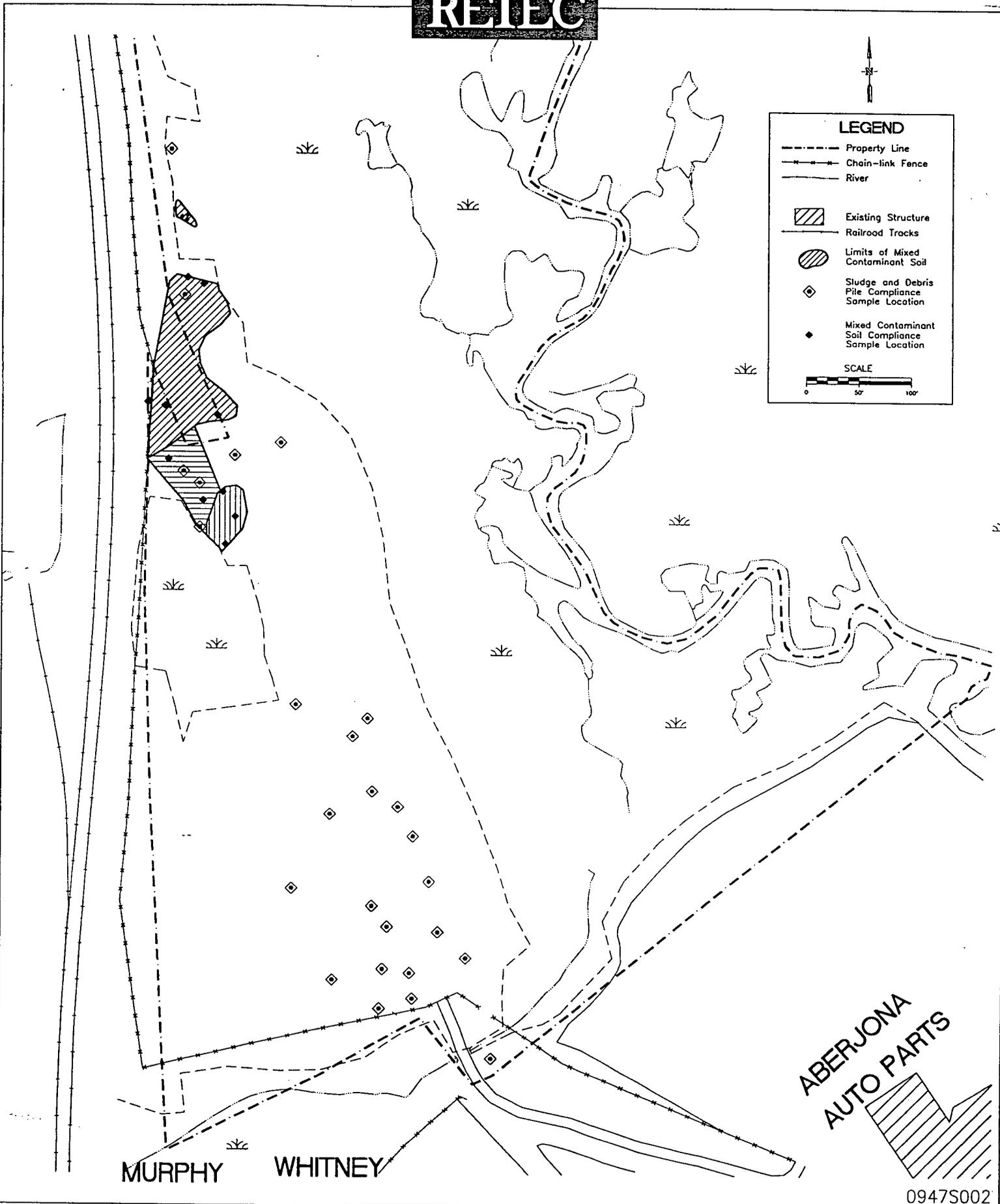
Compliance sample locations will be staked from the site baseline with a tape and transit. Compliance samples will be collected after all possible impacted soils have been excavated. The samples will be composited over a depth of zero to twenty-four inches. Sample collection procedures are detailed in the Sampling and Analysis Plan (RETEC, 1993). Samples in each area will be analyzed for the five mixed contaminants. Twenty percent of all the samples will be analyzed for the full TCL/TAL list of compounds.



LEGEND

- Property Line (dashed line)
- Chain-link Fence (line with cross-ticks)
- River (solid line)
- Existing Structure (hatched area)
- Railroad Tracks (line with cross-ticks)
- Limits of Mixed Contaminant Soil (hatched area)
- Sludge and Debris File Compliance Sample Location (diamond symbol)
- Mixed Contaminant Soil Compliance Sample Location (solid dot symbol)

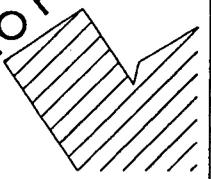
SCALE
0 50' 100'



MURPHY

WHITNEY

ABERJONA
AUTO PARTS



0947S002

Compliance Sample Locations

FIGURE

1-1

2.4 Determining Whether the Site Attains Cleanup Levels

In order to decide whether the site attains the cleanup levels for mixed contaminants, the mean concentration of each mixed contaminant determined by the compliance samples is compared to the cleanup standard. In addition to calculating the mean concentration, the standard deviation of the data is also calculated to determine the variability, or spread, of the data. These two quantities, in addition to the number of samples, and the degree of confidence, determine whether the site attains the cleanup standard for a particular contaminant. An upper one-sided confidence interval on the mean is calculated for each contaminant and compared to the cleanup standard. If the upper confidence interval is below the cleanup standard, the site is declared below cleanup standards for that particular contaminant. If the upper confidence interval is above the cleanup standard, the site is still considered above cleanup standards for the contaminant. This decision process is described in Sections 6.3.3 and 6.3.4 of the EPA guidance document and calculations are presented in Worksheet 7. This worksheet is included as Attachment H-3.

In order to have an adequate number of compliance samples to obtain a mean and standard deviation representative of conditions at the site, the analytical data from the five areas will be combined into one data set. The mean and standard deviation of the sixteen samples will be obtained. When calculating the mean of the data, the detection limits will be used for all non-detected values. When calculating the standard deviation, one-half of the detection limit will be used. For chlordane, cPAHs, and PCBs, which are mixed contaminants with multiple constituents, the detection limits of the individual constituents will be summed. For these same mixed contaminants, the detected concentrations will be summed to establish a concentration for the groups of constituents. A 95% confidence level will be assumed when testing the mean. Calculations presented in Worksheet 7 of the EPA guidance document will be used to determine whether the site is above or below cleanup standards with respect to each of the mixed contaminants. If the site is declared clean with respect to a particular mixed contaminant, no further excavation of soils impacted by this mixed contaminant will be necessary.

2.5 Additional Sampling Required if the Site is Declared Above Cleanup Standards

If the site is declared above the cleanup standard with respect to a particular mixed contaminant, the sample location(s) that caused the upper confidence interval to fall above the cleanup standard will be determined. Additional excavation of soils in that area of the sample location(s) will be required to show that the site is in compliance. The extent of further excavation will be determined by visual observations and the use of field immunoassay testing,

as described in the Design Report. Immunoassay samples will be collected in the area around the original compliance sample location to aid in defining the extent of excavation necessary to remove the remaining contaminated soil. Once this area has been defined, the soil will be excavated using the same procedures as in the original excavation. A new compliance sample will then be taken in the location of the original sample.

The data from the new compliance sample(s) will then replace the data from the original sample(s) in the mean and standard deviation calculations. The upper confidence interval will be recalculated based on this modified data set and compared to the cleanup standard. If the upper confidence interval is less than the cleanup standard, and the site is declared clean, no further excavation will be necessary for the particular mixed contaminant. If the upper confidence interval is greater than the cleanup standard, and the site is declared above cleanup standards, the process of further excavation and sampling will continue until the site is declared clean.

3.0 REFERENCES

EPA, "Methods for Evaluating the Attainment of Cleanup Standards; Soils and Solid Media. Volume I", February 1989.

ATTACHMENT S-1
VARIANCE CALCULATIONS

Variance Calculation for 4,4-DDT

Wells G&H

data below cleanup

Sample	Concentration (mg/kg)	X_i	$(X_i)^2$
SB-15			
SB-14			
SB-8			
SB-4-01	ND	0.017	0.000289
SB-4-03	ND	0.017	0.000289
SB-3-01	ND	0.017	0.000289
SB-3-02	ND	0.017	0.000289
A-14			
SB-5-01	1.1	1.1	1.21
SB-6			
SB-13			
SB-12			
SB-7			
WI-SS06	0.11	0.11	0.0121
WI-SS07	0.21	0.21	0.0441
SB-1-01	ND	0.017	0.000289
SB-1-02	ND	0.017	0.000289
SB-2	ND	0.017	0.000289
SB-10			
SB-9			
SB-11			
PES 1&2			
A-16	0.08	0.08	0.0064
SB-5			
SB-1			
SB91-9-01	ND	0.155	0.024025
SB91-9-02	ND	0.08	0.0064
SB91-9-02RE			
SB91-9-03	ND	0.00195	3.802E-06
SB91-10-04	0.0042	0.0042	0.00001764
SB91-10-04RE			
SB91-12-02	ND	0.0019	3.610E-06
SB91-13-02	0.013	0.013	0.000169
SB91-13-02RE			
SB91-13-03	ND	0.002	4.000E-06
SB91-13-04	ND	0.00195	3.802E-06
SB91-14-02	ND	0.0019	3.610E-06
SB91-15-02	ND	0.00245	6.002E-06
SB91-16-02	ND	0.008	0.000064
SB91-16-02RE			
SB91-3-02	ND	0.012	0.000144
SB91-1-02	ND	0.00205	4.203E-06
SB91-5-01	ND	0.00455	0.0000207
SB91-7-04	ND	0.0027	7.290E-06
SB91-7-04RE			
SB91-7-05	ND	0.00215	4.623E-06
SB91-7-06	ND	0.00195	3.802E-06
SB91-08-04	ND	0.00245	6.002E-06
SB91-08-04RE			

Summation	1.9192	1.30551409
n	29	
Variance	0.042	

Note: All ND's represented as one half of the detection limit of each sample from the predesign investigation; no detection limits are available for the RI data, so an average of predesign detection limits was used.

Variance Calculation for Chlordane

Wells G&H

data below cleanup

Sample	Concentration (mg/kg)	X_i	$(X_i)^2$
SB-15			0
SB-14			0
SB-8			0
SB-4-02	0.219	0.219	0.047961
SB-4-03	0.069	0.069	0.004761
SB-3-01	ND	0.0165	0.00027225
SB-3-02	ND	0.0165	0.00027225
A-13-02	ND	0.0165	0.00027225
SB-5	0.064	0.064	0.004096
SB-6			
SB-13			
SB-12			
SB-7			
WI-SS07	ND	0.0165	0.00027225
SB-2	ND	0.0165	0.00027225
SB-10			
SB-9			
SB-11			
PES 1&2	40000		
A-16	9.3		
A-13-01	ND	0.04	0.0016
SB-5			
SB-1	23		
SB91-9-01	ND	0.16	0.0256
SB91-9-02	ND	0.082	0.006724
SB91-9-02RE			
SB91-9-03	ND	0.002	4.000E-06
SB91-10-04	ND	0.002	4.000E-06
SB91-10-04RE			
SB91-12-02	ND	0.0019	3.610E-06
SB91-13-02	ND	0.0018	3.240E-06
SB91-13-02RE			
SB91-13-03	ND	0.002	4.000E-06
SB91-13-04	ND	0.002	4.000E-06
SB91-14-02	ND	0.002	4.000E-06
SB91-15-02	ND	0.0025	6.250E-06
SB91-16-02	ND	0.0081	0.00006561
SB91-16-02RE			
SB91-3-02	ND	0.012	0.000144
SB91-1-02	ND	0.0021	4.410E-06
SB91-5-01	ND	0.0047	0.00002209
SB91-7-04	ND	0.0028	7.840E-06
SB91-7-04RE			
SB91-7-05	ND	0.0022	4.840E-06
SB91-21-01	0.0064	0.0064	0.00004096
SB91-08-04	ND	0.0025	6.250E-06
SB91-08-04RE			

Summation 0.7735 0.09243235
n 27
Variance 0.003

Note: All ND's represented as one half of the detection limit of each sample from the predesign investigation (sum of chlordane d.l.s); no detection limits are available for the RI data, so an average of predesign detection limits was used.

