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SARATOGA TREE NURSERY

Route 50 Facility

Saratoga Springs, Saratoga County

OFF SITE INVESTIGATION WORK PLAN

March 1995

FILE COPY

Prepared by:

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation

New York State Department of Environmental Conservation

Saratoga Tree Nursery Route 50 Facility

Off-Site Investigation Work Plan

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SECTION 1: PURPOSE OF THE INVESTIGATION

This investigation is designed to determine whether elevated levels of DDT resulting from formulation practices at the Saratoga Tree Nursery are present in off site soil or groundwater. Previous investigations have shown DDT contamination in surface and subsurface soils on the tree nursery property along the fence line adjacent to eight private properties and in a sample collected from a nursery well in the same vicinity. Surface and subsurface soil samples will be collected from each of these properties and analyzed for pesticides to determine if they may have been impacted by past DDT handling at the site. In addition to soil sampling, existing non-potable water wells will be sampled, as well as any surface water present in areas of historic flooding. If DDT contamination is identified in the off site soil or groundwater, the sampling of soils and wells will be extended to additional adjacent properties, as needed, to delineate the extent of contamination.

Due to the past widespread use of DDT and its subsequent presence in the environment, part of this investigation will address the question of background soil concentrations. Background is considered indicative of predisposal conditions. These background levels will be utilized to evaluate the areas of possible impact as a result of the DDT handling at the nursery. Samples will be taken from eight locations in and around the Geyser Crest Community to determine the background level of DDT typically found in the area.

SECTION 2: SITE HISTORY AND BACKGROUND

Site History

The State of New York has operated a tree nursery on the Route 50 location since 1911. Approximately 30 acres of the total 130 acre site has been used for nursery related activities. About 100 acres remain forested; having never been developed for nursery use. Since 1969, only 12 acres of the original 30 have been used for nursery production. The nursery was originally operated by the Conservation Department before its incorporation into the Department of Environmental Conservation in 1970. Because of the acreage available and the proximity to the Saratoga County Airport, the nursery was used as a storage and mixing facility by the Bureau of Forest Insect and Disease Control.

Background

The Saratoga Tree Nursery was used as a storage site for DDT powder and as a formulation/ transfer station for the DDT emulsion used in the aerial spraying operations carried out by the State, from the 1940's until the use of DDT was discontinued in 1966. These spraying operations were part of an effort by the Bureau of Forest Insect and Disease Control to control the gypsy moth populations.

The formulation process involved dissolving DDT powder in fuel oil and using the solution to create an oil/water emulsion. The DDT emulsion was pumped into tanker trucks which were dispatched to waiting aircraft that were used in the spraying operation.

to waiting aircraft that were used in the spraying operation.

After the tanker trucks had delivered the DDT emulsion they were returned to the tree nursery, emptied of any residual emulsion and were rinsed and flushed with water. The rinsing and flushing operations were conducted in the vicinity of the present mechanic shop (see Figure 2). It is believed contaminated rinse waters flowed to a low area at the western edge of the Route 50 facility. NYSDEC believes that the flushing and rinsing of the tanker trucks, including the disposal of the residual emulsion and the resulting contaminated rinse water, were the primary sources of the DDT contamination in this area.

Through the early 1980's, pesticides awaiting final disposition or disposal are reported to have been stored in two small storage sheds, the lumber barn, the mechanic ship, the loading dock, the Smith barn and in the former building of which only a foundation remains (Buildings E, F, G, H, J, K, & L respectively on Figure 2). These are the only areas where DDT is reported to have been stored or handled at the Nursery facility.

DDT was originally found in soil samples collected at the Route 50 facility in May of 1994. The samples were collected as part of the routine sampling for possible petroleum contamination required when the existing underground fuel tanks near the mechanic shop were replaced with new tanks. Based on this data, nursery facility staff requested the NYSDEC's Division of Hazardous Waste Remediation (DHWR) test additional locations in this vicinity for pesticide contamination. This sampling was conducted in the Fall of 1994.

Sampling was conducted in three separate events. The first event, which took place in October 1994, included sampling three water supply wells on the Nursery property and soil sampling to define areas which may have been impacted by the handling of DDT.

After NYSDEC reviewed the results of the first soil sampling, a second round of samples was collected in December 1994. These samples were collected along the western property boundary of the Route 50 facility, including nine locations adjacent to properties located on Hathorn Boulevard in the Geyser Crest Community. The area in question represents an area of about 600 feet along the western fence line.

Soil samples from the 0-6", 6-12", and 12-24" depths were collected from nine locations on the western property boundary. To better define the northern and southern limits of contamination along the fence line, additional samples were collected in a third sampling event in January 1995. Also, existing on site wells were sampled for the presence of lead and arsenic, since the pesticide lead arsenate was also reported to have been stored at the Tree Nursery. The results of the sampling to date are presented in Appendix B.

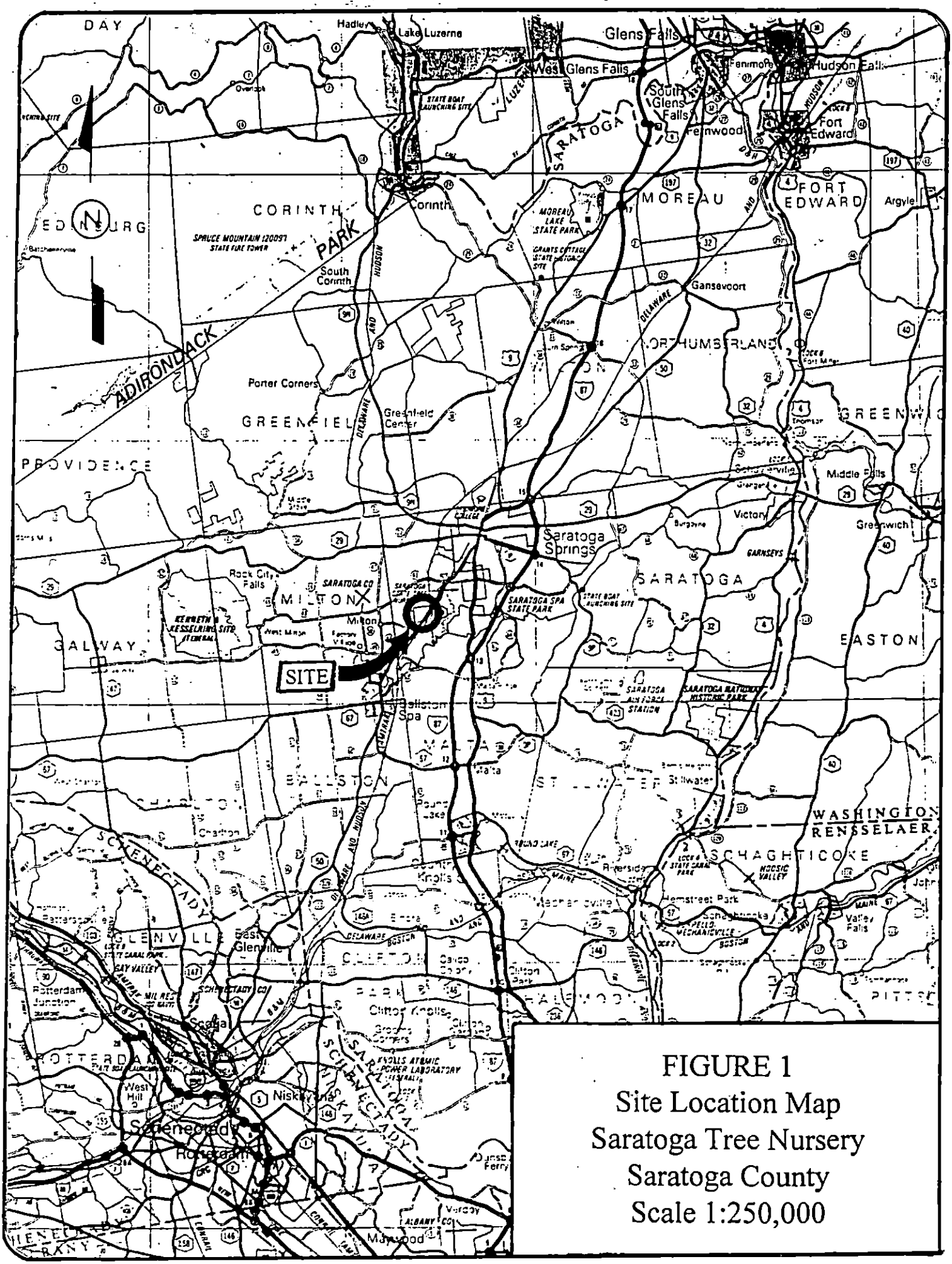


FIGURE 1
Site Location Map
Saratoga Tree Nursery
Saratoga County
Scale 1:250,000

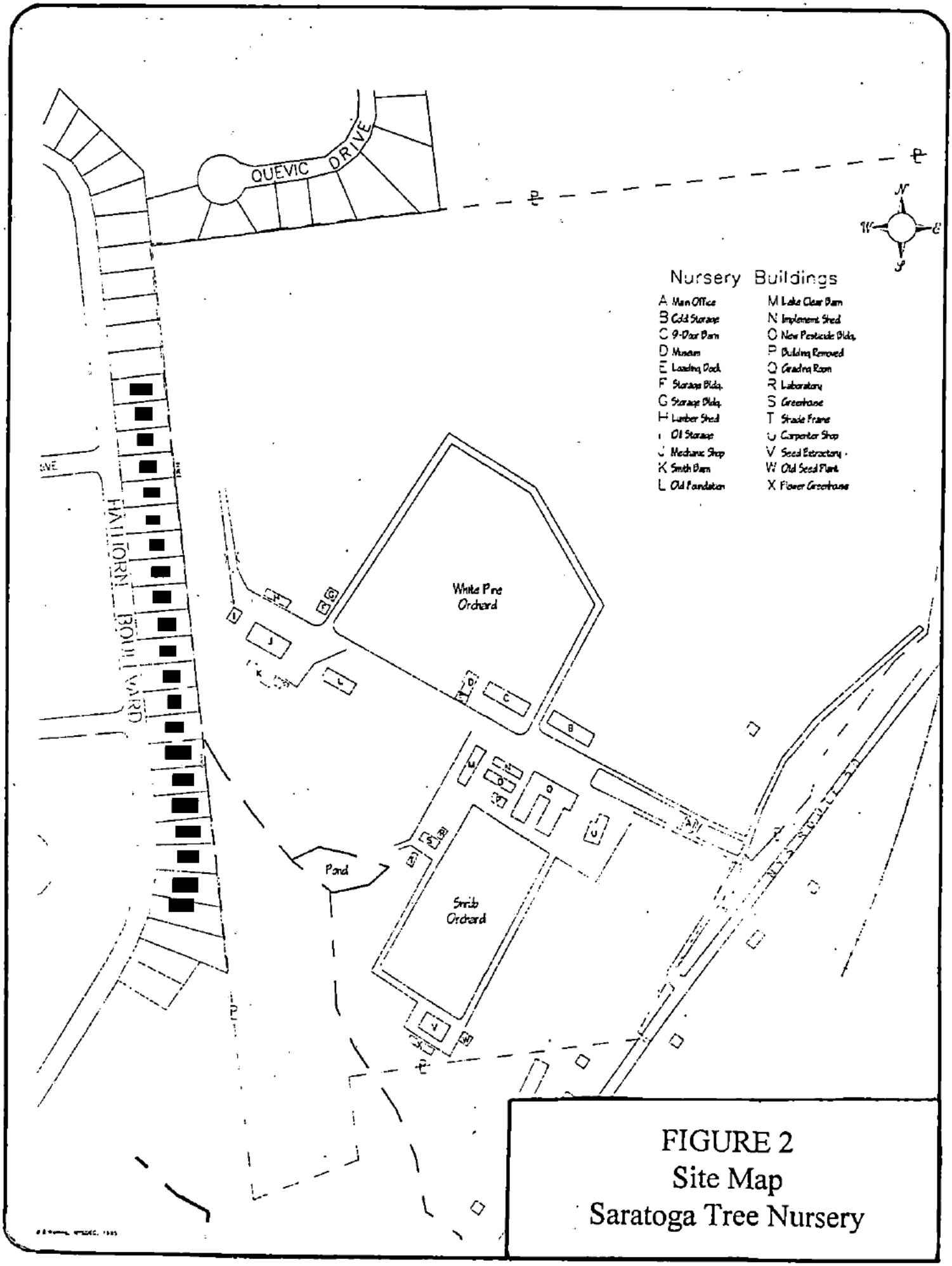


FIGURE 2
Site Map
Saratoga Tree Nursery

SECTION 3: SCOPE OF WORK

3.1 Background Soil Sampling

Samples of surface soils will be collected from the eight (8) locations on and around the Saratoga Tree Nursery property. The locations to be sampled are shown on Figure 4. Each sample will be a composite of five equal subsamples collected from near each corner and the center of a one meter square.