Variance Calculation for cPAHs

Wells G&H

data below cleanup

Sample	Concentration (mg/kg)	X_i	$(X_i)^2$
SB-15-01	ND	0.289	0.083521
SB-15-02	0.075	0.075	0.005625
SB-14-01	ND	0.289	0.083521
SB-14-02	ND	0.289	0.083521
SB-8-01	0.282	0.282	0.079524
SB-8-02	ND	0.289	0.083521
SB-4-02	0.48	0.48	0.2304
SB4-03	ND	0.289	0.083521
SB-3-01	ND	0.289	0.083521
SB-3-02	ND	0.289	0.083521
WI-SS06	ND	0.289	0.083521
SB-6-01	ND	0.289	0.083521
SB-6-03	ND	0.289	0.083521
SB-13-01	ND	0.289	0.083521
SB-13-02	ND	0.289	0.083521
SB-12-01	ND	0.289	0.083521
SB-12-02	ND	0.289	0.083521
SB-7-01	ND	0.289	0.083521
SB-7-03	ND	0.289	0.083521
WI-SS07	ND	0.289	0.083521
SB-2	ND	0.289	0.083521
SB-10-01	1.86		
SB-10-02	ND	0.289	0.083521
SB-9-02	29.9		
SB-9-03	ND	0.289	0.083521
SB-11	0.692		
SB-5-01	23.8		
SB-5-03	ND	0.289	0.083521
SB-1-02	3		
SB-1-01	ND	0.289	0.083521
SB91-9-01	0.054	0.054	0.002916
SB91-9-02	ND	0.287	0.082369
SB91-10-04	ND	0.273	0.074529
SB91-12-02	ND	0.266	0.070756
SB91-13-02	ND	0.252	0.063504
SB91-13-03	ND	0.28	0.0784
SB91-14-02	ND	0.266	0.070756
SB91-15-02	ND	0.343	0.117649
SB91-16-02	0.061	0.061	0.003721
SB91-3-02	ND	0.252	0.063504
SB91-1-02	0.209	0.209	0.043681
SB91-5-01	ND	0.322	0.103684
SB91-7-04RE	0.121	0.121	0.014641
SB91-7-05	ND	0.294	0.086436
SB91-08-04	ND	0.343	0.117649

Summation	10.818	3.147206
n	40	
Variance	0.006	

Note: All ND's represented as half of the detection limit of each sample from the predesign investigation (sum of cPAH d.l.s); no detection limits are available for the RI data, so an average of predesign detection limits was used.

Variance Calculation for PCBs

Wells G&H

data below cleanup

Sample	Concentration (mg/kg)	Xi	(Xi)^2
SB-15	0.6	0.6	0.36
SB-15-02	ND	0.1675	0.02805625
SB-14-01	0.14	0.14	0.0196
SB-14-02	0.14	0.14	0.0196
SB-8	ND	0.1675	0.02805625
SB-4-01	ND	0.1675	0.02805625
SB-4-03	0.081	0.081	0.006561
SB-3-01	ND	0.1675	0.02805625
SB-3-02	0.08	0.08	0.0064
SB-13	0.17	0.17	0.0289
SB-11	ND	0.1675	0.02805625
SB-12-01	ND	0.1675	0.02805625
SB-12-02	ND	0.1675	0.02805625
SB-5	ND	0.1675	0.02805625
SB-2	ND	0.1675	0.02805625
SB-10-01	130		
SB-10-02	ND	0.1675	0.02805625
SB-9-01	3		
SB-9-03	0.13	0.13	0.0169
SB-1	25		
SB91-9-03	0.041	0.041	0.001681
SB91-10-04	ND	0.157	0.024649
SB91-12-02	ND	0.152	0.023104
SB91-19-01	0.12	0.12	0.0144
SB91-13-03	ND	0.1605	0.02576025
SB91-13-04	ND	0.1565	0.02449225
SB91-14-02	ND	0.1525	0.02325625
SB91-15-02	ND	0.197	0.038809
SB91-1-02	ND	0.164	0.026896
SB91-5-01	0.8	0.8	0.64
SB91-7-04	0.29	0.29	0.0841
SB91-7-05	ND	0.1725	0.02975625
SB91-21-01	0.16	0.16	0.0256
SB91-08-04	ND	0.1965	0.03861225
SB91-9-01	250		
SB91-9-02	60		
SB91-3-02	1.3		
Summation		5.9355	1.75963975
n		31	
Variance		0.021	

Note: All ND's represented as half of the detection limit of the sum of the detection limits of Arochlors from the predesign investigation; no detection limits are available for the RI data, so an average of predesign detection limits was used.

ATTACHMENT S-2

NUMBER OF

COMPLIANCE SAMPLE CALCULATIONS

Wildwood Property Compliance Sampling Plan

Assumptions:

			Z value
False positive prob:	0.05	(alpha)	1.645
False neg prob:	0.2	(beta)	0.842
Cleanup Standards:			
chlordanane	6.14	Cs	
4,4-DDT	23.5		
cPAHs	0.69		
PCBs	1.04		
lead	640		

Using power curve to determine u_1 :

u_1 - the mean concentration where the site should be declared clean with a high probability

From power curves given on pg A-13, choose curve C.

$$u_1 = .57C_s$$

Sample Size Calculations

j	beta	Z beta	Cs	u_1	A	variance	$n_j = \text{var}/A$
chlordanane	0.2	0.842	6.14	3.500	1.126995	0.003	0.003
4,4-DDT	0.2	0.842	23.5	13.395	16.50901	0.042	0.003
CPAHs	0.2	0.842	0.69	0.393	0.014233	0.006	0.422
PCBs	0.2	0.842	1.04	0.593	0.032333	0.021	0.649
lead	0.2	0.842	640	364.800	12244.62	3031	0.248

0.65

$$A = ((C_s - u_1) / (Z_{\alpha} - Z_{\beta}))^2$$

Fraction of analyzable samples: R

0.95

0.684

Rounded up:

1

**Wildwood Property
Mixed Contaminant Soils**

Area Number	Area (sq. feet)	Number of Samples	Area/ Number of Samples
1	270	3	90
2	8,935	6	1,489
3	1,660	2	830
4	400	3	133
5	3,240	2	1,324

16

(1) To calculate the number of samples in Areas 2 and 3, 8 samples were distributed based on a weighting of the areas:

Areas 2 and 3	Area 10,595	samples 8	1,324
weighting 2, 3			rounding
2/2+3	0.84	6.75	6 samples
3/2+3	0.16	1.25	2 samples

(2) To calculate the number of samples in Area 5, the same density of samples in Areas 2 and 3 combined was used:

Area 5 $\text{area} / (\text{area}/\text{number of samples}) = \text{number of samples (rounded)}$
 $3,240 / 1,324 = 2$

Attachment H-3

Random Coordinate Calculations

RANDOM SAMPLE COORDINATE LOCATION SELECTION CALCULATIONS FOR
MIXED CONTAMINANT COMPLIANCE SAMPLING

Maximum X	Minimum X	Maximum Y	Minimum Y	Area	Random X Coordinate	Random Y Coordinate	Inside/Outside Sample Area
698881.29	698796.51	544243.53	544118.24	5	698805.13 698858.95 698824.04 698826.05 698870.14 698877.96	544153.18 544163.53 544131.69 544164.63 544234.16 544171.70	Outside Inside Outside Outside Outside Inside
698853.56	698829.44	544452.91	544422.64	1	698842.94 698837.66 698842.05	544436.29 544434.92	Inside Inside Inside
698902.62	698799.35	544396.09	544184.91	2	698872.86 698843.15 698858.62 698899.14 698825.88 698805.67 698822.21	544244.59 544376.58 544370.35 544203.22 544203.39 544257.30 544254.02	Inside Inside Inside Outside Inside Inside Inside
698923.45	698858.69	544183.96	544107.28	3	698918.22 698889.97 698872.74 698880.91	544167.27 544148.08 544109.87 544121.31	Outside Inside Outside Inside

Note: Formula used $X = X_{min} + (X_{max} - X_{min}) * RND$
Reference Box 5.1 of EPA Methods for Evaluating the Attainment of Cleanup Standards. February 1989.

APPENDIX T

MIXED SOIL COMPLIANCE TESTING

MIXED SOIL COMPLIANCE TESTING

In accordance with the 100% Design Report for Mixed-Contaminant Soils: Compliance Sampling Plan, the results from the soil samples collected after the excavation of mixed-contaminant soils were analyzed to determine compliance with site cleanup objectives.

A total of seventeen samples were collected during compliance sampling using the procedures described in the 100% Design Report. One of the seventeen samples collected was a field duplicate. Five of the seventeen samples were analyzed for the full TCL/TAL list of analytes. The remaining twelve samples were analyzed for the following mixed contaminants: chlordane, 4,4-DDT, cPAHs, PCBs, and lead. The results of the compliance sampling were compiled and validated according to CLP data validation procedures.

The methods developed in the Compliance Sampling Plan are based on the EPA guidance document, "Methods for Evaluating the Attainment of Cleanup Standards" (EPA, 1989). The document describes statistical methods for determining with a specified level of confidence whether site remediation has achieved the cleanup standards. The statistical procedures used to determine compliance are detailed in the Compliance Sampling Plan.

In order to determine whether the excavation of mixed-contaminant soils has achieved site cleanup levels, the mean concentration of each mixed-contaminant determined by the compliance samples was compared to the cleanup standard. When calculating the mean, the detection limits were used for all non-detected values. In addition to calculating the mean, the standard deviation of the data was calculated to determine the variability, or spread, of the data. When calculating the standard deviation, one-half of the detection limit was used for all non-detected values. For chlordane, cPAHs, and PCBs, which are mixed contaminants with multiple constituents, the detection limits of the individual constituents were summed. For these same mixed contaminants, the detected concentrations were summed to establish a concentration for the groups of constituents. The mean and standard deviation values calculated for each of the mixed contaminants are provided in Table 1.

The mean and the standard deviation, in addition to the number of samples collected and the degree of confidence specified, determine whether the excavation has achieved site cleanup objectives. The number of samples collected is sixteen. The degree of confidence specified is 95%. An upper one-sided confidence interval on the mean was then calculated for each mixed contaminant and then compared to the cleanup standard. If the upper confidence interval was below the cleanup standard, the site was declared below cleanup standards for that mixed contaminant. If the upper confidence interval was above the cleanup standard, the site was considered above cleanup standards for that mixed contaminant. Calculations for determining the mean, standard deviation, and upper confidence interval for each mixed contaminant are presented using Worksheet 7 of the EPA guidance document and are included as an attachment.

For each mixed contaminant, the upper confidence interval was calculated and compared to the cleanup standard. In all cases, the upper confidence interval was below the cleanup standard. The site was declared clean with respect to each mixed contaminant, and no further excavation of soils was deemed necessary.

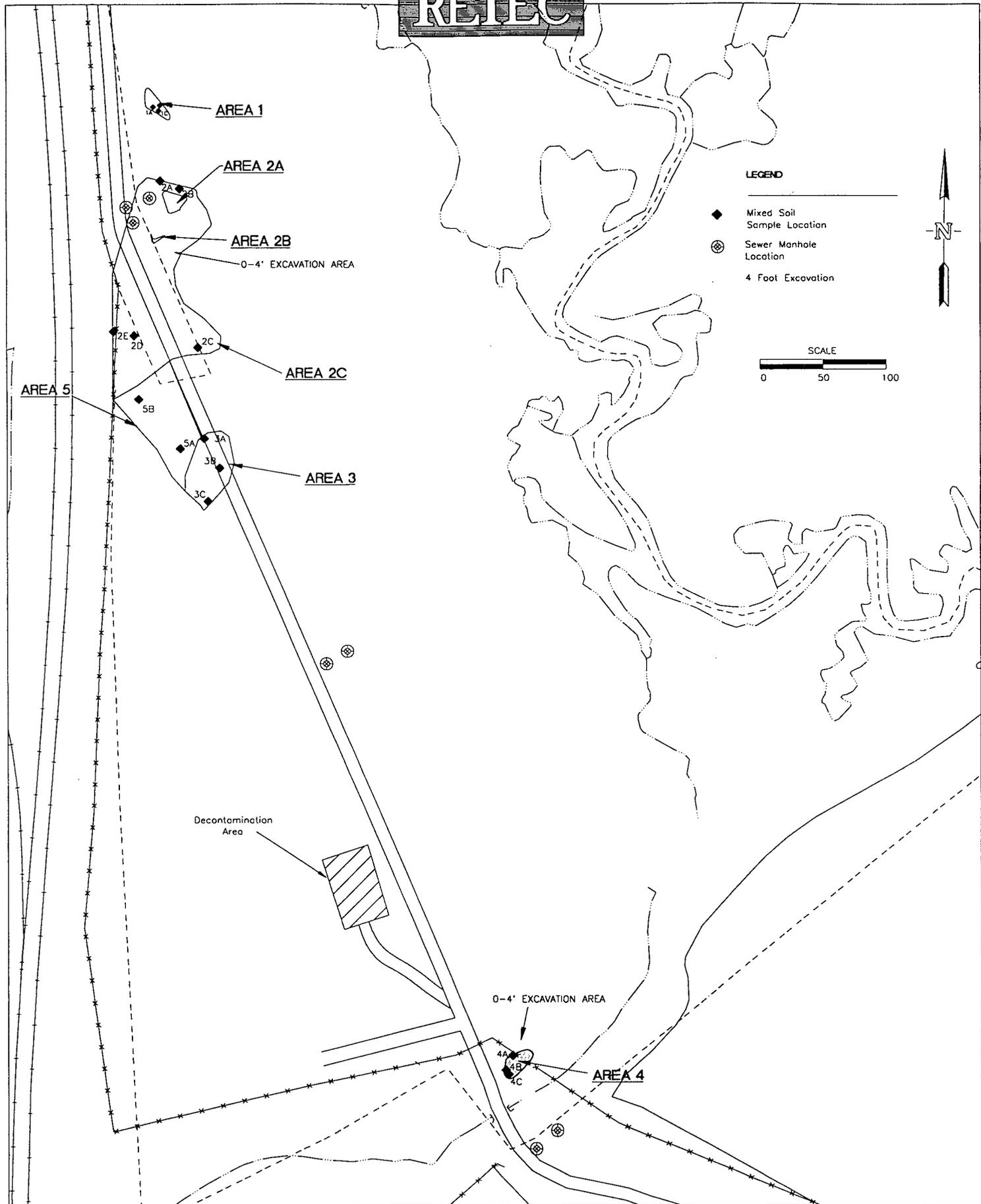
Table 1
Mixed contaminants (mg/Kg)
Compliance Sample Summary

Compound	Target Concentration	MS-1A 10/04/94	MS-1B 10/04/94	MS-1C 10/04/94	MS-2A 10/04/94	MS-2B 10/04/94	MS-2C 10/04/94	MS-2D 10/04/94	MS-2E 10/04/94	MS-2F 10/11/94
Lead	640	6.4	12.2	2.4	5.9	6.7	6.1	4.4	212	6.1
Chlordane	6.14	0.004	0.005	0.001	0.017	0.004	0.003	0.003	0.143	0.004
4, 4 - DDT	23.5	0.004	0.005	0.004	0.004	0.004	0.003	0.003	0.209	0.003
cPAHs	0.69	0.268	0.395	0.286	0.284	0.276	0.251	0.271	0.283	0.256
PCBs	1.04	0.049	0.109	0.052	0.735	0.300	0.274	0.272	0.177	0.269
STATUS		pass								

Compound	Target Concentration	MS-3A 10/11/94	MS-3B 10/11/94	MS-4A 10/04/94	MS-4B 10/04/94	MS-4C 10/04/94	MS-5A 10/11/94	MS-5B 10/11/94	Standard Deviation	Mean Concentration
Lead	640	6.5	6.5	6.0	6.5	2.1	6.6	6.3	52.1	18.9
Chlordane	6.14	0.009	0.004	0.002	0.004	0.003	0.046	0.28	0.075	0.033
4, 4 - DDT	23.5	0.002	0.004	0.003	0.004	0.003	0.007	0.003	0.052	0.017
cPAHs	0.69	0.264	0.273	0.253	0.268	0.257	0.273	0.262	0.040	0.276
PCBs	1.04	0.289	0.297	0.273	0.291	0.279	0.295	0.284	0.155	0.265
STATUS		pass	pass							

Notes:

All concentrations mg/kg



AREAS OF MIXED CONTAMINANT SOIL

FIGURE

1

0947s004

Mixed Contaminant Soil (continued)
cPAHs (ug/Kg)
Compliance Sample Summary

	2f ug/kg	3a ug/kg	3b ug/kg	4a ug/kg	4b ug/kg	4c ug/kg	5a ug/kg	5b ug/kg
Phenol						< 245 U		
bis(2-Chloroethyl)ether						< 245 U		
2-Chlorophenol						< 245 U		
1,3-Dichlorobenzene						< 245 U		
1,4-Dichlorobenzene						< 245 U		
1,2-Dichlorobenzene						< 245 U		
2-Methylphenol						< 245 U		
2,2'-oxybis(1-Chloropropane)						< 245 U		
4-Methylphenol						< 245 U		
N-Nitroso-di-n-propylamine						< 245 U		
Hexachloroethane						< 245 U		
Nitrobenzene						< 245 U		
Isophenol						< 245 UJ		
2-Nitrophenol						< 245 U		
2,4-Dimethylphenol						< 245 U		
bis(2-Chloroethoxy)methane						< 245 U		
2,4-Dichlorophenol						< 245 U		
1,2,4-Trichlorobenzene						< 245 U		
Naphthalene						< 245 U		
4-Chloroaniline						< 245 UJ		
Hexachlorobenzene						< 245 U		
4-Chloro-3-methylphenol						< 245 U		
2-Methylnaphthalene						< 245 U		
Hexachlorocyclopentadiene						< 245 U		
2,4,6-Trichlorophenol						< 245 U		
2,4,5-Trichlorophenol						< 612 U		
2-Chloronaphthalene						< 245 U		
2-Nitroaniline						< 612 U		
Dimethylphthalate						< 245 U		
Acenaphthylene						< 245 U		
2,6-Dinitrotoluene						< 245 U		
3-Nitroaniline						< 612 UJ		
Acenaphthene						< 245 U		
2,4-Dinitrophenol						< 612 UJ		
4-Nitrophenol						< 612 UJ		
Dibenzofuran						< 245 U		
2,4-Dinitrotoluene						< 245 U		
Diethylphthalate						< 245 U		
4-chlorophenyl-phenylether						< 245 U		
Fluorene						< 245 U		
4-Nitroaniline						< 612 UJ		
4,6-Dinitro-2-methylphenol						< 612 U		
N-Nitrosodiphenylamine (1)						< 245 U		
4-Bromo-phenyl-phenylether						< 245 U		
Hexachlorobenzene						< 245 U		
Pentachlorophenol						< 612 UJ		
Fluoranthene						< 245 U		
Anthracene						< 245 U		
Carbazole						< 245 UJ		
Di-n-butylphthalate						< 245 U		
Fluoranthene						< 245 U		
Pyrene						< 245 U		
Butylbenzylphthalate						< 245 U		
3,3'-Dichlorobenzidine						< 245 U		
Benzo(a)anthracene	< 37 U	< 38 U	< 39 U	< 36 U	< 38 U	< 37 U	< 39 U	< 37 U
Chrysene	< 37 U	< 38 U	< 39 U	< 36 U	< 38 U	< 37 U	< 39 U	< 37 U
bis(2-Ethylhexyl)phthalate						< 245 U		
Di-n-octylphthalate						< 245 UJ		
Benzo(b)fluoranthene	< 37 U	< 38 U	< 39 U	< 36 U	< 38 U	< 37 U	< 39 U	< 37 U
Benzo(k)fluoranthene	< 37 U	< 38 U	< 39 U	< 36 U	< 38 U	< 37 U	< 39 U	< 37 U
Benzo(a)pyrene	< 37 U	< 38 U	< 39 U	< 36 U	< 38 U	< 37 U	< 39 U	< 37 U
Indeno(1,2,3-cd)pyrene	< 37 UJ	< 38 UJ	< 39 UJ	< 36 UJ	< 38 UJ	< 37 U	< 39 UJ	< 37 UJ
Dibenz(a,h)anthracene	< 37 UJ	< 38 UJ	< 39 UJ	< 36 UJ	< 38 UJ	< 37 U	< 39 UJ	< 37 UJ
Benzo(a,h,i)perylene						< 245 U		

Notes: U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
J - The associated numerical value is an estimated quantity.
UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

**Mixed Contaminant Soil
VOCs (ug/Kg)
Compliance Sample Summary**

	Soil Cleanup Level ug/kg	1c ug/kg	1d ug/kg	2a ug/kg	2d ug/kg	4c ug/kg
Chloromethane		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Bromomethane		< 2.6 UD	< 1,310 UD	657 JD	< 1.2 U	< 1.2 U
Vinyl Chloride		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Chloroethane		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Methylene Chloride		< 55 UJ	< 3,684 J	< 3,013 UJ	< 9.6 UJ	< 23 UJ
Acetone		< 12 UJ	< 1,711 J	< 1,824 UJ	< 6.1 UJ	< 5.0 UJ
Carbon Disulfide		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
1,1-Dichloroethene		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
1,1-Dichloroethane		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
1,2-Dichloroethene (cis)		217 JD	18,772 JD	3,576 D	< 1.2 U	< 1.2 U
1,2-Dichloroethene (trans)	83	< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Chloroform	63	< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
1,2-Dichloroethane		11 D	< 1,310 UD	< 1,050 UD	6.4	< 1.2 U
2-Butanone		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
1,1,1-Trichloroethane	613	< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Carbon Tetrachloride		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Bromodichloromethane		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
1,2-Dichloropropane		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
cis-1,3-Dichloropropene		93 JD	4,910 JD	21,751 D	< 1.2 U	< 1.2 U
Trichloroethene	13	< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Dibromochloromethane		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
1,1,2-Trichloroethane		< 23 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Benzene		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
trans-1,3-Dichloropropene		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Bromoform		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
4-Methyl-2-Pentanone		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
2-Hexanone		73 JD	2,430 JD	< 1,050 UD	< 1.2 U	< 1.2 U
Tetrachloroethene	37	< 2.6 UD	1,084 JD	< 1,050 UD	< 1.2 U	< 1.2 U
1,1,2,2-Tetrachloroethane		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.8 U	< 1.2 U
Toluene		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Chlorobenzene		54 JD	4,337 JD	< 1,050 UD	< 1.2 U	< 1.2 U
Ethylbenzene		< 2.6 UD	< 1,310 UD	< 1,050 UD	< 1.2 U	< 1.2 U
Styrene		711 DR	12,750 JD	1,449 D	< 1.2 U	< 1.2 U
Xylene (total)						

Notes:

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

R - The data is unusable (compound may or may not be present.)

D - Compounds identified in an analysis at a secondary dilution factor.

Sample 1d is a duplicate of sample 1c.