The background sample locations were selected to provide background levels of DDT representative of typical undisturbed and developed areas in the vicinity of the area of investigation. Sample results will be used to determine typical background levels for the area in question. This sampling will be available for use in the surface and subsurface soil sampling program.

3.2 Surface and Subsurface Soil

A minimum of five locations will be sampled at each of the eight private properties on Hathorn Boulevard (# 's [redacted]) located adjacent to the area of known contamination. At a minimum, samples will be taken from the 0-3" and 3-12" soil horizons of native material at each sample location. The 0-3" sample will be taken using the background sampling technique. Three samples will collected at a distance of one meter from the fence, with at least one near the existing fence line sample point associated with the property. If applicable, at least one sample will be located in an area of apparent significant usage. Based on the results of these initial samples, two additional samples will be collected. Their location will be either further into the yard if initial sample results are elevated, or in the area of the fence if levels are within background levels. If contamination is identified in the top one foot of native soil, samples from additional locations will be collected until the limits of contamination have been defined. The vertical limits of sampling will be determined based on the flow chart below.

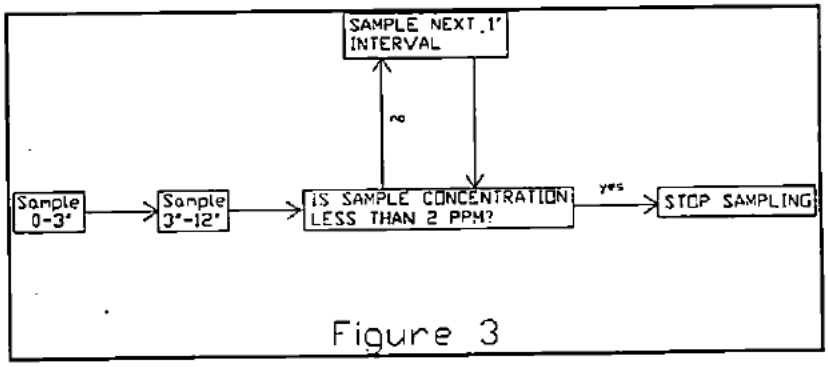


Figure 3

The presence of significant non-native fill has been identified on one property. Where fill is present,

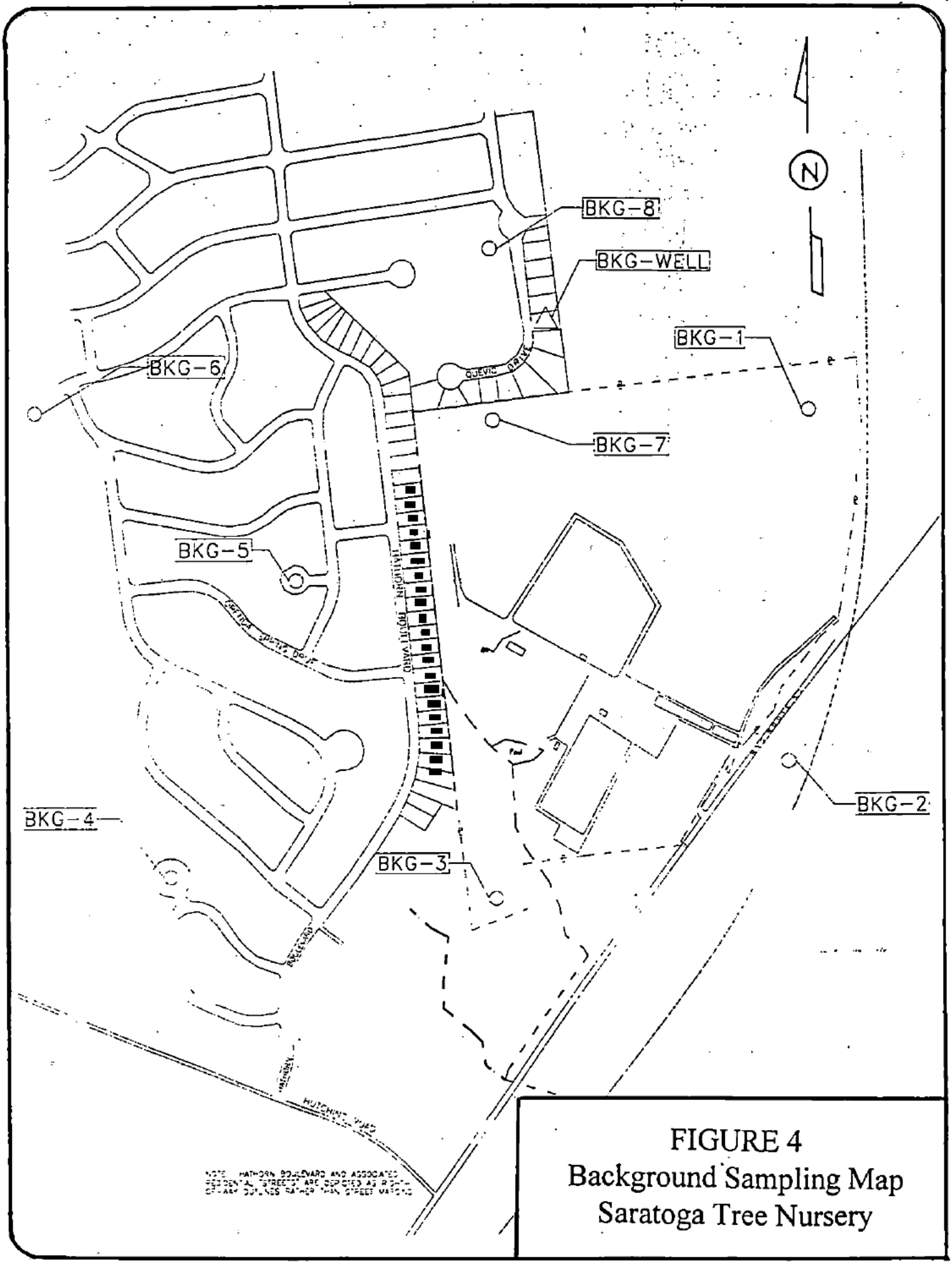


FIGURE 4
Background Sampling Map
Saratoga Tree Nursery

a surface composite sample from the top 3" of fill will be collected at one sample location in the same manner as the background samples. The sampling program will then proceed with a boring being advanced to native material, at which point sample collection will proceed. Samples will be taken from 0-12" and 12-24" horizons of the native material. Where fill is from on site excavation (i.e. from a pool installation), it will be sampled more fully based on the depth of the fill.

Samples from new locations will be collected and analyzed until the horizontal and vertical limits of contamination have been defined for each property. Should this effort not complete the delineation of the area impacted, sampling will be extended to adjoining properties, with property owners consent.

Surface soil samples will also be collected from the areas of identified seasonal standing surface water which has been reported to occur on the nursery property in the area behind [redacted]. Other locations in the vicinity of the fence where flooding has been noted will also be sampled as part of the above property sampling. Soil samples will be taken at the same location as the surface water samples, discussed below.

The samples will be analyzed with immunoassay field test kits. These test kits will allow the sampling to be extended to fully delineate the impact on a property since results are typically available within twenty-four hours of sampling. At least one sample per residence will be subjected to a full pesticide scan in the laboratory. Additionally, several samples will be duplicated and sent to an independent laboratory. These analytical procedures are discussed in greater detail in the Quality Assurance/Quality Control (QA/QC) section.

3.3 Groundwater

Groundwater from non-potable use well points identified at two (2) properties on Hathorn Boulevard by the well survey ([redacted] will be sampled for pesticides. These locations are shown on Figure 5. In addition, a well point identified on Quevic Drive will be sampled as a background location. Groundwater elevations will be determined, where practical, from available well points and the wells located at the Nursery to provide information for use in assessing groundwater flow patterns. Wells will not be pumped for a minimum of 24 hours prior to measuring groundwater elevations.

3.4 Surface Water

Based upon field observations, and dependent upon its occurrence this Spring, representative water samples will be collected from locations where seasonal standing water is identified or has previously been reported. The approximate locations where standing water has been reported and the proposed areas where samples will be collected are shown of Figure 5. The water sampling locations will be coordinated to the extent possible with the soil sample locations, as discussed above. A sample will also be collected from the stream shown on Figure 5, downstream of the drainage from the areas of standing water.

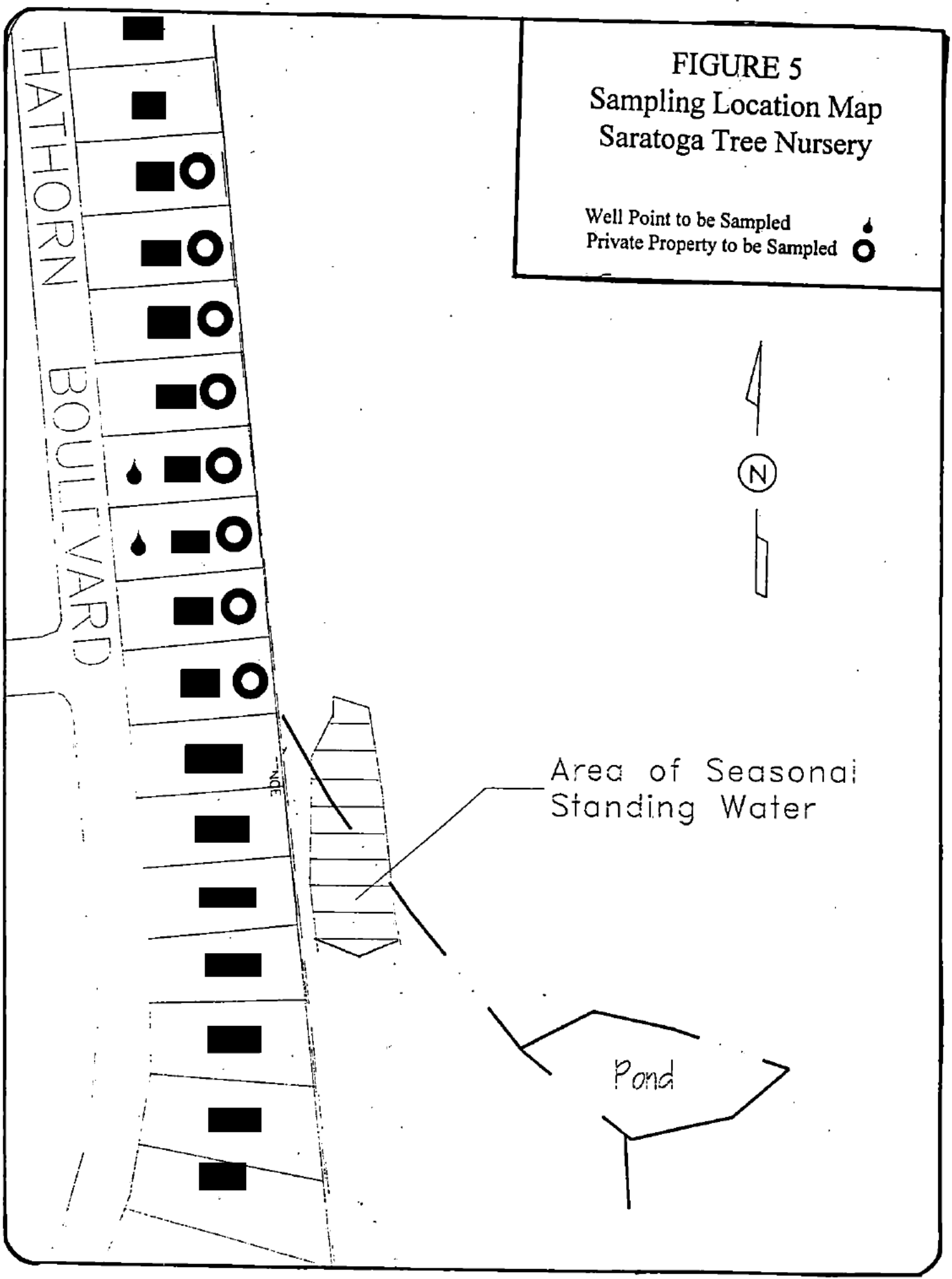


FIGURE 5
Sampling Location Map
Saratoga Tree Nursery
Well Point to be Sampled
Private Property to be Sampled
HATHORN BOULEVARD
N
Area of Seasonal Standing Water
Pond

3.5 Preliminary Remedial Investigation Report

Data generated from this sampling effort will be used to define DDT concentrations in surface soils, subsurface soils, groundwater, and surface water within the off-site area of investigation. After review and evaluation of sample results the NYSDEC and NYSDOH will determine if the investigation has satisfactorily defined the extent of any off-site contamination and determine appropriate remedial objectives. The NYSDEC will then prepare a preliminary remedial investigation report which will define the nature and extent of any off-site contamination and recommend the need for any interim remedial measures (IRMs) to address any contaminated media requiring remediation. This data will eventually be incorporated in the final Remedial Investigation/Feasibility Study for the site.