**Mixed Contaminant Soil
Pesticides And PCBs (ug/Kg)
Compliance Sample Summary**

	1a ug/kg Q	1b ug/kg Q	1c ug/kg Q	1d ug/kg Q	2a ug/kg Q	2b ug/kg Q	2c ug/kg Q	2d ug/kg Q	2e ug/kg Q
alpha-BHC			< 1.9 U	< 2.1 U	< 1.9 U			< 1.7 U	
beta-BHC			< 1.9 U	< 2.1 U	< 1.9 U			< 1.7 U	
delta-BHC			< 1.9 U	< 2.1 U	< 1.9 U			< 1.7 U	
gamma-BHC (Lindane)			< 1.9 U	< 2.1 U	< 1.9 U			< 1.7 U	
Heptachlor			< 1.9 U	< 2.1 U	< 1.9 U			< 1.7 U	
Heptachlor epoxide			< 1.9 U	< 2.1 U	< 1.9 U			< 1.7 U	
Endosulfan I			< 1.9 U	< 2.1 U	< 1.9 U			< 1.7 U	
Dieldrin			< 3.9 U	< 4.1 U	< 3.8 U			< 3.4 U	
4,4'-DDE			< 3.9 U	< 4.1 U	< 3.8 U			< 3.4 U	
Endrin			< 3.9 U	< 4.1 U	< 3.8 U			< 3.4 U	
Endosulfan II			< 3.9 U	< 4.1 U	< 3.8 U			< 3.4 U	
4,4'-DDD			< 3.9 U	< 4.1 U	< 3.8 U			< 3.4 U	
Endosulfan sulfate			< 3.9 U	< 4.1 U	< 3.8 U			< 3.4 U	
4,4'-DDT	< 3.6 U	< 5.4 U	< 3.9 U	< 4.1 U	< 3.8 U	< 3.7 U	< 3.4 U	< 3.4 U	208.5 DP
Methoxychlor			< 19.4 U	< 20.5 U	< 19.2 U			< 17.0 U	
Endrin ketone			< 3.9 U	< 4.1 U	< 3.8 U			< 3.4 U	
Endrin aldehyde			< 3.9 U	< 4.1 U	< 3.8 U			< 3.4 U	
alpha-Chlordane	< 1.8 U	< 2.7 U	1.3 JP	1.3 J	10.2 P	< 1.9 U	< 1.7 U	< 1.7 U	71.7 D
gamma-Chlordane	< 1.8 U	< 2.7 U	< 1.9 U	< 2.1 U	7.2 P	< 1.9 U	< 1.7 U	< 1.7 U	62.0 EJ
Toxaphene			< 194.0 U	< 205.3 U	< 192.4 U			< 170.2 U	
Aroclor-1016	< 36.2 U	< 53.8 U	< 38.8 U	< 41.1 U	< 38.5 U	< 37.5 U	< 34.2 U	< 34.0 U	< 35.8 U
Aroclor-1221	< 72.4 U	< 107.5 U	< 77.6 U	< 82.1 U	< 77.0 U	< 75.0 U	< 68.5 U	< 68.1 U	< 71.5 U
Aroclor-1232	< 36.2 U	< 53.8 U	< 38.8 U	< 41.1 U	< 38.5 U	< 37.5 U	< 34.2 U	< 34.0 U	< 35.8 U
Aroclor-1242	< 36.2 U	< 53.8 U	< 38.8 U	< 41.1 U	< 38.5 U	< 37.5 U	< 34.2 U	< 34.0 U	< 35.8 U
Aroclor-1248	< 36.2 U	< 53.8 U	< 38.8 U	< 41.1 U	< 38.5 U	< 37.5 U	< 34.2 U	< 34.0 U	< 35.8 U
Aroclor-1254	49.3 P	108.5	52.4 P	73.0	735.0 D	< 37.5 U	< 34.2 U	< 34.0 U	< 35.8 U
Aroclor-1260	< 36.2 U	< 53.8 U	< 38.8 U	< 41.1 U	< 38.5 U	< 37.5 U	< 34.2 U	< 34.0 U	176.5 P

	2f ug/kg Q	3a ug/kg Q	3b ug/kg Q	4a ug/kg Q	4b ug/kg Q	4c ug/kg Q	5a ug/kg Q	5b ug/kg Q
alpha-BHC						< 1.7 U		
beta-BHC						< 1.7 U		
delta-BHC						< 1.7 U		
gamma-BHC (Lindane)						< 1.7 U		
Heptachlor						< 1.7 U		
Heptachlor epoxide						< 1.7 U		
Endosulfan I						< 1.7 U		
Dieldrin						< 3.5 U		
4,4'-DDE						< 3.5 U		
Endrin						< 3.5 U		
Endosulfan II						< 3.5 U		
4,4'-DDD						< 3.5 U		
Endosulfan sulfate						< 3.5 U		
4,4'-DDT	3.0 J	2.4 J	3.6 JP	< 3.4 U	< 3.6 U	3.2 J	7.2 P	3.1 J
Methoxychlor						< 17.4 U		
Endrin ketone						< 3.5 U		
Endrin aldehyde						< 3.5 U		
alpha-Chlordane	1.9 P	4.2 P	< 1.9 U	1.1 JP	< 1.8 U	< 1.7 U	21.1 P	126.0 DP
gamma-Chlordane	1.9 P	4.8 P	< 1.9 U	1.2 JP	< 1.8 U	< 1.7 U	24.6 P	153.5 DP
Toxaphene						< 174.4 U		
Aroclor-1016	< 33.6 U	< 36.1 U	< 37.1 U	< 34.1 U	< 36.4 U	< 34.9 U	< 36.9 U	< 35.5 U
Aroclor-1221	< 67.2 U	< 72.2 U	< 74.2 U	< 68.3 U	< 72.8 U	< 69.7 U	< 73.8 U	< 71.0 U
Aroclor-1232	< 33.6 U	< 36.1 U	< 37.1 U	< 34.1 U	< 36.4 U	< 34.9 U	< 36.9 U	< 35.5 U
Aroclor-1242	< 33.6 U	< 36.1 U	< 37.1 U	< 34.1 U	< 36.4 U	< 34.9 U	< 36.9 U	< 35.5 U
Aroclor-1248	< 33.6 U	< 36.1 U	< 37.1 U	< 34.1 U	< 36.4 U	< 34.9 U	< 36.9 U	< 35.5 U
Aroclor-1254	< 33.6 U	< 36.1 U	< 37.1 U	< 34.1 U	< 36.4 U	< 34.9 U	< 36.9 U	< 35.5 U
Aroclor-1260	< 33.6 U	< 36.1 U	< 37.1 U	< 34.1 U	< 36.4 U	< 34.9 U	< 36.9 U	< 35.5 U

Notes:

- U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
 - J - The associated numerical value is an estimated quantity.
 - UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.
 - P - Pesticide / Aroclor target analyte has greater than 25 % difference detected concentrations between the two GC columns.
 - D - Compounds identified in the analysis at a secondary dilution factor.
- All concentrations ug/kg.

**Mixed Contaminant Soil
Metals (mg/Kg)
Compliance Sample Summary**

	1a mg/kg	1b mg/kg	1c mg/kg	1d mg/kg	2a mg/kg	2b mg/kg	2c mg/kg	2d mg/kg	2e mg/kg
Aluminum			1,005.4	1,586.43	3,801.49			4,124.7	
Antimony			< 8.83 U	< 9.22 U	< 8.89 U			< 8.43 U	
Arsenic			< 0.36 U	0.61 B	1.88			2.06	
Barium			10.99 B	71.53	453.24			4.99 B	
Beryllium			< 0.18 U	< 0.19 U	< 0.18 U			< 0.17 U	
Cadmium			< 0.72 U	< 0.75 U	< 0.73 U			< 0.69 U	
Calcium			512.52 B	825.02 B	1,123.94			275.04 B	
Chromium			25.77	77.74 J	549.91 J			5.68	
Cobalt			< 1.08 U	< 1.13 U	1.45 B			1.20 B	
Copper			1.62 B	3.20 B	8.52			1.72 B	
Iron			249.05 J	469.64 J	3,079.64 J			3,089.22 J	
Lead	< 6.40 U	12.20	2.42 J	4.48 J	5.93 J	< 6.70 U	< 6.10 U	4.44 J	212.00
Magnesium			41.63 BJ	79.62 BJ	898.86 BJ			840.94 BJ	
Manganese			9.01	15.06 J	40.81 J			32.85 J	
Mercury			< 0.13 U	< 0.13 U	< 0.13 U			< 0.12 U	
Nickel			2.16 B	< 1.88 U	5.80 B			4.82 B	
Potassium			< 62.71 U	< 65.51 U	325.56 B			232.90 B	
Selenium			< 0.36 U	< 0.38 U	< 0.36 U			< 0.34 U	
Silver			< 0.72 U	< 0.75 U	< 0.73 U			< 0.69 U	
Sodium			34.42 B	48.56 B	50.60 B			55.39 B	
Thallium			< 0.18 U	< 0.19 U	< 0.18 U			< 0.17 U	
Vanadium			0.54 B	1.32 B	5.44 B			5.68 B	
Zinc			174.08	301.17	414.07			10.84	
Cyanide			< 0.27 U	< 0.31 U	< 0.28 U			< 0.26 U	

	2f mg/kg	3a mg/kg	3b mg/kg	4a mg/kg	4b mg/kg	4c mg/kg	5a mg/kg	5b mg/kg
Aluminum						3,013.86		
Antimony						< 7.98 U		
Arsenic						2.70		
Barium						10.91 B		
Beryllium						< 0.16 U		
Cadmium						< 0.65 U		
Calcium						619.54 B		
Chromium						18.89		
Cobalt						1.79 B		
Copper						3.09 B		
Iron						3,352.53 J		
Lead	< 6.10 U	< 6.50 U	< 6.50 U	< 6.00 U	< 6.50 U	2.06 J	< 6.60 U	< 6.30 U
Magnesium						785.78 BJ		
Manganese						35.01 J		
Mercury						< 0.11 U		
Nickel						5.21 B		
Potassium						227.79 B		
Selenium						< 0.32 U		
Silver						< 0.65 U		
Sodium						29.63 B		
Thallium						< 0.16 U		
Vanadium						5.70 B		
Zinc						28.01		
Cyanide						< 0.26 U		

Notes:

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

WORKSHEET 7 Inference for Simple Random Samples by Chemical

See Section 6.3 or 7.3 in "Methods for Evaluating the Attainment of Cleanup Standards," Volume 1

SITE: Wildwood Property
Number (j) and Description [2] CHEMICAL: cPAHs (mg/kg)

Numbers in square brackets [] refer to the Worksheet from which the information may be obtained.

Testing the Mean

$[2] \quad \alpha =$	0.05
$[2] \quad C_s =$	0.69
<i>Number of Collectible Samples [6] = n =</i>	16
<i>Total of the concentration measurements [6] = $\sum x_i = B =$</i>	4.412
<i>Total for x_i^2 [6] = $\sum (x_i)^2 = D =$</i>	368.5
<i>Mean Concentration - $\frac{B}{n} = \bar{x} =$</i>	0.276
<i>Standard Deviation of the Data - $\sqrt{\frac{D - n\bar{x}^2}{n - 1}} = s =$</i>	0.040
<i>Degrees of Freedom for $s = n - 1 = df =$</i>	15
<i>$t_{1-\alpha, df} =$</i>	1.753
<i>Standard Error for the Mean Concentration - $\frac{s}{\sqrt{n}} =$</i>	0.01
<i>Upper One Sided Confidence Interval - $\bar{x} + t_{1-\alpha, df} \frac{s}{\sqrt{n}} = \mu_{U\alpha} =$</i>	0.294
<i>If $\mu_{U\alpha} < C_s$ then circle Clean, otherwise circle Dirty: Based on the mean concentration, the sample area is:</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> Clean Dirty </div>

WORKSHEET 7 Inference for Simple Random Samples by Chemical

See Section 6.3 or 7.3 in "Methods for Evaluating the Attainment of Cleanup Standards," Volume 1

SITE: Wildwood Property
Number (j) and Description [2] CHEMICAL: 4,4-DDT (mg/kg)

Numbers in square brackets [] refer to the Worksheet from which the information may be obtained.