SECTION 4: SAMPLING METHODOLOGY

4.1 Field Log Books

All field activities will be documented in field log books. This book will provide a record of the activities conducted at the site. All entries will be signed and dated at the end of each day of field work. The field log book will include, at a minimum the following: date and time of all entries, names of all personnel on site, weather conditions (temperature, precipitation, etc.), location of activity, and description of activity.

4.2 Equipment Decontamination and Disposal

The majority of the field equipment will be disposable and not require decontamination. All equipment will be decontaminated by washing with Alconox and rinsing with deionized water. Equipment will be kept in a clean environment prior to sampling. Hand augers will be properly decontaminated between sample locations and residential lots. It a portable pump is necessary for well sampling, the pump will be properly decontaminated prior to sampling, and in between well sampling events. All discarded equipment (latex gloves, trowels, paper towels, etc.) will be drummed in accordance with applicable requirements. Decontamination water will be drummed and treated or disposed of.

4.3 Field Instrument Calibration

All field instruments will be calibrated prior to use.

4.4 Sample Collection

Surface and Subsurface Soils: Leaves and other yard debris will be cleared from sample locations prior to sampling. This debris will remain on each property.

Each surface sample will be a composite of five equal subsamples collected from near each corner and the center of a one meter square. These subsamples will be from a depth of 0-3" and will be composited in a disposable aluminum pan and placed in a sample jar for analysis. Each subsample of the composite will be of the same approximate volume. Inclusion of vegetation, roots and large stones will be avoided. When sampling sod areas, grass will be removed to the degree possible and the soil being held by the sod will be shaken loose and retained for the sample. Surface soil samples will be collected with disposable trowels.

Subsurface samples will be collected using a stainless steel hand auger. These samples will be taken at the same location as the center sample of the surface soil composite. Sufficient soil will be collected to fill the number of sample bottles necessary for the test kits and pesticides analysis. All samples will be placed on ice in appropriate coolers until delivery to the lab. Any observable physical characteristics of the soil as it is being sampled (e.g., color, odor, physical state, waste material or debris encountered) will be recorded on the appropriate sampling data sheets (see Appendix 1).

Soil Sampling in Flooded Areas: Sediment sampling will take place after surface water sampling if the samples are to be taken in the same location. Rocks and vegetative material will be discarded and care taken to collect fine sediment materials. Samples will be collected with disposable trowels and transferred to an appropriate container as specified by the laboratory. All samples will be placed on ice in appropriate coolers until delivery to the lab. Any observable physical characteristics of the sediment as it is being sampled (e.g., color, odor, physical state, waste material or debris encountered) will be recorded on the appropriate sampling data sheets.

Groundwater: Prior to sampling, the static water level will be measured from the top of casing. Groundwater samples will be taken with either a dedicated bailer, an existing dedicated pump, or a portable pump. The pH, conductivity, turbidity, and temperature will be noted for each well. Three to five well volumes will be removed from each well prior to sampling. If the well is bailed dry before removing the required amount of water, the well will be allowed to fully recover and purged a second time. After the well has fully recovered, it may be sampled. Sufficient water will be collected from each well to fill the sample bottles necessary for a pesticides analysis. All samples will be placed on ice in appropriate coolers until delivery to the lab. Any observable physical characteristics of the water as it is being sampled (e.g., color, odor, or physical state) will be recorded on the appropriate sampling data sheets.

Surface Water: Surface water samples will be taken from upstream locations first to prevent disturbing downstream locations. Sufficient water will be collected to fill the sample bottles necessary for a pesticides analysis. All samples taken for full scan pesticides analysis will be placed on ice in appropriate coolers until delivery to the lab. Any observable physical characteristics of the water as it is being sampled (e.g., color, odor, or physical state) will be recorded on the appropriate sampling data sheets.

4.5 Equipment

TABLE 1 SAMPLING EQUIPMENT LIST	
Field Book	Gloves
Sampling Jars	Plastic Trowels
Hand Auger	Tools (assorted)
Coolers	Respirator/Cartridges
Distilled Water	Field Sample Markers/Flags
Custody Forms	Brushes
Ice	Alconox
Knife	Portable Pump
First Aid Kit	Generator
Dredge	Clear Tape
Plastic Sheeting	Paper Towels
Tyvek	Disposable Bailers
pH/temp./conductivity/turbidity meters	Distilled Water
Water Level Indicator	Rope
Buckets	

All equipment will be collected and/or purchased prior to mobilization to the site.

SECTION 5: QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

5.1 Sample Custody

Chain-of-Custody forms will be filled out in order to provide an accurate written record that can be used to trace the possession and handling of sample from its collection trough its analysis (See Appendix 1). This form will accompany the sample containers during selection and preparation at the laboratory, during shipment to the field, and during return shipment to the laboratory. A sample is in custody if it is:

- In someone's physical possession;
- In someone's view;
- Locked up; or
- Kept in a secure area that is restricted to authorized personnel.

Samples will be properly stored and meet all holding times required for analysis.

Each sample will be labeled with an identification number and plastic clear tape over the label to prevent pealing while shipping or storing. Duplicate copies of the Chain of Custody form will be filled out. One copy of the form will be retained by the samplers, and one form will be sealed in a plastic bag and taped inside the lid of the shipping cooler. After the shipping cooler is closed, custody seals provided by the laboratory will be affixed to the latch and across the front and back of the cooler lid, and signed by the person relinquishing the samples to the shipper. The samples must be delivered to the laboratory within 48 hours of collection.

5.2 Sample Documentation

A sampling summary sheet will be filled out for each sample taken. Please see Appendix 1 for an example of this form.

5.3 Immunoassay Protocols

The following QA/QC will be used for the analysis of samples collected at the Saratoga Tree Nursery:

1. All samples will be run in accordance with the manufactures procedures. These procedures can be found in Appendix C.

2. Each analysis group will include: a negative control, 3 standards, a duplicate, and a reference standard (a sample of known concentration).

3. The duplicate will be run every tenth sample. The difference in absorbance will be less than 0.20. If the difference in absorbance is greater than 0.20 then all samples will be re-run. If duplicates are out upon reanalysis the operator will re-extract and re-run.

4. Ten percent of all samples will be confirmed by GC/MS analysis. Of the confirmed samples, two samples will be sent to an outside lab for confirmation.

5. Three unconfirmed samples will be sent to an outside lab for confirmation.

SECTION 6: HEALTH AND SAFETY PLAN (HASP)

6.1 Community Health and Safety

DDT is non-volatile and this investigation will be relatively non-intrusive. For these reasons, no perimeter air monitoring will be carried out. During sampling, an exclusion zone will be set up. Only NYSDEC personnel will be permitted within the exclusion zone. All core plugs will be replaced after sampling. If significant dust is generated, the sampling will be discontinued until

proper air monitoring is established.

6.2 Investigation Health and Safety Plan

Since DDT is non-volatile and there will be no sampling in confined spaces, the need for air monitoring is not anticipated.

There are telephones on site at the laboratory and at the nursery office building. **In case of emergency, call 911.** The route to the nearest hospital is shown in the Health and Safety Plan in Appendix D.

SECTION 7: BUDGET AND SCHEDULE

Budget

The Division of Hazardous Waste Remediation (DHWR) will be implementing this work plan of behalf of the Division of Lands and Forests (DLF), utilizing DHWR staff with some assistance from DLF staff. The estimated sampling budget is shown below.

Table 2
OFF-SITE INVESTIGATION BUDGET

ITEM	COST
Immunoassay Screening Kits (400 kits)	$ [redacted]
Supplies Not in Kit (gloves, solvents, paper, etc.)	$ [redacted]
GC/MS Confirmation (30 samples)	$ [redacted]
Contract Lab Confirmation Samples (15 samples)	$ [redacted]
TOTAL COST	$ [redacted]

Sample collection and analysis will be performed by the NYSDEC staff. Samples being duplicated and analyzed by an independent lab will be sent to a NYSDEC contract laboratory for appropriate analysis. It is anticipated that 2 two-person crews and one chemist will be required full time to perform the sampling and analysis. Sampling is expected to take two weeks.

Schedule

Table 3 below shows the schedule for all activities associated with off site sampling at the Saratoga Tree Nursery.

Table 3
SCHEDULE

ACTIVITY	START DATE	END DATE
Develop Off-Site Work Plan	02/15/95	03/17/95
Conduct Background Sample	03/06/95	03/06/95
Public Mailing/Make Work Plan Available to Public	03/20/95	
Analyze Background Samples	03/07/95	03/20/95
Interpret Background Sampling Results	03/20/95	03/24/95
Determine Background Levels	03/24/95	
Sample Private Properties	03/27/95	04/07/95
Survey Existing Private Well Points	To be determined	
Prepare Preliminary Investigation Report	04/07/95	05/31/95
Release Preliminary Investigation Report to Public	06/05/95	
Public Meeting to Discuss Off Site Investigation Results	06/21/95	

APPENDIX A

FORMS

SAMPLE SUMMARY SHEET

SITE NAME: Saratoga Tree Nursery
REGISTRY NO.: NA
SAMPLE ID NO.: _____
SAMPLING DATE: _____
SAMPLING TIME: _____
SAMPLE LOCATION: _____
SAMPLING PERSONNEL: _____ _____
_____ _____

MATRIX TYPE (check one)				
Water☐	Waste☐	Sediment☐	Soil☐	Surf Water☐
Depth to Water:	Description:	Stream Depth:	Sample Depth:	Temperature:
Temperature:		Temperature:	Sample Type:	pH:
# Volumes. Purged:		Core Depth:		
Well Volume:		Was Core Recovered?:		
pH:		pH:		

Type of Sample: Grab:___ Composite:___ Other:_____

Sample Containers (Describe volume and number):

_____

_____

_____

Photograph: Frame:_____ Number:_____ Time:_____

Other (Sample description, special circumstances, etc.):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION
BUREAU OF TECHNICAL SERVICES

CHAIN OF CUSTODY RECORD

SITE NAME:_____ SITE CODE:_____

DEC REGION:_____ T&A CODE:_____

VOA (40ml)	BNA; PEST/PCB (1 liter)	METALS (preserved) (500ml/1 liter)	SOIL JARS

BOTTLES RELEASED BY: (Signature,date/time)_____

BOTTLES RECEIVED BY: (Signature,date/time)_____

FIELD ID	TYPE GRAB/ COMP	MATRIX	DATE	VOA	BNA PES PCB	MET	LAB ID

COLLECTED BY: (Signature,date/time)_____

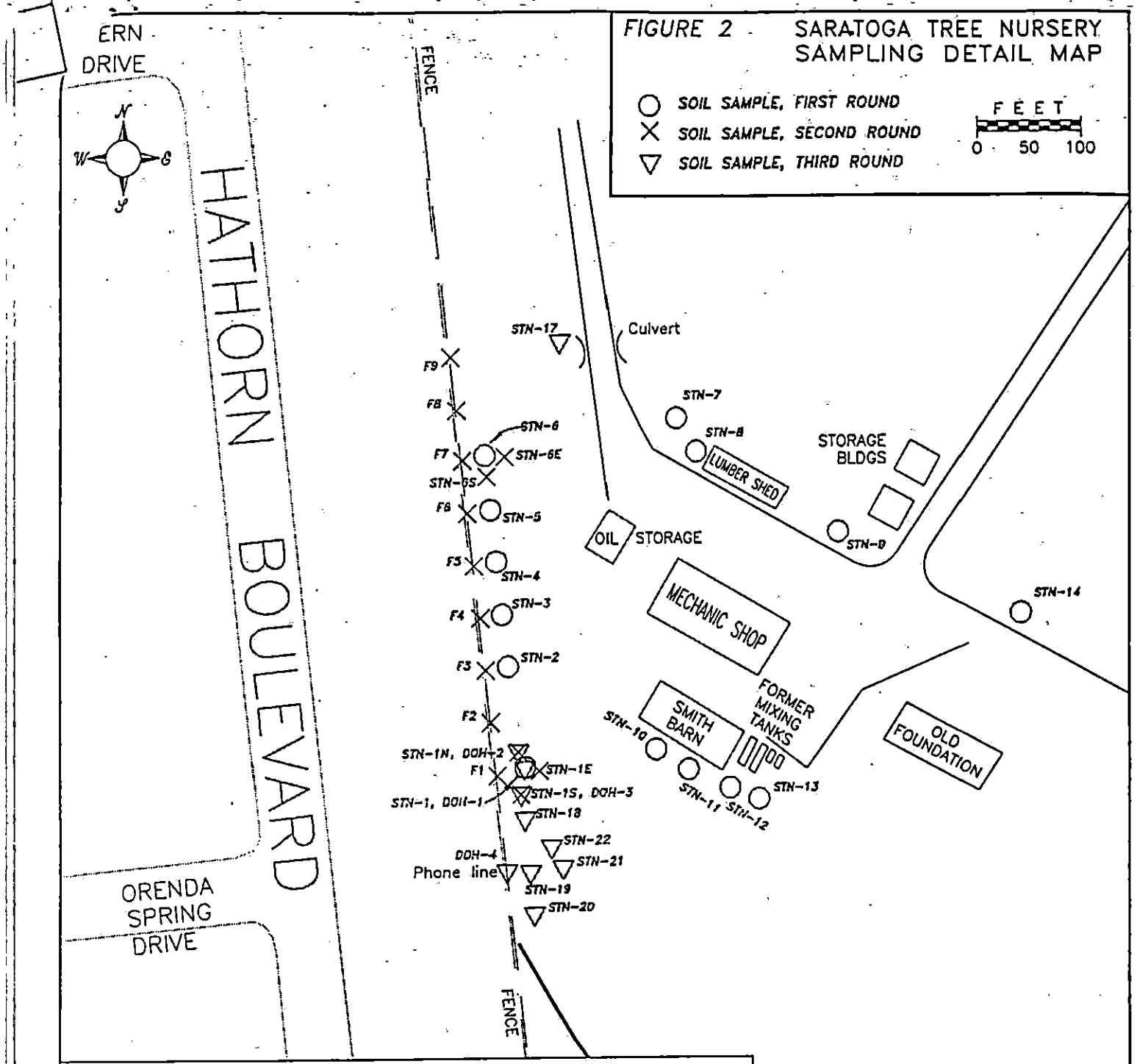
RELINQUISHED BY: (Signature,date/time)_____

LABORATORY ACESSION BY: (Signature,date/time)_____

APPENDIX B

EXISTING SURFACE SAMPLES

LOCATIONS AND ANALYTICAL RESULTS



SAMPLING RESULTS

Sample	STN-1	STN-2	STN-3	STN-4	STN-5	STN-6	STN-7	STN-8	STN-9	STN-10
Depth	0-1'	0-1'	0-1'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'
Total*	1249.00	1.80	14.88	2.01	1.11	21.20	32.98	0.04	2.23	0.01

Sample	STN-11	STN-12	STN-13	STN-14	F1	F2	F3	F4	F5	F6
Depth	0-2'	0-2'	0-2'	0-2'	0-6'	0-6'	0-6'	0-6'	0-6'	0-6'
Total*	0.17	1.60	0.00	190.90	36.80	0.29	0.44	5.63	0.69	1.29

Sample	F7	F8	F9	STN-1N	STN-1E	STN-1S	STN-6E	STN-6S
Depth	0-6'	0-6'	0-6'	0-6'	0-6'	0-6'	0-6'	0-6'
Total*	1.23	0.25	0.49	900.80	10.70	2.47	59.90	1.17

Sample	STN-17	STN-18	STN-19	STN-20	STN-21	STN-22	DOH-1	DOH-2	DOH-3	DOH-4
Depth	0-6'	0-6'	0-6'	0-6'	0-6'	0-6'	0-1'	0-1'	0-1'	0-1'
Total*	0.128	68.7	20.1	6.53	19.7	0.029	19.0	39.8	1.65	4.97

*Total refers to the sum of DDT, DDD, and DDE concentrations found in the soil in parts per million.

NOTE: DOH-1, DOH-2 and DOH-3 were part of third round sampling and are at the same locations as previous sampling points.

SARATOGA TREE NURSERY DATA SUMMARY

Round 1 Soil Sampling

(Conc. in ppm)

Sample Point	Sample Date	Matix	Depth	DDT	DDD	DDE	Total	
STN-1	Oct 13, 1994	Soil	0-1'	1200	39	10	1249	
			1-2'	7.1	0.44	0.11	7.65	
STN-2	Oct 13, 1994	Soil	0-1'	1.5	0.029	0.27	1.799	
			1-2'	0.086	0	0.036	0.122	
STN-3	Oct 13, 1994	Soil	0-1'	11	0.28	3.6	14.88	
			1-2'	2.4	0.05	0.39	2.84	Also, 0.078 endrin
STN-4	Oct 13, 1994	Soil	0-2'	1.2	0.054	0.76	2.014	
			2-4'	0.26	0.029	0.15	0.439	
STN-5	Oct 13, 1994	Soil	0-2'	0.58	0.076	0.45	1.106	
			2-4'	0.12	0.16	0.091	0.371	
STN-6	Oct 13, 1994	Soil	0-2'	19	0.4	1.8	21.2	
			2-4'	1.5	0.029	0.27	1.799	
STN-7	Oct 13, 1994	Soil	0-2'	26	0.58	6.4	32.98	
			2-4'	1.3	0.04	0.38	1.72	
STN-8	Oct 13, 1994	Soil	0-2'	0.023	0	0.015	0.038	
			2-4'	0	0	0	0	
STN-9	Oct 13, 1994	Soil	0-2'	1.7	0.14	0.39	2.23	
			2-4'	0.14	0.025	0.064	0.229	
STN-10	Oct 13, 1994	Soil	0-2'	0.008	0	0.004	0.012	
			2-4'	1.8	0.047	0.14	1.987	
STN-11	Oct 13, 1994	Soil	0-2'	0.11	0.006	0.052	0.168	
			2-4'	1.9	0.18	0.38	2.46	
STN-12	Oct 13, 1994	Soil	0-2'	1.4	0.16	0.037	1.597	Also, 0.029 Gamma BHC
			2-4'	0.62	0.03	0.01	0.66	
STN-13	Oct 13, 1994	Soil	0-2'	0	0	0	0	
			2-4'	0	0	0	0	
STN-14	Oct 13, 1994	Soil	0-2'	180	7.2	3.7	190.9	
			2-4'	13	1	0.6	14.6	
STN-15	Oct 13, 1994	Soil	0-2'	98	5.6	2	105.6	
			2-4'	90	2	0.52	92.52	
STN-16	Oct 13, 1994	Soil	0-2'	6	0.37	0.46	6.83	
			2-4'	6.9	0.48	0.53	7.96	

KEY

ND: not detected

na: not analyzed for

SARATOGA TREE NURSERY DATA SUMMARY

Round 1 Well Sampling

(Conc. in ppm)

Sample Point	Sample Date	Matix	DDT	DDD	DDE	Total
Auto Shop	Nov 14, 1994	Water	4E-05	3E-05	4E-05	0.00011
Culling Room	Nov 14, 1994	Water	ND	ND	ND	ND
Office	Nov 14, 1994	Water	ND	ND	ND	ND

Also, 0.04ppb Endrin, 0.02ppb endrin aldehyde, 0.06ppb endrin ketone

KEY

ND: not detected

na: not analyzed for

SARATOGA TREE NURSERY DATA SUMMARY

Round 2 Soil Sampling

(Conc. in ppm)

Sample Point	Sample Date	Matix	Depth	Lead	Arsenic	DDT	DDD	DDE	Total
F1	Dec 1, 1994	Soil	0-6"	ND	ND	32	3	1.8	36.8
(STN-1W)			6-12"	ND	ND	2.8	0.62	0.43	3.85
			12-24"	ND	ND	1.9	0.39	0.37	2.66
F2	Dec 1, 1994	Soil	0-6"	ND	ND	0.18	0.046	0.068	0.294
			6-12"	ND	ND	0.48	0.081	0.061	0.622
			12-24"	ND	ND	0.28	0.054	0.029	0.363
F3	Dec 1, 1994	Soil	0-6"	ND	ND	0.26	0.056	0.12	0.436
			6-12"	ND	ND	0.28	0.065	0.089	0.434
			12-24"	ND	ND	0.24	0.046	0.046	0.332
F4	Dec 1, 1994	Soil	0-6"	ND	ND	4.1	0.53	1	5.63
			6-12"	ND	ND	0.41	0.078	0.2	0.688
			12-24"	ND	ND	1	0.16	0.34	1.5
F5	Dec 1, 1994	Soil	0-6"	ND	ND	0.4	0.085	0.2	0.685
			6-12"	ND	ND	0.59	0.082	0.28	0.952
			12-24"	ND	ND	0.28	0.058	0.12	0.458
F6	Dec 1, 1994	Soil	0-6"	ND	ND	0.77	0.1	0.42	1.29
			6-12"	ND	ND	0	0	0	0
			12-24"	ND	ND	0	0	0	0
F7	Dec 1, 1994	Soil	0-6"	ND	ND	0.8	0.13	0.3	1.23
			6-12"	ND	ND	0	0	0	0
			12-24"	ND	ND	0	0	0	0
F8	Dec 1, 1994	Soil	0-6"	na	na	0.11	0.052	0.083	0.245
			6-12"	na	na	2	0.4	0.64	3.04
			12-24"	na	na	0.07	0	0	0.07
F9	Dec 1, 1994	Soil	0-6"	na	na	0.28	0.054	0.16	0.494
			6-12"	na	na	0.13	0.069	0	0.199
			12-24"	na	na	0.16	0.035	0	0.195
STN-1N	Dec 1, 1994	Soil	0-6"	ND	ND	830	64	6.8	900.8
			6-12"	ND	ND	910	99	4.4	1013.4
			12-24"	ND	ND	580	75	30	685
STN-1E	Dec 1, 1994	Soil	0-6"	ND	ND	7.9	1.7	1.1	10.7
			6-12"	ND	ND	18	3.5	0.94	22.44
			12-24"	ND	ND	22	3.1	0.6	25.7
STN-1S	Dec 1, 1994	Soil	0-6"	ND	ND	2.1	0.27	0.1	2.47
			6-12"	ND	ND	2100	120	21	2241
			12-24"	ND	ND	2700	460	38	3198
STN-6E	Dec 1, 1994	Soil	0-6"	ND	ND	50	8.3	1.6	59.9
			6-12"	ND	ND	33	12	0.76	45.76
			12-24"	ND	ND	71	21	0.79	92.79
STN-6S	Dec 1, 1994	Soil	0-6"	ND	ND	0.66	0.17	0.34	1.17
			6-12"	ND	ND	0.54	0.13	0.17	0.84
			12-24"	ND	ND	0.076	0	0.031	0.107