Testing the Mean

$[2] \quad \alpha =$	0.05
$[2] \quad Cs =$	23.5
<i>Number of Collectible Samples [6] = n =</i>	16
<i>Total of the concentration measurements [6] = $\sum x_i = B =$</i>	.265
<i>Total for $x_i^2 [6] = \sum (x_i)^2 = D =$</i>	43.6
<i>Mean Concentration - $\frac{B}{n} = \bar{x} =$</i>	0.017
<i>Standard Deviation of the Data - $\sqrt{\frac{D - n\bar{x}^2}{n - 1}} = s =$</i>	0.052
<i>Degrees of Freedom for $s = n - 1 = df =$</i>	15
<i>$t_{1-\alpha, df} =$</i>	1.753
<i>Standard Error for the Mean Concentration - $\frac{s}{\sqrt{n}} =$</i>	0.013
<i>Upper One Sided Confidence Interval - $\bar{x} + t_{1-\alpha, df} \frac{s}{\sqrt{n}} = \mu_{U\alpha} =$</i>	0.040
<i>If $\mu_{U\alpha} < Cs$ then circle Clean, otherwise circle Dirty: Based on the mean concentration, the sample area is:</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> Clean Dirty </div>

WORKSHEET 7 Inference for Simple Random Samples by Chemical

See Section 6.3 or 7.3 in "Methods for Evaluating the Attainment of Cleanup Standards," Volume 1

SITE: Wildwood Property
Number (j) and Description [2] CHEMICAL: Chlordane (mg/kg)

Numbers in square brackets [] refer to the Worksheet from which the information may be obtained.

Testing the Mean

$[2] \quad \alpha =$	0.05
$[2] \quad Cs =$	6.14
<i>Number of Collectible Samples [6] = n =</i>	16
<i>Total of the concentration measurements [6] = $\sum x_i = B =$</i>	0.533
<i>Total for x_i^2 [6] = $\sum (x_i)^2 = D =$</i>	101.4
<i>Mean Concentration - $\frac{B}{n} = \bar{x} =$</i>	0.033
<i>Standard Deviation of the Data - $\sqrt{\frac{D - n\bar{x}^2}{n - 1}} = s =$</i>	0.075
<i>Degrees of Freedom for $s = n - 1 = df =$</i>	15
<i>$t_{1-\alpha, df} =$</i>	1.753
<i>Standard Error for the Mean Concentration - $\frac{s}{\sqrt{n}} =$</i>	0.019
<i>Upper One Sided Confidence Interval - $\bar{x} + t_{1-\alpha, df} \frac{s}{\sqrt{n}} = \mu_{U\alpha} =$</i>	0.066
<i>If $\mu_{U\alpha} < Cs$ then circle Clean, otherwise circle Dirty: Based on the mean concentration, the sample area is:</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> Clean Dirty </div>

WORKSHEET 7 Inference for Simple Random Samples by Chemical

See Section 6.3 or 7.3 in "Methods for Evaluating the Attainment of Cleanup Standards," Volume 1

SITE: Wildwood Property
Number (j) and Description [2] CHEMICAL: Lead (mg/kg)

Numbers in square brackets [] refer to the Worksheet from which the information may be obtained.

Testing the Mean

$[2] \quad \alpha =$	0.05
$[2] \quad C_s =$	640
<i>Number of Collectible Samples [6] = n =</i>	16
<i>Total of the concentration measurements [6] = $\sum x_i = B =$</i>	302.7
<i>Total for $x_i^2 [6] = \sum (x_i)^2 = D =$</i>	45,259
<i>Mean Concentration - $\frac{B}{n} = \bar{x} =$</i>	18.9
<i>Standard Deviation of the Data - $\sqrt{\frac{D - n\bar{x}^2}{n - 1}} = s =$</i>	52.1
<i>Degrees of Freedom for $s = n - 1 = df =$</i>	15
<i>$t_{1-\alpha, df} =$</i>	1.753
<i>Standard Error for the Mean Concentration - $\frac{s}{\sqrt{n}} =$</i>	13.0
<i>Upper One Sided Confidence Interval - $\bar{x} + t_{1-\alpha, df} \frac{s}{\sqrt{n}} = \mu_{U\alpha} =$</i>	41.7
<i>If $\mu_{U\alpha} < C_s$ then circle Clean, otherwise circle Dirty: Based on the mean concentration, the sample area is:</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 5px 15px; text-align: center;">Clean</div> <div style="padding: 5px 15px; text-align: center;">Dirty</div> </div>

WORKSHEET 7 Inference for Simple Random Samples by Chemical

See Section 6.3 or 7.3 in "Methods for Evaluating the Attainment of Cleanup Standards," Volume 1

SITE: Wildwood Property
Number (j) and Description [2] CHEMICAL: PCBs (mg/kg)

Numbers in square brackets [] refer to the Worksheet from which the information may be obtained.

Testing the Mean

$[2] \quad \alpha =$	0.05
$[2] \quad Cs =$	1.04
<i>Number of Collectible Samples [6] = n =</i>	16
<i>Total of the concentration measurements [6] = $\sum x_i = B =$</i>	4.25
<i>Total for x_i^2 [6] = $\sum (x_i)^2 = D =$</i>	810.5
<i>Mean Concentration - $\frac{B}{n} = \bar{x} =$</i>	0.265
<i>Standard Deviation of the Data - $\sqrt{\frac{D - n\bar{x}^2}{n - 1}} = s =$</i>	0.155
<i>Degrees of Freedom for $s = n - 1 = df =$</i>	15
<i>$t_{1-\alpha, df} =$</i>	1.753
<i>Standard Error for the Mean Concentration - $\frac{s}{\sqrt{n}} =$</i>	0.0388
<i>Upper One Sided Confidence Interval - $\bar{x} + t_{1-\alpha, df} \frac{s}{\sqrt{n}} = \mu_{U\alpha} =$</i>	0.333
<i>If $\mu_{U\alpha} < Cs$ then circle Clean, otherwise circle Dirty: Based on the mean concentration, the sample area is:</i>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 5px; text-align: center;">Clean</div> <div style="padding: 5px;">Dirty</div> </div>

APPENDIX U

BARIUM IMPACTED SOIL

BARIUM IMPACTED SOIL

Background

During the predesign investigation, RETEC conducted an investigation in November 1992 to delineate newly discovered sludges and any undiscovered sludges in the Wildwood property. This investigation included excavating test trenches every 25 feet along the access road. During this investigation, a white powdery substance was observed within the soil matrix in the northern portion of the access road along the sewer rights-of-way. In November 1992, a sample of this material was sent to New England Testing Laboratory, Inc. (NETL) to determine the chemical characteristics of the material. The initial results indicated that the suspect material contained barium, sulfur and silica (soil particles). The material was also found to contain hydrogen sulfide. As a result of this discovery, additional investigation was performed to determine the nature of the material and delineate it in the field. The results of these investigations are presented below.

Investigation

Phase I

In April 1993, an initial investigation was conducted to delineate the extent of the barium impacted soil on the Wildwood property. The purpose of the investigation was to determine the limits of this material. Soil borings were advanced in and along the wetlands east of the site access road. A two-inch diameter pipe with a one-half inch wide, thirty-six-inch long slot along the length of the pipe was used to collect samples for visual examination of the soil profile. The pipe was pounded into the ground to a depth of 36 inches and removed from the ground. The sample was then extruded from the pipe and inspected for the presence of barium powder within the soil matrix. The soil stratigraphy was logged in the field for each test hole. If barium powder was present within the soil matrix, another boring was advanced east of the previous boring to find the limits. This continued until no barium powder was present in the borings. All boring locations were surveyed in the field. Figure 1 presents the locations of the eight borings (B1-B8) along with all other subsequent investigation borings.

A backhoe was then utilized to dig twenty test pits west and east of the access road. Observations regarding soil stratigraphy and the presence or absence of barium impacted soil was present was recorded. Each test pit location was surveyed in the field. Figure 1 presents the location of the test pits (Pit 1-Pit 20). Two composite samples (1-1 and 1-2) of the barium impacted soil were collected and analyzed for the RCRA characteristics of ignitability, corrosivity,

and reactivity. One composite sample was taken from Test Pits 5 and 7, the other composite sample was taken from Test Pits 10 and 12. The results are presents in Table 1.

Phase II

On June 3, 1993, additional investigation activities were performed. Test borings were installed to further delineate the eastern limits of barium impacted soil, and composite samples were collected to further define the nature of the barium impacted soil. Delineation of the eastern limits of the barium impacted soil was conducted by hand excavation to a depth of two feet in an along the wetlands. Holes were dug at 10 foot intervals in an easterly direction until no barium impacted soil was encountered (H1-H22). Soil stratigraphy and the presence or absence of barium impacted soil were recorded. The locations of all test holes were surveyed in the field and are presented in Figure 1. Seven composite samples (2-1 through 2-7) were collected to characterize the barium impacted soil in the soil. Aliquots from locations across the lateral extent of barium impacted soil were combined into composite samples at seven locations along the observed length of the material to represent the nature of the barium impacted soil over the entire area. A total of seven composite samples were collected and sent for RCRA reactivity analysis at NETL. Table 1 presents the results of the analysis.

Phase III

On August 16, 1993, an additional sample of barium impacted soil was collected to further characterize the material for parameters not evaluated during the first two phases on investigation. A composite sample was collected from two locations within the area of barium impacted soil defined by the Phase I and Phase II delineation efforts. The sampling locations are presented in Figure 1. Aliquots were collected by hand digging to a depth of two feet below grade, then scaping the walls and bottom of the excavation with a hand trowel and transferring the material into two, eight-ounce glass sampling jars.

The composite sample was analyzed for total barium, total sulfide, total sulfate, and TCLP. The full suite of toxicity characteristics, including volatiles, semivolatiles, pesticides, herbicides, and metals were analyzed following the TCLP extraction. In addition to the standard TCLP analytes, sulfide, sulfite, and sulfate in the leachate were quantified as well.

Extent of Barium Impacted Soil

Investigation activities identified the limits of the barium impacted soil east and south of the northwestern property boundary. Figure 1 presents the limits. No exploration was conducted outside of the Wildwood property and City of Woburn boundaries. Barium impacted soil was encountered at western property boundary abutting the railroad right-of-way and at the Olympia Nominee Trust property boundary to the north.

The stratigraphy of the barium impacted soils generally consisted of a six-inch to one-foot layer of brown sand or sandy silt over a six-inch to two-foot layer of soil with barium powder within the soil matrix. A wet, dark brown to black organic peat was encountered under the layer of barium impacted soil. Figure 2 presents cross-sections of the barium impacted soils area along the Phase I and Phase II composite sample locations. Figure 2 also shows the approximate locations of the MWRA and City of Woburn sewer easements. This figure shows a distinct layer of barium powder within the soil matrix over the sewer easements which tapers off east and west of the easements.

The volume of soil containing barium impacted soil is estimated at 1,100 cubic yards. This volume is based upon the horizontal and vertical limits identified during the supplemental sludge investigation.

Chemical Composition of Barium Impacted Soil

The original chemical characterization of the barium impacted soil during the Wildwood Property Predesign Investigation identified the material as being largely composed of barium, sulfide, and rock forming minerals common to native soils. Laboratory analyses performed on samples of the material indicated the barium impacted soil is not hazardous waste.