KEY
ND: not detected
na: not analyzed for

Also, 2.3 ppm Endrin, 0.3 ppm Endrin Ketone

SARATOGA TREE NURSERY DATA SUMMARY

Round 3 Soil Sampling

(Conc. in ppm)

Sample Point	Sample Date	Matix	Depth	DDT	DDD	DDE	Total	
STN-17	Jan 18, 1995	Soil	0-6"	0.084	0.026	0.018	0.128	
			6-12"	0	0	0	0	
			12-24"	0	0.0058	0	0.0058	
STN-18	Jan 18, 1995	Soil	0-6"	52	15	1.7	68.7	
			6-12"	10	2.1	0.29	12.39	
			12-24"	0.99	0.48	0.046	1.516	
STN-19	Jan 18, 1995	Soil	0-6"	6.5	12	1.6	20.1	
			6-12"	2.5	3.9	0.61	7.01	
			12-24"	0.01	0.022	0.0046	0.0366	
STN-20	Jan 18, 1995	Soil	0-6"	1.4	4.4	0.73	6.53	
			6-12"	3	8	0.83	11.83	
			12-24"	12	10	0.74	22.74	
STN-21	Jan 18, 1995	Soil	0-6"	5.5	13	1.2	19.7	also, 0.014 ppm gamma chlordane
			6-12"	1.2	2.9	0.3	4.4	also, 0.0052 ppm gamma chlordane
			12-24"	0.068	0.075	0.018	0.161	
STN-22	Jan 18, 1995	Soil	0-6"	0	0.011	0.018	0.029	
			6-12"	0	0	0	0	
			12-24"	0	0	0	0	
DOH-1 (STN1)	Jan 18, 1995	Soil	0-1"	13	2	4	19	
DOH-2 (1-N)	Jan 18, 1995	Soil	0-1"	28	5.6	6.2	39.8	
DOH-3 (1-S)	Jan 18, 1995	Soil	0-1"	1.1	0.08	0.47	1.65	
DOH-4	Jan 18, 1995	Soil	0-1"	4	0.29	0.68	4.97	

KEY

ND: not detected

na: not analyzed for

SARATOGA TREE NURSERY DATA SUMMARY

Round 2 Well Sampling

(Conc. in ppm)

Sample Point	Sample Date	Matix	Lead	Arsenic
Auto Shop	Jan 19, 1995	Water	ND	ND
Culling Room	Jan 19, 1995	Water	ND	ND
Office	Jan 19, 1995	Water	ND	ND
Carpenter Shop	Jan 19, 1995	Water	ND	ND
Seed Plant	Jan 19, 1995	Water	ND	ND
Seed Plant/Trailers	Jan 19, 1995	Water	ND	ND

KEY

ND: not detected

na: not analyzed for

APPENDIX C

MILLIPORE DDT SCREENING KIT

MILLIPORE

EnviroGard™ DDT in Soil Test Kit

ENVR 000 31

Intended Use

The EnviroGard DDT in Soil Test Kit is a qualitative or semi-quantitative field test for the detection of DDT and its metabolites DDD and DDE in soil. The EnviroGard DDT in Soil Test Kit allows rapid semi-quantitative screening for DDT at 0.2, 1.0, and 10.0 parts per million (ppm) in soils.

Test Principles

The EnviroGard DDT in Soil Test Kit is based on the use of polyclonal antibodies that bind either DDT or DDT-Enzyme Conjugate. These antibodies are immobilized to the walls of the test tubes. When DDT is present in the sample, it competes with the DDT-Enzyme Conjugate for a limited number of antibody binding sites.

- A sample containing DDT is added to a test tube containing Assay Diluent. DDT-Enzyme Conjugate is then added to the test tube. The DDT-Enzyme Conjugate competes with the DDT for the antibody binding sites.
- After the incubation, the unbound molecules are washed away.
- A clear solution of chromogenic Substrate is then added to the test tube. In the presence of bound DDT-Enzyme Conjugate, the clear Substrate is converted to a blue color. One enzyme molecule can convert many Substrate molecules.

Since there are the same number of antibody binding sites on every test tube and each test tube receives the same number of DDT-Enzyme Conjugate molecules, a sample that contains a low concentration of DDT allows the antibody to bind many DDT-Enzyme Conjugate molecules.

Therefore, a low concentration of DDT produces a dark blue solution. Conversely, a high concentration of DDT allows fewer DDT-Enzyme Conjugate molecules to be bound by the antibodies, resulting in a lighter blue solution.

NOTE: Color is inversely proportional to DDT concentration.

Darker color = Lower concentration
Lighter color = Higher concentration

Performance Characteristics

The EnviroGard DDT in Soil Test Kit will not differentiate between DDT, its metabolites, and other structurally similar compounds, but will detect their presence to differing degrees. The following table shows a number of compounds and the approximate concentration of each required to yield a positive result (Lower Limit of Detection or LLD), and the concentration required to inhibit one-half of the color developed by the Negative Control (IC50). Concentration is in parts per million (ppm) in soil.

Compound	LLD	IC50
p,p'-DDT (kit calibrator)	0.04	1.25
p,p'-DDD	0.01	0.3
p,p'-DDE	0.18	3.6
o,p'-DDT	4	93
o,p'-DDD	0.4	11
o,p'-DDE	3	93
DDA	0.002	0.04
Chloropropylate	0.007	0.08
Chlorobenzilate	0.03	0.35
Dicofol	0.14	2
Tetradifon	1.2	14
Thiobencarb	5	52
Tebuconazole	7	95
Neburon	17	284
Chloroxuron	24	216
Monolinuron	25	714
Diclofop	70	>1000

The following compounds have lower limits of detection > 100 ppm:

2,4-D	4-chlorophenoxyacetic acid
Chlorbromuron	Chlordane
Chlortoluron	Dicamba
Diflubenzuron	Diuron
Lindane	Linuron
MCPA acid	MCPB
Mecoprop	

Precautions

- Treat DDT, solutions that contain DDT and potentially contaminated soil samples as hazardous materials.
- Where appropriate, use gloves, proper protective clothing, and methods to contain and handle hazardous material.
- Store all test kit components at 4°C to 8°C (39°F to 46°F) when not in use.
- Do not freeze test kit components or expose them to temperatures greater than 37°C (99°F).
- Allow all reagents to reach ambient temperature (18°C to 27°C or 64°F to 81°F) before beginning the test.
- Do not use test kit components after the expiration date.
- Do not use reagents or test tubes from one test kit with reagents or test tubes from a different test kit.
- Use approved methodologies to confirm any positive resuits.
- Do not dilute or adulterate test reagents or use samples not called for in the test procedure; this may give inaccurate results.
- Tightly recap the DDT calibrator vials to prevent evaporative loss.
- Distribution of DDT in soils may be highly variable. The use of a composite sampling technique may be appropriate. Development of a sampling plan that assures adequate sample number and distribution is the responsibility of the analyst.
- DDT is light sensitive. Store soil extracts at 2°C to 7°C, shielded from direct light.

Materials Provided

EnviroGard DDT in Soil Test Kit

This test kit contains the following items:

20 Antibody-Coated Test Tubes
1 vial of Assay Diluent
1 vial of Negative Control (methanol)
1 vial of 0.2 ppm DDT Calibrator in methanol
1 vial of 1.0 ppm DDT Calibrator in methanol
1 vial of 10.0 ppm DDT Calibrator in methanol
1 vial of DDT-Enzyme Conjugate
1 vial of Substrate
1 vial of Stop Solution
1 20-place Test Tube Rack
22 Pipette Tips, yellow (for the Gilson M-25 Micro-man® Positive Displacement Pipettor)

Materials Required and Ordered Separately

See "Ordering Information" for the appropriate catalogue numbers.

EnviroGard Soil Extraction Bottle Kit

Use this kit for the extraction of DDT in soil samples. This kit contains enough devices to process 14 samples:

- 14 30 milliliter (mL) LDPE Bottles with screw caps (each bottle contains stainless steel mixing beads)
- 14 filtration caps
- 14 Millex® HV_{13} filters
- 18 Wooden Spatulas
- 1 Syringe with coupler
- 1 Syringe coupler
- 14 Screw Top Glass Vials, 4.0 mL
- 14 Stoppers
- 18 Weigh Boats

Methanol

ACS reagent grade Methanol is required for soil extraction, but is not included in the EnviroGard Soil Extraction Kit. You must order it separately. (See "Ordering Information.")

Materials Required but Not Provided

You will also need several other items, some of which are included in the EnviroGard Soil Field Lab. (See "Ordering Information" for the appropriate catalogue number).

- Gilson M-25 Microman Positive Displacement Pipettor
- Eppendorf™ Repeater® Pipettor and five Combitips® (3 x 12.5 mL, 1 x 5.0 mL, and 1 x 50 mL)
- Balance capable of accurately weighing 5 grams
- Millipore Differential Photometer or Enviro-Quant Photometer
- Indelible marker for labeling test tubes
- Watch or timer
- Clean running water or a wash bottle containing tap or deionized water (500 mL)
- Calculator (optional)

Suggestions for Pipettor Use

- Practice using both pipettors (positive displacement and Repeater pipettor) with water and extra tips before you analyze your samples.
- Use a new tip each time you use the Repeater pipettor to avoid reagent cross-contamination. Label three 12.5 mL tips "Diluent", "Substrate" and "Stop," and one 5.0 mL tip "Conjugate".
- Draw the desired reagent volume into the Repeater pipettor and dispense one portion of the reagent back into the container to properly engage the ratchet mechanism. If you do not do this, the first volume delivered may be inaccurate.
- To add reagents using the Repeater pipettor, pipette down the side of the test tube just below the rim.
- To add samples and calibrators using the positive displacement pipettor, pipette down the side of the test tube just above the liquid level.
- The carryover volume of the positive displacement tips is minimal, but may affect results if you are going from a high to low DDT concentration. Use a new pipettor tip each time you pipette a new unknown.

Assay Procedure

Collect/Store the Sample

1. Collect soil in appropriately-sized and labeled containers.
2. Take care to remove excess twigs, organic matter and rocks or pebbles from the sample. For best results, wet soils should be air-dried overnight and thoroughly mixed before testing.
3. Store soil samples at 4°C (39°F).

Prepare the Sample/Extract the Soil

1. Please follow the instructions from the EnviroGard Soil Extraction Bottle Kit to prepare the soil extract before the assay.
2. **5 ml** of **Methanol** will be used to extract DDT residue from a 5 gram soil sample. As per instructions, attach a **50 mL** Combitip to the Repeater pipettor and set the dial to **5**. Deliver once to add **5 mL** of **methanol** to the extraction vial, and cap tightly.

Perform the Test

NOTE: Allow all reagents and sample extracts to reach room temperature before you begin the test. Do not analyze more than 20 test tubes at a time.

1. The choice of calibrators to use in the test will depend on the the selection of the analyst. The use of two calibrators may be appropriate if screening for a single level of DDT.

   Remove the test tubes from the plastic bag and label them as follows*:

Tube Label	Tube Contents
NC	Negative Control
C1	0.2 ppm Calibrator
C2	1.0 ppm Calibrator
C3	10.0 ppm Calibrator
S1	sample 1
S2	sample 2
etc.	

   * You are not required to perform the assay in duplicate; however, doing so will increase the precision.

   Place the test tubes in the test tube rack. Push down on each tube so that it is held firmly and does not fall out of the rack when shaken.

CAUTION: Do not "snap" the test tubes into the rack as this may result in a cracked tube.

2. Attach the **12.5 mL** Combitip labeled "Diluent" to the Repeater pipettor and adjust the dial to **2**. Add 500 microliters (µL) of Assay Diluent to each test tube.
3. Attach a clean pipette tip to the Microman pipettor and adjust the dial to "**250**". Add 25 µL of each calibrator (including Negative Control) to the corresponding test tube by placing the end

of the pipette tip against the side of the tube (just above the level of the Assay Diluent) and dispensing the volume. Use a clean pipette tip each time.

CAUTION: Replace the caps on the calibrator vials immediately after use to minimize evaporation.