The presence of barium sulfide in the suspect material was confirmed in sample TP-6 when hydrogen sulfide gas was generated during the sulfide reactivity test. Despite the initial laboratory report that indicated that the dry solids show significant levels of barium, the presence of barium sulfide could not be confirmed in three of the nine composite samples. The presence of more than one barium compound in the material would help to explain these apparently inconsistent results. Unfortunately, there is currently no one analytical method that is capable of quantifying the concentrations of all of the possible barium compounds present in a sample. However, the analytical results of sample # 2 Barium powder, obtained during the Phase III investigation (Case

Number D0817-05), does provide some additional insights. The concentration of Total Barium in sample #2 Barium powder was 7,120 mg/Kg, while the TCLP Extractable Sulfide and Total Sulfide concentrations were below their respective quantification limits. In contrast, both the TCLP Extractable Sulfate and Total Sulfate tests on sample #2 Barium powder indicate the presence of sulfates. Even though these particular series of analytical tests were conducted on only one sample, the results confirm that barium sulfate is present in the suspect material. The fact that barium sulfate is present in the material is not surprising if the natural fate mechanisms of barium containing compounds are considered. For example, barium sulfide will tend to oxidize in dry air and slowly decompose in damp air into carbonate and other compounds (Merck, 1989). In solution, barium sulfide will decompose and combine with sulfate to form barium sulfate (EPA, 1985). The tendency of barium sulfide to readily form barium sulfate in an aqueous solution is one of the reasons it is difficult to quantify the amount of barium sulfide actually in the material. The analytical results along with what is known about the reactive mechanisms of barium compounds suggest that the predominant barium compound at the site is probably barium sulfate.

Toxicity Evaluation

The Endangerment Assessment (Clement, 1988) indicated that the potential adverse effects in humans following oral exposure to barium were associated with soluble barium compounds. A review of the toxicity studies, cited in EPA's Integrated Risk Information System (IRIS) database, that provided the basis for establishing an oral reference dose for barium confirms this statement. For example, the study that provided the basis for establishing the current NOAEL of 10 mg/L involved administering barium chloride in the drinking water to 11 healthy male volunteers. Although there were no changes in systolic or diastolic blood pressures, or serum chemistry of these volunteers, there was an increase in their serum calcium levels. The increase in serum calcium levels is described in IRIS as statically significant, but not clinically significant.

A retrospective epidemiology study of barium exposure was also cited in IRIS that involved comparing human mortality and morbidity rate in populations ingesting elevated barium levels in their drinking water to populations ingesting very little or no barium. Differences in mortality rates from all cardiovascular diseases were significantly higher in the communities with elevated barium in their water. However, these differences were largely in the 65 and over age group and did not account for confounding variables such as population mobility, or use of medication. When further analyzed, the data from the study indicated that there were not significant differences in mean systolic and diastolic pressures between the two communities. In addition, no significant differences were found when the total populations were broken down by duration, medication, or use of water softeners. Also, the prevalence rates for hypertension,

stroke, and heart and kidney disease were not significantly different between the two communities.

Insoluble forms of barium, particularly barium sulfate, are not toxic by ingestion or inhalation because only minimal amounts are absorbed (EPA, 1985). Therefore, a summary of the solubilities of various forms of barium provides a simple means of evaluating their relative potential toxicity to humans. Of the various barium compounds, barium chloride is considered very soluble in water, barium sulfide is slightly soluble, barium carbonate is almost insoluble, and barium sulfate is practically insoluble in water (Merck, 1989).

Barium compounds have not been evaluated by the U.S. EPA for evidence of human carcinogenic potential. Since the 1988 Endangerment Assessment (Clement, 1988) was prepared, the U.S. EPA raised the oral reference dose for barium to 0.07 mg/kg-day from 0.05 mg/kg-day. The calculation of cleanup levels discussed in the following section considered the more recent reference dose cited in IRIS.

There are currently no ambient water quality criteria for aquatic organisms. It is generally believed that the physical and chemical properties of barium will preclude the existence of toxic soluble forms under usual marine and fresh water conditions and thus a restrictive criterion for aquatic life is considered unwarranted (IRIS, 1994).

Calculation of Cleanup Levels

The same methodology and exposure assumptions used in the 1988 Endangerment Assessment (Clement, 1988), for ingestion and dermal contact scenarios were used to calculate a concentration of barium that would result in a hazard index of 1 or an intake equal to the reference dose. As stated above, the latest oral reference dose for barium of 0.07 mg/kg-day was used in the calculation. Equations No. 2 and No. 3 in the Endangerment Assessment Report (Clement, 1988) for oral and dermal chronic daily intakes using a chemical concentration of 1 ppm (mg/kg) of barium were combined with the reference dose as follows:

$$UHI = (CDI_{oral} + CDI_{derm}) / RfD_{oral}$$

where:

- CDI_{oral} = oral chronic daily intake (mg/kg-day);
- CDI_{dermal} = dermal chronic daily intake (mg/kg-day); and
- UHI = unit hazard index;
- RfD_{oral} = oral reference dose.

The unit hazard index value calculated in Equation 1 represents the noncarcinogenic health effect associated with exposures to 1 ppm of barium in the soil/sludge. The cleanup level for each receptor was calculated by determining the concentration associated with a hazard index value of 1, as follows:

$$CL \text{ (ppm)} = 1 \text{ ppm} / UHI$$

where:

CL = cleanup level (ppm);
UHI = unit hazard index.

The most conservative cleanup level calculated for barium, presented in Table 2, was 68,438 mg/kg-soil. This cleanup level was calculated for a plausible maximum exposure of a young male adult resulting from ingestion and dermal exposure of impacted soil. It should be noted that the cleanup levels presented in Table 2 represent health-based concentrations for soluble barium compounds. Individual toxicity values on the various suspected barium compounds, such as barium sulfate, are not available.

Summary/Recommendation

The methodology used to calculate health-based cleanup levels for the various receptor groups was based on the very conservative assumption that all of the barium powder found within soils at the site is composed of pure barium sulfide, even though there is evidence that suggests that the predominant barium compound present is probably barium sulfate.

As previously discussed, there is currently no direct means of determining the concentration of the various barium compounds present at the site. However, the reactivity sulfide data, summarized in Table 1, could be used to provide an approximate means of determining the amount of barium sulfide present at the site. For example, the highest concentration of reactive sulfide present at the site. For example, the highest concentration of reactive sulfide detected was 407 mg/kg in sample # 2. The actual concentration of barium sulfide present in this sample may be as high as 1,000 mg/kg. This is due in part to the tendency of barium sulfide to rapidly form barium sulfate in an aqueous solution. Since the assumed maximum detected concentration of barium sulfide is 49 times less than the most stringent health-based cleanup level, it is reasonable to conclude that the barium impacted soil present at the site does not pose a threat to human health via ingestion or contact.

A review of the groundwater monitoring data collected in September 1992, indicates that barium is not present in elevated concentrations at the Wildwood Property. This is not entirely unexpected since barium is not soluble at more than a few parts per million in water that contains sulfate at more than a few parts per million (EPA, 1985). The highest concentration of barium, observed during this sampling event, was 0.0659 mg/L in Well S-88M. In contrast, the Maximum Contaminant Level (MCL) for barium is 2 mg/L. This comparison indicates that the barium impacted soil is not a threat to human health via the groundwater pathway.

In conclusion, it is reasonable to conclude that the barium impacted soil found at the Wildwood Property does not pose a threat to human health and may be left in place.

TABLE 1

**Barium Soil Sample Results
Wildwood Property
Wells G & H Superfund Site**

Sample #	Reactivity		Corrosivity (ph, S. U.)	Ignitability (Degrees F.)
	Sulfide (mg/kg)	Cyanide (mg/kg)		
Phase I				
1 ^a	45	<0.3	6.8	>200
2 ^b	407	<0.3	5.9	>200
Phase II				
1 ^c	3.0	--	--	--
2 ^d	<1.0	--	--	--
3 ^e	5.3	--	--	--
4 ^f	<1.0	--	--	--
5 ^g	23	--	--	--
6 ^h	20	--	--	--
7	<1.0	--	--	--

NOTES:

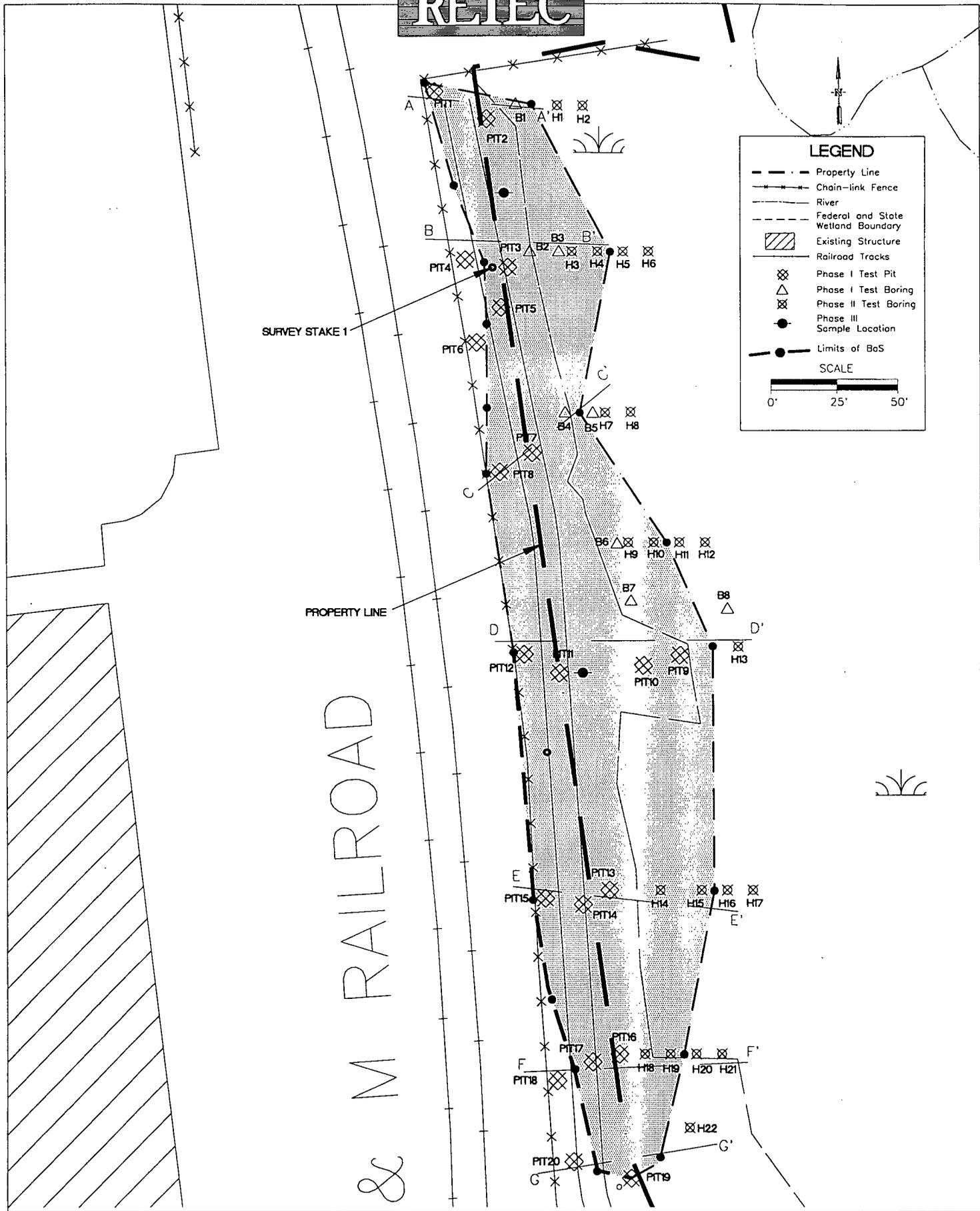
- a - Composite sample taken from test pits 5 and 7.
- b - Composite sample taken from test pits 10 and 12.
- c - Composite sample taken from test pits 1, 2 and boring 1.
- d - Composite sample taken from test pits 3, 4 and boring 2, 3.
- e - Composite sample taken from test pits 7, 8 and boring B4, B5.
- f - Composite sample taken from test pits 9, 10, 11, and 12.
- g - Composite sample taken from test pits 13, 14 and 15.
- h - Composite sample taken from test pits 16, 17 and 18.

Table 2

Calculation of Cleanup Goals for Barium
 at the WELLS G&H site
 based on EBASCO Endangerment Report
 Pathways Considered: Ingestion, dermal absorption

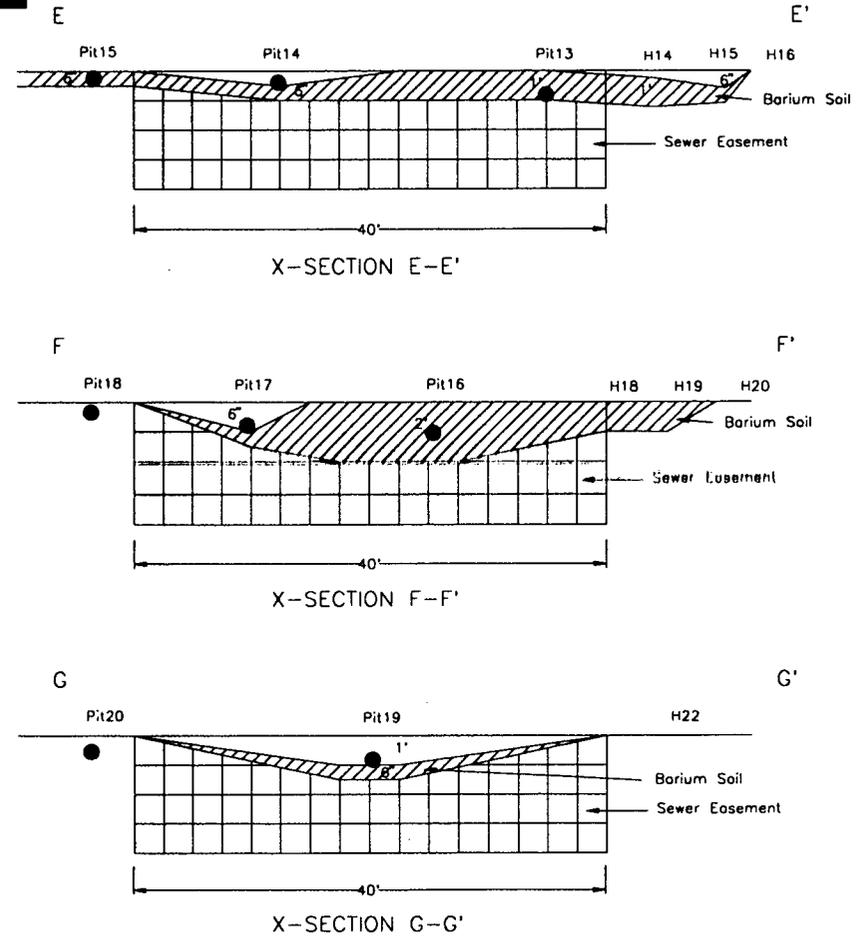
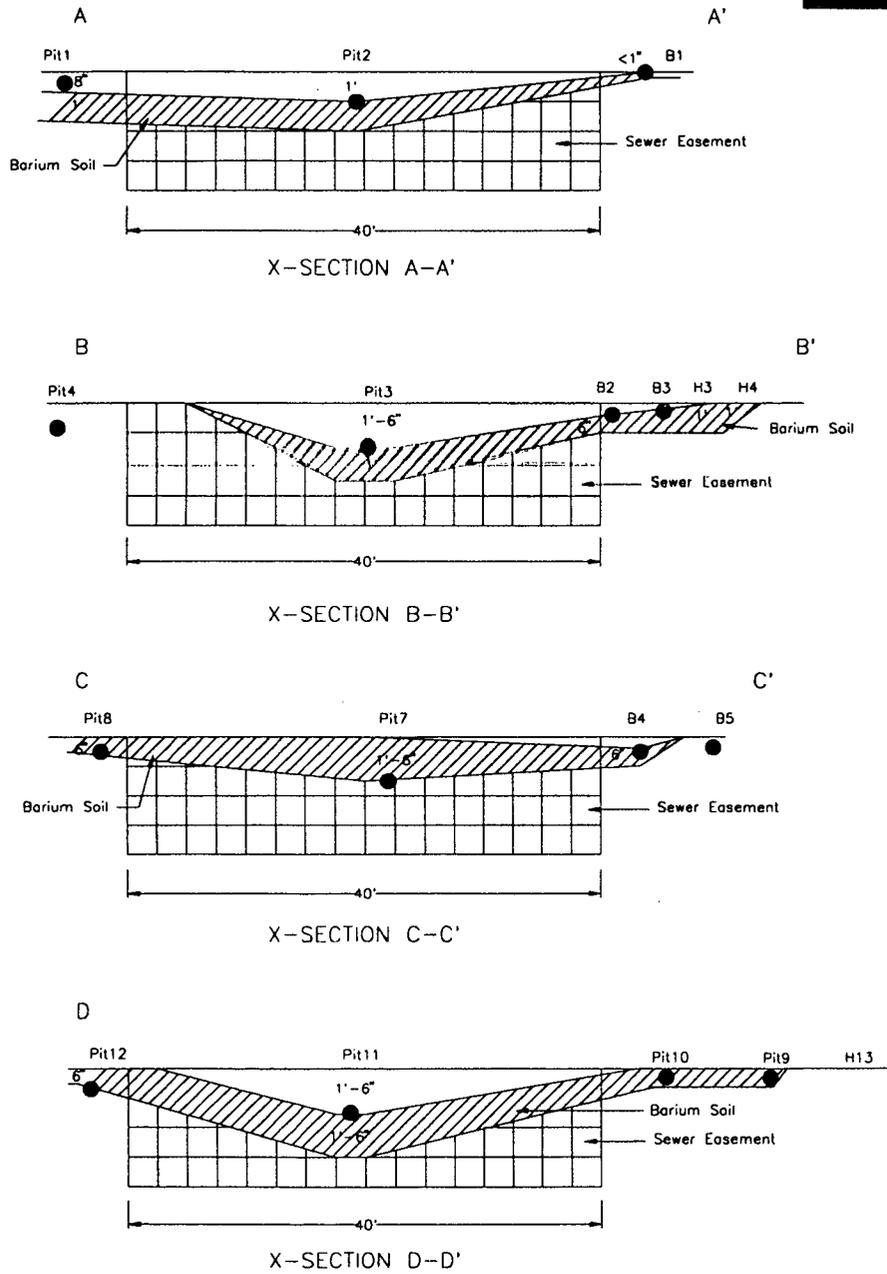
Barium Oral RfD = 0.05 mg/kg-day

EXPOSURE PARAMETER	RECEPTOR: WORKER MEDIUM: SOIL		RECEPTOR: YOUNG ADULT MEDIUM: SOIL/SLUDGES		RECEPTOR: FUT. RESIDENT MEDIUM: SOIL/SLUDGES		RECEPTOR: CHILD MEDIUM: SEDIMENTS		RECEPTOR: ADULT MEDIUM: SEDIMENTS	
	Average	Plausible Max	Average	Plausible Max.	Average	Plausible Max.	Average	Plausible Max	Average	Plausible Max
I=Amount of soil ingested (mg/visit)	25	100	50	100	54	145	0	0	0	0
AI=differential absorption factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
E=frequency of exposure events (per year)	48	100	100	168	100	168	16	32	16	32
YR=years of exposure (years)	10	10	6	6	70	70	5	5	5	30
X=conversion factor (kg/1E6 mg)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06
BW=average body weight (kg)	70	70	45	45	70	70	27	27	70	70
DY=days in a year (days/yr)	365	365	365	365	365	365	365	365	365	365
YL=averaging period (years)	10	10	6	6	70	70	5	5	5	30
CD=contact rate for soil (g/visit)	0.4	0.99	0.4	0.99	0.79	5.4	0.3	0.9	0.42	1.26
Z=conversion factor (kg/1000g)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
ABS=dermal absorption factor	1%	10%	0%	0%	0%	0%	1%	10%	1%	10%
CLEANUP LEVEL (mg/kg-soil)	917,744	64,196	164,250	48,884	236,574	52,443	10,265,625	171,094	19,010,417	316,840



LIMITS OF BARIUM SOIL

FIGURE
1
WILDW3.DWG



Note: Figure not to scale

WILDWOOD
CROSS SECTIONS OF BARIUM SOIL

REPORT OF ANALYTICAL RESULTS

Case Number: C1217-03

Prepared for:

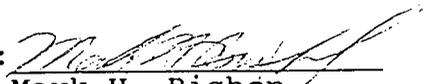
Remediation Technologies, Inc.
Damonmill Square
9 Pond Lane
Concord, MA 01742

Prepared by:

New England Testing Laboratory, Inc.
1254 Douglas Avenue
North Providence, RI 02904

Date: 21 JANUARY 1993

Reviewed By:


Mark H. Bishop
Laboratory Director

NEW ENGLAND TESTING LABORATORY, INC.

1254 Douglas Avenue, North Providence, Rhode Island 02904-5392 • 401-353-3420

The following samples were submitted to New England Testing Laboratory on 17 December 1992:

Wells G&H - Woburn, Supplemental Sludge Investigation:

Sample ID	Description
TP-43-2	Bright blue chunks
TP-6	Gray/white, moist powder
TR-16	Dark gray, moist clay-like semi-solid
SL-8-1	Yellow/white, translucent grease
TR-39-1	Rust colored chunks
TR-44	White fibers solid mixed with soil-like solids
TP-43-1	Dark brown chunks

These samples were submitted to the laboratory for qualitative identification. The following text details the analyses performed and the results of those analyses.

Qualitative analysis of "TP-43-2"

The material loses approximately 25% of its weight upon ignition at 500C, indicating a mix of 75% inorganics and 25% organics/water.

An energy dispersive X-ray spectrum (EDS) of the material indicates that silicon dioxide is the primary inorganic with traces of magnesium present. No heavy metals are present in bulk quantities.

The organic portion of the sample was extracted from the silica with chloroform/acetone and analyzed by Fourier Transform Infrared spectroscopy (FTIR). (The blue color is solvent extractable.) This analysis indicates that the organic fraction of the sample is an aromatic ester, possibly a fiber reactive blue dye/pigment.

Qualitative analysis of "TP-6"

Oven drying at 105C indicates a water content of 32%.

An EDS of the dry solids shows significant levels of Barium (possibly titanium), sulfur, and silica. Potassium and aluminum were present at trace levels.

The presence to significant levels of barium is confirmed by inductively coupled argon plasma atomic emission spectroscopy.

Ignition at 500 C results in a weight loss of about 8%. Loss of hydrogen sulfide would account for this weight loss.

The sample generates hydrogen sulfide gas upon dissolving in hydrochloric acid. This result together with the EDS results indicates that the solids are barium sulfide.

2 Samples Reactivity
Corrosivity
Ignitability

REPORT OF ANALYTICAL RESULTS

Case Number: D0415-04

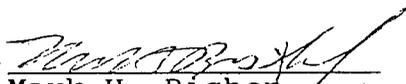
Prepared for:

Remediation Technologies
Damonmill Square
9 Pond Lane
Concord, MA 01742
Attn: Michael Gardner

Prepared by:

New England Testing Laboratory, Inc.
1254 Douglas Avenue
North Providence, RI 02904

Date Reported: 22 APRIL 1993

Reviewed By: 
Mark H. Bishop
Laboratory Director

NEW ENGLAND TESTING LABORATORY, INC.

1254 Douglas Avenue, North Providence, Rhode Island 02904-5392 • 401-353-3420

Sample Description

The following samples were submitted to New England Testing Laboratory on 15 APRIL 1993:

"Wells G & H"

1. #1
2. #2

The Custody record is included in this report. The samples were assigned an internal identification code (case number) for laboratory information management purposes. The case number for this sample submission is as follows:

Case Number: D0415-04

Request for Analysis

The following table details the analyses performed on the samples:

<u>Sample</u>	<u>Analysis</u>	<u>Method*</u>
D0415-04:		
1. #1	Reactivity	
2. #2	Cyanide	7.3.3.2
	Sulfide	7.3.4.1
	Corrosivity-pH	9040
	Ignitability	1010

*Note: These methods are documented in:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, USEPA.

Quality Assurance/Control Statements

All samples were found to be properly preserved/cooled upon receipt. All analyses were performed within EPA designated holding times. Procedure/calibration checks required by the designated protocols were within control limits.