4. Using a clean tip for each sample, add 25 µL of each sample extract to the appropriately-labeled test tube.
5. Attach the **5.0 mL** Combitip labeled "Conjugate" to the Repeater pipettor and adjust the dial to **1.** Add 100 µL of DDT-Enzyme Conjugate to each test tube.
6. Shake the test tube rack to mix for 10 to 15 seconds. Leave the test tubes undisturbed for 15 minutes.
7. Vigorously shake out the test tube contents into a sink or suitable container. Fill the test tubes to **overflowing** with cool tap or distilled water, then decant and vigorously shake out the remaining water.

   Repeat this wash step three more times, being certain to shake out as much water as possible on each wash. After the final wash, remove as much water as possible by tapping the inverted tubes on absorbant paper.
8. Attach the **12.5 mL** Combitip labeled "Substrate" to the Repeater pipettor and set the dial to **2.** Add 500 µL of Substrate to each test tube. Leave the test tubes undisturbed for 10 minutes.

NOTE: If a blue color does not develop in the Negative Control test tube within 10 minutes after adding the Substrate, the test is invalid and you must repeat it.

Interpret the Results

You can either interpret the results visually within 10 minutes after adding the Substrate to each test tube, or you can perform a more precise analysis with a photometer after you add the Stop Solution.

Visual Interpretation

After you add the Substrate, wait 10 minutes then mix the test tubes by shaking them for a few seconds until they are a uniform blue color. Compare the sample test tube to the calibrator test tubes against a white background. The test tube rack in the kit is well-suited for this purpose.

NOTE: The word DDT in the interpretation instructions below refers to "total DDT", i.e. the sum of *p,p'*-DDT, *p,p'*-DDD, and *p,p'*-DDE.

- If a sample test tube contains *more* color than the calibrator test tube, the sample contains DDT at a concentration *lower* than the calibrator.
- If a sample test tube contains *less* color than the calibrator test tube, the sample may contain DDT at a concentration *greater* than the calibrator.
- If the sample test tube contains color that is between the calibrator test tubes, the sample contains DDT at a concentration between the calibrator concentrations.
- If a sample test tube contains *approximately the same* amount of color as the calibrator test tube, the sample contains DDT at a concentration *approximately equal* to the calibrator.
- If the sample test tube contains less color than the 10 ppm Calibrator test tube, you may dilute a fraction of the soil extract in methanol (for example, 1:100) and perform the assay again. To determine the concentration of the diluted extract multiply the result by the dilution factor. (Go to "Semi-Quantitative Interpretation" for further details.)

Photometric Interpretation

After you add the Substrate, wait 10 minutes then add the Stop Solution to each test tube.

WARNING: Stop solution is 1N Hydrochloric acid. Handle carefully.

Attach the **12.5 mL** Combitip labeled "Stop" to the Repeater pipettor and set the dial to **2.** Add 500 µL of Stop Solution to each test tube. This converts the blue color in the test tubes to yellow.

NOTE: After you add Stop Solution to the test tubes, results should be read within 30 minutes.

Millipore Differential Photometer

1. Place a water blank test tube containing 1.5 mL of Milli-RO® or Milli-Q® water, or equivalent in the left (reference) well.
2. Place the Negative Control test tube into the right (sample) well. Record the optical density (OD) of the Negative Control.
3. Remove the Negative Control test tube and replace it with the 0.2 ppm Calibrator test tube

to reactivate the photometer. Record the result. Repeat this step to determine the OD for each of the remaining calibrators and for each sample.

Semi-quantitative Interpretation

Compare the OD of each sample to the OD of each calibrator:

NOTE: The word DDT in the interpretation instructions below refers to "total DDT", i.e. the sum of *p,p'*-DDT, *p,p'*-DDD, and *p,p'*-DDE.

- If a sample OD is *equal* to the OD of a calibrator, the sample contains DDT at a concentration *approximately equal* to the calibrator.
- If a sample OD is *greater* than a calibrator OD, the sample contains *less* DDT than the calibrator.
- If a sample OD is *lower* than a calibrator OD, the sample may contain *more* DDT than that calibrator.
- If an assay result indicates that a soil sample contains greater than 10 ppm total DDT, but you need more specific information, the soil extract may be diluted 1:100 in neat methanol, and assayed again. You must then multiply the results of the re-assay by 100 to determine the approximate sample concentration.

NOTE: If you know in advance that the "action level" of interest is greater than 10 ppm total DDT in soil, the assay may be modified to pinpoint that particular concentration. For example:

If you wish to categorize samples as less than or greater than 250 ppm, you should dilute all sample extracts 1:250 in neat methanol (e.g. 20 µL extract plus 4.98 mL methanol) and compare the diluted extracts to the 1 ppm DDT kit calibrator. Due to the 250-fold dilution, the 1 ppm calibrator represents 250 ppm in the assay.

NOTE: If you are interested in action levels greater than 1000 ppm, please contact Millipore Technical Services for assistance.

Example

Actual OD values will vary. This data is for demonstration purposes only.

Tube	OD	Interpretation
NC	0.90	
C1 (0.2 ppm)	0.75	
C2 (1.0 ppm)	0.49	
C3 (10.0 ppm)	0.35	
S1	0.68	>0.2 ppm < 1.0 ppm
S2	0.16	> 10.0 ppm

NOTE: The EnviroQuant Photometer is also available from Millipore. This dual wavelength instrument measures the OD at 450 nanometers (nm) minus 600 nm of all samples and calibrators, and provides a printout of results. See "Ordering Information" for the appropriate catalogue number.

Limitations of the Procedure

The EnviroGard DDT in Soil Test Kit is a qualitative/semi-quantitative screening test only. Actual quantitation of DDT by EnviroGard immunoassay is not possible due to the Test kit's cross-reactivity with DDT breakdown products and other similar compounds and to the variations in extraction efficiency inherent in the fast extraction protocol described in this product insert.

Soil sampling error may significantly affect testing reliability. The distribution of pesticides in different soils can be extremely heterogeneous. Soils should be dried and homogenized before analysis by any method. Split samples (i.e. for GC and immunoassay) should always derive from the same homogenate.

Ordering Information

The following table lists descriptions and catalogue numbers for the EnviroGard DDT in Soil Test Kit, Soil Extraction Bottle Kit and related products.

Description	Catalogue Number
EnviroGard DDT in Soil Test Kit	ENVR 000 31
EnviroGard Soil Extraction Bottle Kit	ENSP 000 30
Methanol for soil extraction, 100 mL bottle	ELCR 000 07
Millipore Differential Photometer: • 115 volt (V), or • 230 V	 ENVR 000 00 ENVR 002 30
EnviroQuant Photometer, 110V, or EnviroQuant Photometer, 220V	ENVR T11 00 ENVR T22 00
EnviroQuant Replacement Paper, 12 rolls	ENVR T11 02
EnviroGard Replacement Pipettor Tips (available separately): • Positive displacement pipettor tips, 1-25 µL range 200/pk (not preassembled) • Repeater pipettor tips, 5.0 mL, 100/pk • Repeater pipettor tips, 12.5 mL, 100/pk • Repeater pipettor tips, 50 mL, 10/pk	 ENVR L04 09 ENVR L01 09 ENVR L02 09 ENVR L03 09
EnviroGard Soil Field Lab includes: • 1 Positive displacement precision pipettor • 1 Eppendorf Repeater pipettor • 1 Electronic timer • 13 Polystyrene test tubes, 12 mm X 75 mm (for blanking the spectrophotometer and sample dilutions) • 1 Portable balance with 100 gram calibrator weight • 1 Wash bottle, 500 mL • 4 Test tube racks, six-position • 8, 5.0 mL Pipette tips for the Repeater pipettor, for 0.1 mL through 0.5 mL dispensing volumes • 4, 12.5 mL Pipette tips for the Repeater pipettor, for 0.25 mL through 1.250 mL dispensing volumes • 1, 50 mL Pipette tip for the Repeater pipettor, for 1.0 mL through 5.0 mL dispensing volumes • 100 pipette tips, 2.0-25 µL (not preassembled) • 100 pipette tips, 50-250 µL (not preassembled) Contact Millipore Technical Service for kit component replacement or reordering information. (See the "Technical Assistance" section for the number of the Millipore office nearest you.)	ENVR L00 09

Technical Assistance

For additional information about Millipore products, call the nearest Millipore office listed below.

Call toll-free 800-MILLIPORE (800-645-5476) **FAX Orders 508-624-8873**

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A•C•N: (001) 239-818
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In Sydney Area (02) 428-7333

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(02) 242-17-40

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General Limited Warranty

Millipore Corporation ("Millipore") warrants the products manufactured by it against defects in materials and workmanship when used in accordance with the applicable instructions for a period of one year from the date of shipment of the products or where applicable, for a period not to extend beyond a product's printed expiration date. **MILLIPORE MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED. THERE IS NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** The warranty provided herein and the data, specifications and descriptions of Millipore products appearing in Millipore's published catalogues and product literature may not be altered except by express written agreement signed by an officer of Millipore. Representations, oral or written, which are inconsistent with this warranty or such publications are not authorized and if given, should not be relied upon.

In the event of a breach of the foregoing warranty, Millipore's sole obligation shall be to repair or replace, at its option, any product or part thereof that proves defective in materials or workmanship within the warranty period, provided the customer notifies Millipore promptly of any such defect. The exclusive remedy provided herein shall not be deemed to have failed of its essential purpose so long as Millipore is willing to repair or replace any nonconforming Millipore product or part. **Millipore shall not be liable for consequential, incidental, special or any other indirect damages resulting from economic loss or property damage sustained by a customer from the use of its products.** However, in some states the purchaser may have rights under state law in addition to those provided by this warranty.

Safety

To receive complete safety information on this product, contact the nearest Millipore office and request Material Safety Data Sheet documents P70002, P34782, P34207 and P34210.

Acknowledgment

This kit was developed in collaboration with the Commonwealth Scientific and Industrial Research Organization (Australia) using reagents produced and supplied under exclusive license to Millipore and ImmunoSystems Incorporated.

P35409, Rev - 2/24/94

APPENDIX D

HEALTH AND SAFETY PLAN

SAMPLING & INVESTIGATION SITE SAFETY PLAN

OFF SITE INVESTIGATION

GENERAL INFORMATION

SITE: Saratoga Tree Nursery I.D. NA

LOCATION: Rte 50, Saratoga Springs, Saratoga County CONTACT:

PLAN PREPARED BY: Jeff Edwards DATE: 2/27/95

APPROVED BY:

BUREAU SAFETY OFFICER: DATE:

SECTION CHIEF: DATE:

WORK SCOPE: Soil, well water, surface water sampling. Well survey.

PROPOSED DATE OF INVESTIGATION: spring / summer 1995

WAS A BACKGROUND REVIEW COMPLETED?: YES [X] NO [ ] If yes; from what source:

Facility records

OVERALL HAZARDS ANTICIPATED:

Serious: Moderate: Low: X Unknown:

B. SITE/WASTE CHARACTERISTICS

WASTE TYPE (S): Mixed Municipal C&D Industrial Hazardous X

CHARACTERISTIC (S): Corrosive Ignitable Radioactive

Volatile Toxic X Reactive Unknown

FACILITY FUNCTION: Tree nursery for the production of seedlings. Was used until 1966 for the mixing and storage of DDT.

Principal Disposal Method: Rinse water flowing into area on western boarder of the site

Unusual Features Known To Exist On Site: none

Status: (active, inactive, unknown) inactive

History: (Worker or non-worker injury; complaints from public; previous agency action):

No former complaints.

HAZARDOUS/TOXIC MATERIAL (known or suspected, contaminated media or in storage container, etc.)

Soil contaminated with DDT, DDE, DDD, endrin, chlordane

Groundwater contaminated with DDT, DDE, DDD, endrin

HAZARD ASSESSMENT (toxic and pharmacologic effects, reactivity, stability flammability, and operational concerns, sampling decontaminating, etc.)

See attached MSDS.

C. SITE SAFETY WORK PLAN

PERIMETER ESTABLISHMENT: Map/Sketch attached X Site secured? yes

Perimeter Identified/ Zone(s) of Contamination Identified? *yes (see note below)

PROPOSED ON-SITE ACTIVITIES: Soil sampling, well sampling, surface water sampling. For more details reference the Investigation Work Plan.

* Based on historical accounts, two areas on the Nursery property are believed to be affected by past operations. These include the western property boundary and the former pesticide mixing area. Access to these areas will be limited to OSHA-certified personnel during the course of all remedial activities at the site (ref. Attached Figure)

RECOMMENDED LEVEL OF PROTECTION: Level D

*Modifications: _____

Monitoring Equipment and Materials: Not Applicable

DECONTAMINATION AND DISPOSAL:

Decontamination Procedure: () label to be utilized

_____Level A - Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, suit/safety boot wash, suit safety boot rinse, (Tank Change), safety boot removal, suit and hard hat removal, inner glove wash, inner glove removal, inner clothing removal, field wash, redress.

_____Level B - Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, suit/safety boot wash, suit/SCBA/boot/glove/ rinse, (tank Change) safety boot removal, (splash suit removal) SCBA backpack removal, inner glove wash, inner glove rinse, face piece removal, inner glove removal, inner clothing removal, field wash, redress.

_____Level C - Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal suit/safety boot wash, suit/safety boot rinse (Canister or Mask Change, safety boot removal, splash suit removal, inner glove wash, inner glove rinse, face piece removal, inner glove removal, inner clothing removal, field wash, redress.

__X__Level D - Segregated equipment drop, boot and glove wash, boot and glove rinse.

_____*Modifications (specify)_____

*If modified in the field, be sure to attach statement to file copy upon return to office.

LIST OF PERSONNEL AT SITE

1. Bob Schick
2. Mike Ryan
3. Fred Woodward
4. Brad Brown
5. Jeff Edwards
6. Steve Scharf
7. Catherine Klatt
8. Dave Camp
9. Brian Surprenant
10. Scott Orr
11.
12.
13.
14.
15.

EMERGENCY PLANNING

HOSPITAL: 911

AMBULANCE: 911

POLICE: 911

FIRE: 911

POISON CONTROL CENTER: 800-336-6997

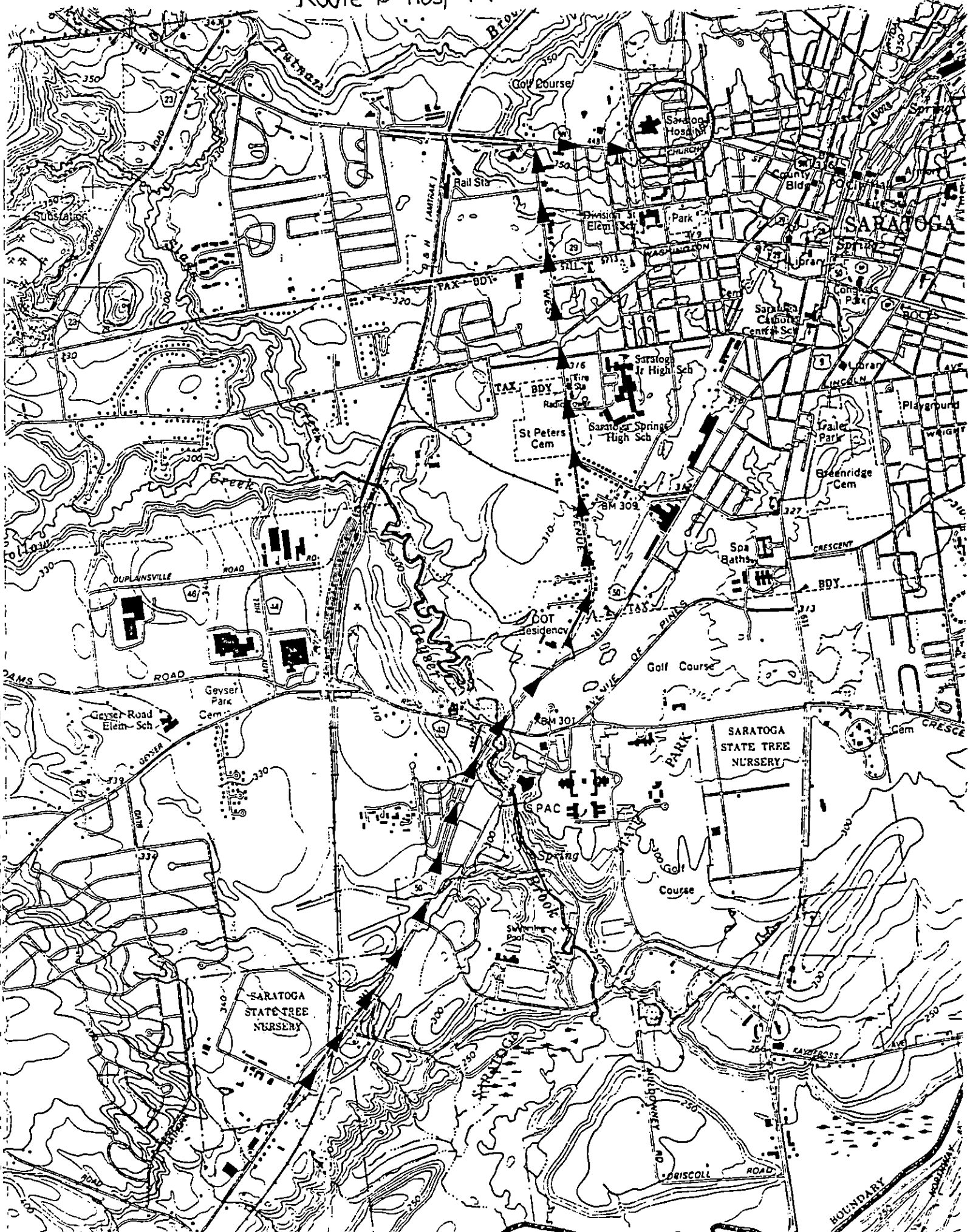
D.E.C. REGIONAL CONTACT:

ROUTE TO HOSPITAL (Attach Map)

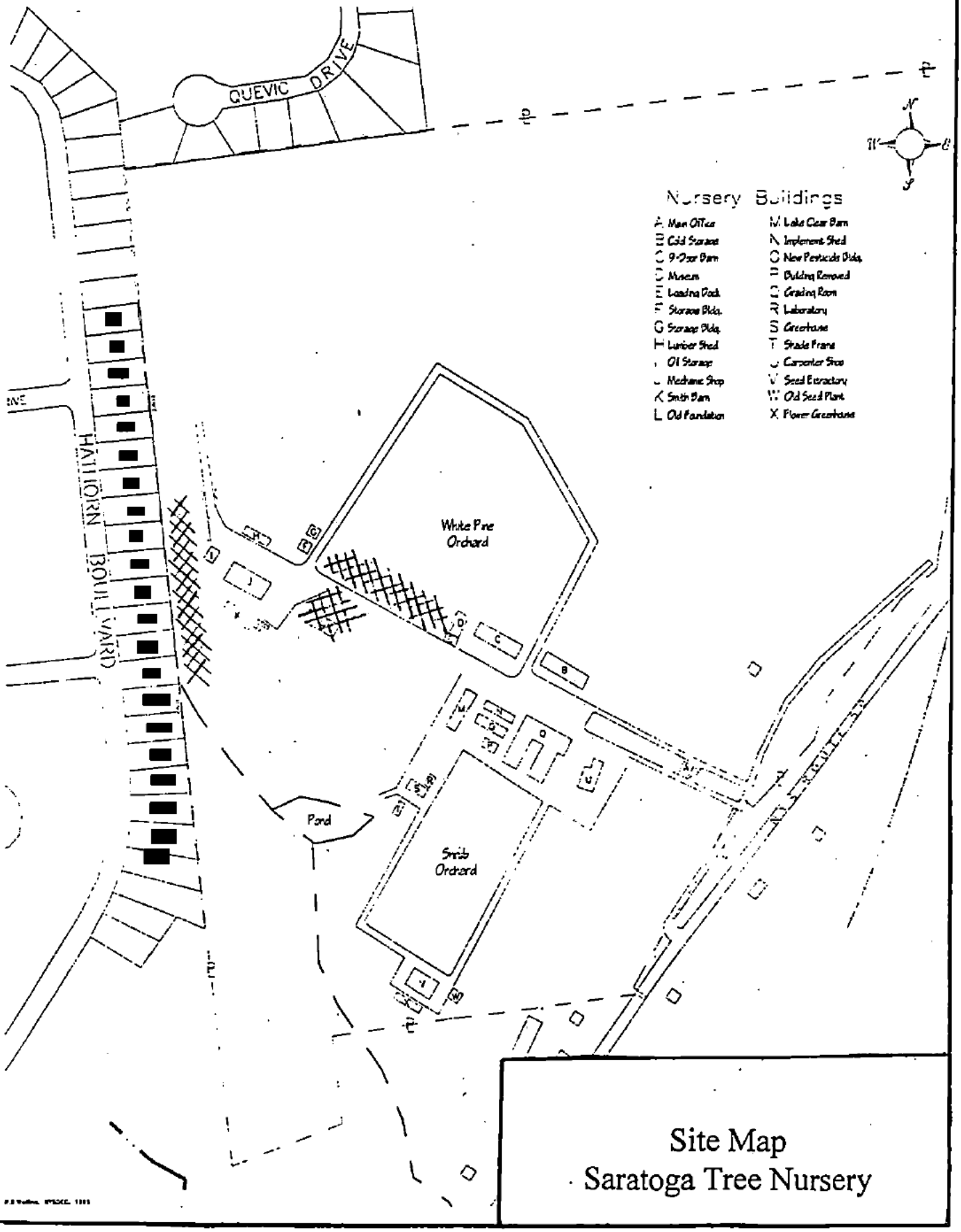
From tree nursery, take left on Route 50. After 1.75 mi., take left onto West Avenue. Take West Avenue 1.6 mi. to end at T-intersection. Take right on Church Street (Route 9N). Hospital is 0.38 mi. on left.

		Phone #
D.E.C. OFFICE -		
BC:	Edward Belmore	(518) 457-0414
SC:	Robert Schick	(518) 457-4343

Route to Hospital



NOTE: Crosshatching depicts areas of past operations and/or disposal - access restricted.



Site Map
Saratoga Tree Nursery

MATERIAL SAFETY DATA SHEET

PPO-8S
09/10/90
Last revised June 1989

SECTION I PRODUCT SPECIFICATIONS Endrin

CAT NO. F98S 0.1mg/ml Hexachloro-epoxy-octahydro-endo-endo-dimethanonaphthalene in Methanol
CAS NO. 72-20-8
Supplied by CHEM SERVICE, Inc. PO BOX 3108, WEST CHESTER, PA, 19381 (215)692-3026
EMERGENCY PHONE #: 215-386-2100

SECTION II TOXICITY DATA

Since this solution contains a very low concentration of active component, the primary hazard is from the solvent.
The LD50 for the minor component (Hexachloro-epoxy-octahydro-endo-endo-dimethanonaphthalene): 8mg/kg
The following information is for the solvent:

RAT OR MOUSE LD50	RTECS#	OSHA PEL	ACGIH TLV
5628mg/kg	PC1400000	200 ppm (260 mg/m3)	200 ppm(260 mg/m3)

This compound is generally considered to be non-toxic.
This statement is based upon OSHA's assesment of the LD50

SECTION III PHYSICAL DATA

For the solvent:

MELTING POINT	BOILING POINT	DENSITY	VAPOR PRESSURE	VAPOR DENSITY	EVAPORATION RAT (Butyl acetate=
-98 C	64.6 C	0.791	97 mm@20 C	1.11	NOT AVAILABLE

ODOR	COLOR	PHASE	SOLUBILITY IN WATER
NOT AVAILABLE	Colorless	Liquid	Miscible with

SECTION IV FIRE AND EXPLOSION HAZARD DATA

For the solvent:
FLASH POINT: 11 C This is a flammable chemical.
EXTINGUISHING MEDIA: Carbon dioxide or dry chemical powder. DO NOT USE WATER!
UPPER EXPLOSION LIMIT: 36% **LOWER EXPLOSION LIMIT:** 6.7%

SECTION V HEALTH HAZARD DATA

For the solvent:
Contact lenses should not be worn in the laboratory.
All chemicals should be considered hazardous - Avoid direct physical contact!
Can be fatal if absorbed through the skin! Can be fatal if inhaled!
Can be fatal or cause blindness if swallowed.
Repeated exposure to vapors and/or dust can cause eye injury.
Can cause gastro-intestinal disturbances. Can cause liver injury. Can cause kidney injury.
Can cause cardiovascular system injury. Can cause convulsions.