Case No. D0415-04

#1

<u>Parameter</u>	<u>Result, mg/Kg</u>
Reactivity	
Sulfide	45
Cyanide	<0.3
Corrosivity	
pH, S.U.	6.8
Ignitability, Deg. F	>200

#2

<u>Parameter</u>	<u>Result, mg/Kg</u>
Reactivity	
Sulfide	407
Cyanide	<0.3
Corrosivity	
pH, S.U.	5.9
Ignitability, Deg. F	>200

CUSTODY RECORD

CHAIN OF CUSTODY RECORD

D0415-04

PROJ. NO. 30947		PROJECT NAME Wells GEH		NO. OF CONTAINERS	REMARKS	
SAMPLERS: (Signature)						
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	9 + RCRA REACTIVITY	CONTAINS BAs (TROLL)	
1	4/14	5:00				
2	4/14	5:00				
Relinquished by: (Signature) <i>[Signature]</i>		Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)		Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)		Date / Time	Received for Laboratory by: (Signature) <i>[Signature]</i>	Date / Time 4/15/03	REMEDIAION TECHNOLOGIES	
REMARKS:						 REMEDIAION TECHNOLOGIES Damon III Square 9 Pond Lane Concord, MA 01742

Bas Sulfide Reactivity

7 Samples Sulfide Reactivity

REPORT OF ANALYTICAL RESULTS

Case Number: D0604-08

Prepared for:

Remediation Technologies, Inc.
9 Pond Lane
Concord, MA 01742
Attn: Tom Clark

Prepared by:

New England Testing Laboratory, Inc.
1254 Douglas Avenue
North Providence, RI 02904

Date Reported: 10 JUNE 1993

Reviewed By:


Mark H. Bishop
Laboratory Director

NEW ENGLAND TESTING LABORATORY, INC.

1254 Douglas Avenue, North Providence, Rhode Island 02904-5392 • 401-353-3420

Sample Description

The following samples were submitted to New England Testing Laboratory on 4 JUNE 1993:

"Wells G & H"

1. #1
2. #2
3. #3
4. #4
5. #5
6. #6
7. #7

The Custody record is included in this report. The samples were assigned an internal identification code (case number) for laboratory information management purposes. The case number for this sample submission is as follows:

Case Number: D0604-08

Request for Analysis

The following table details the analyses performed on the samples:

<u>Sample</u>	<u>Analysis</u>	<u>Method*</u>
D0604-08:		
1. #1	Reactivity-S	Section 7.3.4.1
2. #2		
3. #3		
4. #4		
5. #5		
6. #6		
7. #7		

*Note: These methods are documented in:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,
SW-846, USEPA.

Quality Assurance/Control Statements

All samples were found to be properly preserved/cooled upon receipt. All analyses were performed within EPA designated holding times. Procedure/calibration checks required by the designated protocols were within control limits.

ANALYTICAL RESULTS

Case No. D0604-08

Reactive Sulfide

<u>Sample</u>	<u>Result, mg/Kg</u>
#1	3.0
#2	<1.0
#3	5.3
#4	<1.0
#5	23
#6	20
#7	<1.0

CUSTODY RECORD

D0604-08

US EPA ARCHIVE DOCUMENT

DJ. NO.		PROJECT NAME		NO. OF CONTAINERS	RCRA REACTIVITY	REMARKS
0947		WEUS G&H				
SAMPLERS: (Signature)						
<i>Dante Guth</i>						
SAMPLE NO.	DATE	TIME	SAMPLE LOCATION			
1	6-3-93			1	1	Reactivity Sulfide only
2	6-3-93			1	1	
3	6-3-93			1	1	
4	6-3-93			1	1	
5	6-3-93			1	1	
6	6-3-93			1	1	
7	6-3-93			1	1	

Work Order #
NETL-002

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
<i>Dante Guth</i>	6-3-93 5:20				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time		
		<i>A. Madaras</i>	6/4/93		

REMARKS:



REMEDATION TECHNOLOGIES
Damonmill Square
9 Pond Lane
Concord, MA 01742

Debris Soil @ TCEP + BCRA cor Ig Riecht

Bas TCEP + sulfides
Total barium
total sulfides

REPORT OF ANALYTICAL RESULTS

Case Number: D0817-05

Prepared for:

Remediation Technologies, Inc.
9 Pond Lane
Concord, MA 01742
Attn: Jamie Greacen

Prepared by:

New England Testing Laboratory, Inc.
1254 Douglas Avenue
North Providence, RI 02904

Date Reported: 3 SEPT 1993

Reviewed By:

Mark H. Bishop
Mark H. Bishop
Laboratory Director

NEW ENGLAND TESTING LABORATORY, INC.

1254 Douglas Avenue, North Providence, Rhode Island 02904-5392 • 401-353-3420

Sample Description

The following samples were submitted to New England Testing Laboratory on 17 AUG 1993:

"Wells G & H RD/RA"

1. #1 Debris Soil B
2. #2 Bas

The Custody record is included in this report. The samples were assigned an internal identification code (case number) for laboratory information management purposes. The case number for this sample submission is as follows:

Case Number: D0817-05

Request for Analysis

The following table details the analyses performed on the samples:

<u>Sample</u>	<u>Analysis</u>	<u>Method*</u>	
D0817-05: 1. #1	Corrosivity-pH	9040	
	Reactivity-CN	Section 7.3.3.2	
	-S	Section 7.3.4.1	
	Ignitability	1010	
	Pesticides/PCB's	8080	
	Ash	209D	
	BTU's	D2382-76	
	Grain Size	D422	
	Moisture	EPA/CE 3-58	
	1. #1 2. #2	TCLP Extraction	1311
		TC Volatiles	8240
TC Semivolatiles		8270	
TC Pesticides		8080	
TC Herbicides		8150	
Arsenic		7060	
Barium		6010	
Cadmium		6010	
Chromium		6010	
Lead		6010	
Mercury		7470	
Selenium		7740	
Silver		6010	
2. #2		TCLP Extraction	1311
	Sulfide	376.2	
	Sulfite	377.1	
	Sulfate	375.4	
	Barium	6010	
	Sulfide	9030	
	Sulfate	9038	
	Sulfite		

*Note: These methods are documented in:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,
SW-846, USEPA.

Procedure for Handling and Chemical Analysis of Sediment and Water
Samples, EPA/CE-81-1, US Army Engineer Waterways Experiment Station.

Standard Methods for the Examination of Water and Wastewater,
16 & 17th Edition, 1989, APHA, AWWA-WPCF.

Manual of Methods for Chemical Analysis of Water and Water Wastes,
EPA-600/4-79-020 (Revised 1983), USEPA/EMSL.

Quality Assurance/Control Statements

All samples were found to be properly preserved/cooled upon receipt. All analyses were performed within EPA designated holding times. Procedure/calibration checks required by the designated protocols were within control limits.

9/13/93 08:54

4013548951

NE TESTING LAB

006

ANALYTICAL RESULTS

Case No. D0817-05

#2 Bas

<u>Parameter</u>	<u>Result, mg/Kg</u>
TCLP Extractables	Attached
TCLP Extractable, mg/L:	
Sulfide	<0.02
Sulfite	<1.0
Sulfate	23
Total Sulfide	<0.5
Total Sulfite	<25
Total Sulfate	349
Total Barium	7120

Sample: #2 Bas

Case No. D0817-05

Date TCLP Extracted: 8/22/93

Date Analyzed*: 8/23/93

<u>TCLP Extractable Metals:</u>	<u>Result, mg/L</u>	<u>Regulatory Limit, mg/L</u>
Arsenic	<0.1	5.0
Barium	<0.5	100.0
Cadmium	<0.05	1.0
Chromium	0.11	5.0
Lead	<0.2	5.0
Mercury	<0.005	0.2
Selenium	<0.1	1.0
Silver	<0.05	5.0

* Date Completed

Sample: #2 Bas

Case No. D0817-05

Date TCLP Extracted: 8/22/93

Date Analyzed: 8/29/93

TCLP Volatile Organic Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Benzene	<0.02	0.5
Carbon Tetrachloride	<0.02	0.5
Chlorobenzene	<0.02	100.0
Chloroform	<0.02	6.0
1,4-Dichlorobenzene	<0.02	7.5
1,2-Dichloroethane	<0.02	0.5
1,1-Dichloroethylene	<0.02	0.7
Methyl Ethyl Ketone (MEK)	<0.5	200.0
Tetrachloroethylene	<0.02	0.7
Trichloroethylene	<0.02	0.5
Vinyl Chloride	<0.04	0.2

Surrogates:

	<u>% Recovery</u>	<u>Limits</u>
Toluene d8	89	88-110
1,2-Dichloroethane-d4	107	76-114
4-Bromofluorobenzene	109	86-115

Sample: #2 Bas

Case No. D0817-05

Date TCLP Extracted: 8/22/93

Date Prep Extracted: 8/24/93

Date Analyzed: 9/1/93

TCLP Extractable Pesticides/Herbicides:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
Chlordane	<0.01	0.03
2,4-D	<0.05	10.0
Endrin	<0.001	0.02
Heptachlor	<0.001	0.008
Heptachlor Epoxide	<0.001	0.008
Lindane	<0.001	0.4
Methoxychlor	<0.005	10.0
Toxaphene	<0.01	0.5
2,4,5-TP Silvex	<0.05	1.0

Sample: #2 Bas

Case No. D0817-05

Date TCLP Extracted: 8/22/93

Date Prep Extracted: 8/23/93

Date Analyzed: 8/24/93

TCLP Semivolatile Base/Neutral Extractable Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
1,4-Dichlorobenzene	<0.05	7.5
Hexachlorobenzene	<0.05	0.13
Hexachloro-1,3-butadiene	<0.05	0.5
Hexachloroethane	<0.05	3.0
Nitrobenzene	<0.05	2.0
Pyridine	<0.05	5.0
2,4-Dinitrotoluene	<0.05	0.13

TCLP Semivolatile Acid Extractable Compounds:

<u>Compound</u>	<u>Concentration mg/L (ppm)</u>	<u>Regulatory Limit, mg/L (ppm)</u>
o-Cresol	<0.1	200.0
m-Cresol	<0.1	200.0
p-Cresol	<0.1	200.0
Pentachlorophenol	<0.1	100.0
2,4,5-Trichlorophenol	<0.1	400.0
2,4,6-Trichlorophenol	<0.1	2.0

Surrogates:

	<u>% Recovery</u>	<u>Limits</u>
Nitrobenzene d5	43	35-114
2-Fluorobiphenyl	59	43-116
p-Terphenyl d14	56	33-141
Phenol d6	40	10-94
2-Fluorophenol	50	21-100
2,4,6-Tribromophenol	63	10-123

NEW ENGLAND TESTING LABORATORY, INC.
 1254 Douglas Avenue
 North Providence, RI 02904

D0817-05

CHAIN OF CUSTODY RECORD

PROJ. NO.		PROJECT NAME		NO. OF CONTAINERS	TESTS	REMARKS
3-0947-00		Wells G+H RO/RA				
CLIENT					STATION LOCATION	
RETEC						
SAMPLE I.D.	DATE	TIME	COMP	GRAU		
1	8-16-93	4pm	x		Debris Piles G, 7, 9, 13, & South	2
Debris Soil B						
2	8-16-93	4pm	x		Test Pits near wells 7 and 12	2
Bas						

Relinquished by: (Signature) <i>Tom R. Green</i>	Date/Time 8-16-93 5pm	Received by: (Signature) <i>FedEx</i>	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature) <i>Tom R. Green</i>	Date/Time 8/17/93	Remarks * AKA BTU grain size. MUST REFRACH.	

TESTS
 Digestion
 8080
 TCLP - Cd, Pb, Cu, Zn
 Sulfide - TC + Fe
 Sulfate - TC + Fe
 Total Ba

As per verbal discussions. First analysis per 8080, subsequent analyses subject to results of EPA 8080
 Add sulfide, sulfite, and sulfate to the leachate analyte list

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1/13/93 09:07
 B04013548951
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