SECTION VI FIRST AID

For the solvent:
An antidote is a substance intended to counteract the effect of a poison. It should be administere on by a physician or trained emergency personnel. Medical advice can be obtained from a POISON CONTROL CENTER.

In case of contact: Flush eyes continuously with water for 15-20 minutes. Flush skin with water fo 15-20 minutes. If no burns have occurred-use soap and water to cleanse skin.
If inhaled remove patient to fresh air. Administer oxygen if patient is having difficulty breathin
If patient has stopped breathing administer artificial respirations.
If patient is in cardiac arrest administer CPR.
Continue life supporting measures until medical assistance has arrived.
Get medical attention if necessary.
Do not wear shoes or clothing until absolutely free of all chemical odors.

SECTION VII REACTIVITY DATA

For the solvent:
Flammable. Hygroscopic. Incompatible with strong acids. Reacts with Acid halides and anhydrides. Incompatible with strong oxidizing agents. Incompatible with strong reducing agents. Incompatible with active metals (e.g. Sodium). Decomposition liberates toxic fumes.

SECTION VIII SPILL OR LEAK PROCEDURES

Spills or leaks: Evacuate area. Wear appropriate OSHA regulated equipment. Ventilate area. Absorb on vermiculite or similar material. Sweep up and place in an appropriate container. Hold fo disposal. Wash contaminated surfaces to remove any residues.
DISPOSAL: Burn in a chemical incinerator equipped with an afterburner and scrubber.

SECTION IX PRECAUTIONS TO BE TAKEN IN HANDLING

This chemical should be handled only in a hood. Eye shields should be worn. Use appropriate OSHA/MSHA approved safety equipment. Avoid contact with skin, eyes and clothing. Keep tightly closed in a cool dry place. STORE UNDER NITROGEN. Store only with compatible chemicals.

SECTION X SPECIAL PRECAUTIONS AND COMMENTS

The above information is believed to be correct on the date it is published and must not be considered all inclusive. The information has been obtained only by a search of available literature and is only a guide for handling the chemicals. OSHA regulations require that if other hazards become evident, an upgraded MSDS must be made avalible to the employee within three months. Responsibility for updates lies with the employer and not with CHEM SERVICE, Inc. Persons not specifically and properly trained should not handle this chemical or its container. This MSDS is provided without any warranty expressed or implied, including merchantability or fitness for any particular purpose.

This product is furnished FOR LABORATORY USE ONLY! Our products may NOT BE USED as drugs, cosmetics, agricultural or pesticidal products, food additives or as household chemicals.

MATERIAL SAFETY DATA SHEET

PPO-8S
09/10/90
Last revised June 1989

SECTION I PRODUCT SPECIFICATIONS Chlordane

CA[illegible] 0, F91S 0.1mg/ml Octachloro-hexahydro-methano-1H-indene in Methanol.
CAS NO. 57-74-9
Supplied by CHEM SERVICE, Inc. PO BOX 3108, WEST CHESTER, PA, 19381 (215)692-3026
EMERGENCY PHONE #: 215-386-2100

SECTION II TOXICITY DATA

Since this solution contains a very low concentration of active component, the primary hazard is from the solvent.
The LD50 for the minor component (Octachloro-hexahydro-methano-1H-indene):
367mg/kg
The following information is for the solvent:

RAT OR MOUSE LD50	RTECS#	OSHA PEL	ACGIH TLV
5628mg/kg	PC1400000	200 ppm (260 mg/m3)	200 ppm(260 mg/m3)

This compound is generally considered to be non-toxic.
This statement is based upon OSHA's assesment of the LD50

SECTION III PHYSICAL DATA

For the solvent:

MELTING POINT	BOILING POINT	DENSITY	VAPOR PRESSURE	VAPOR DENSITY	EVAPORATION RA (Butyl acetate
-98 C	64.6 C	0.791	97 mm@20 C	1.11	NOT AVAILABLE

ODOR	COLOR	PHASE	SOLUBILITY IN WATE
NOT AVAILABLE	Colorless	Liquid	Miscible with

SECTION IV FIRE AND EXPLOSION HAZARD DATA

For the solvent:
FLASH POINT: 11 C This is a flammable chemical.
EXTINGUISHING MEDIA: Carbon dioxide or dry chemical powder. DO NOT USE WATER!
UPPER EXPLOSION LIMIT: 36% **LOWER EXPLOSION LIMIT:** 6.7%

SECTION V HEALTH HAZARD DATA

For the solvent:
Contact lenses should not be worn in the laboratory.
All chemicals should be considered hazardous - Avoid direct physical contact!
Can be fatal if absorbed through the skin! Can be fatal if inhaled!
Can be fatal or cause blindness if swallowed.
Repeated exposure to vapors and/or dust can cause eye injury.
Can cause gastro-intestinal disturbances. Can cause liver injury. Can cause kidney injury.
Can cause cardiovascular system injury. Can cause convulsions.

SECTION VI FIRST AID

For the solvent:
An antidote is a substance intended to counteract the effect of a poison. It should be administere on by a physician or trained emergency personnel. Medical advice can be obtained from a POISON CONTROL CENTER.

In case of contact: Flush eyes continuously with water for 15-20 minutes. Flush skin with water fo 15-20 minutes. If no burns have occurred-use soap and water to cleanse skin.
If inhaled remove patient to fresh air. Administer oxygen if patient is having difficulty breathir
If patient has stopped breathing administer artificial respirations.
If patient is in cardiac arrest administer CPR.
Continue life supporting measures until medical assistance has arrived.
Get medical attention if necessary.
Do not wear shoes or clothing until absolutely free of all chemical odors.

SECTION VII REACTIVITY DATA

For the solvent:
Flammable. Hygroscopic. Incompatible with strong acids. Reacts with Acid halides and anhydrides. Incompatible with strong oxidizing agents. Incompatible with strong reducing agents. Incompatible with active metals (e.g. Sodium). Decomposition liberates toxic fumes.

SECTION VIII SPILL OR LEAK PROCEDURES

Spills or leaks: Evacuate area. Wear appropriate OSHA regulated equipment. Ventilate area. Absorb on vermiculite or similar material. Sweep up and place in an appropriate container. Hold fo disposal. Wash contaminated surfaces to remove any residues.
DISPOSAL: Burn in a chemical incinerator equipped with an afterburner and scrubber.

SECTION IX PRECAUTIONS TO BE TAKEN IN HANDLING

This chemical should be handled only in a hood. Eye shields should be worn. Use appropriate OSHA/MSHA approved safety equipment. Avoid contact with skin, eyes and clothing. Keep tightly closed in a cool dry place. STORE UNDER NITROGEN. Store only with compatible chemicals.

SECTION X SPECIAL PRECAUTIONS AND COMMENTS

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SECTION I PRODUCT SPECIFICATIONS

CAT NO. F94S 0.1mg/ml 4.4'-DDD (p.p'-TDE) in Methanol.
CAS NO. 72-54-8
Supplied by CHEM SERVICE, Inc. PO BOX 3108, WEST CHESTER, PA, 19381 (215)692-3026
EMERGENCY PHONE #: 215-386-2100

SECTION II TOXICITY DATA

Since this solution contains a very low concentration of active component, the primary hazard is from the solvent.
The LD50 for the minor component (4.4'-DDD (p.p'-TDE)): 113mg/kg
The following information is for the solvent:

RAT OR MOUSE LD50	RTECS#	OSHA PEL	ACGIH TLV
5628mg/kg	PC1400000	200 ppm (260 mg/m3)	200 ppm(260 mg/m3)

This compound is generally considered to be non-toxic.
This statement is based upon OSHA's assesment of the LD50

SECTION III PHYSICAL DATA

For the solvent:

MELTING POINT	BOILING POINT	DENSITY	VAPOR PRESSURE	VAPOR DENSITY	EVAPORATION RAT (Butyl acetate=
-98 C	64.6 C	0.791	97 mm@20 C	1.11	NOT AVAILABLE

ODOR	COLOR	PHASE	SOLUBILITY IN WATE
NOT AVAILABLE	Colorless	Liquid	Miscible with

SECTION IV FIRE AND EXPLOSION HAZARD DATA

For the solvent:
FLASH POINT: 11 C This is a flammable chemical.
EXTINGUISHING MEDIA: Carbon dioxide or dry chemical powder. DO NOT USE WATER!
UPPER EXPLOSION LIMIT: 36% **LOWER EXPLOSION LIMIT:** 6.7%

SECTION V HEALTH HAZARD DATA

For the solvent:
Contact lenses should not be worn in the laboratory.
All chemicals should be considered hazardous - Avoid direct physical contact!
Can be fatal if absorbed through the skin! Can be fatal if inhaled!
Can be fatal or cause blindness if swallowed.
Repeated exposure to vapors and/or dust can cause eye injury.
Can cause gastro-intestinal disturbances. Can cause liver injury. Can cause kidney injury.
Can cause cardiovascular system injury. Can cause convulsions.

SECTION VI FIRST AID

For the solvent:
An antidote is a substance intended to counteract the effect of a poison. It should be administered only by a physician or trained emergency personnel. Medical advice can be obtained from a POISON CONTROL CENTER.

In case of contact: Flush eyes continuously with water for 15-20 minutes. Flush skin with water for 15-20 minutes. If no burns have occurred-use soap and water to cleanse skin.
If inhaled remove patient to fresh air. Administer oxygen if patient is having difficulty breathing.
If patient has stopped breathing administer artificial respirations.
If patient is in cardiac arrest administer CPR.
Continue life supporting measures until medical assistance has arrived.
Get medical attention if necessary.
Do not wear shoes or clothing until absolutely free of all chemical odors.

SECTION VII REACTIVITY DATA

For the solvent:
Flammable. Hygroscopic. Incompatible with strong acids. Reacts with Acid halides and anhydrides. Incompatible with strong oxidizing agents. Incompatible with strong reducing agents. Incompatible with active metals (e.g. Sodium). Decomposition liberates toxic fumes.

SECTION VIII SPILL OR LEAK PROCEDURES

Spills or leaks: Evacuate area. Wear appropriate OSHA regulated equipment. Ventilate area. Absorb on vermiculite or similar material. Sweep up and place in an appropriate container. Hold for disposal. Wash contaminated surfaces to remove any residues.
DISPOSAL: Burn in a chemical incinerator equipped with an afterburner and scrubber.

SECTION IX PRECAUTIONS TO BE TAKEN IN HANDLING

This chemical should be handled only in a hood. Eye shields should be worn. Use appropriate OSHA/MSHA approved safety equipment. Avoid contact with skin, eyes and clothing. Keep tightly closed in a cool dry place. STORE UNDER NITROGEN. Store only with compatible chemicals.

SECTION X SPECIAL PRECAUTIONS AND COMMENTS

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MATERIAL SAFETY DATA SHEET

PPO-8S
09/10/90
Last revised June 1989

SECTION I PRODUCT SPECIFICATIONS

CAT NO. F93S 0.1mg/ml 4.4'-DDE (p.p'-DDX) in Methanol.
CAS NO. 72-55-9
Supplied by CHEM SERVICE, Inc. PO BOX 3108, WEST CHESTER, PA, 19381 (215)692-3026
EMERGENCY PHONE #: 215-386-2100

SECTION II TOXICITY DATA

Since this solution contains a very low concentration of active component, the primary hazard is from the solvent.
The LD50 for the minor component (4.4'-DDE (p.p'-DDX)): 880mg/kg
The following information is for the solvent:

RAT OR MOUSE LD50	RTECS#	OSHA PEL	ACGIH TLV
5628mg/kg	PC1400000	200 ppm (260 mg/m3)	200 ppm(260 mg/m3)

This compound is generally considered to be non-toxic.
This statement is based upon OSHA's assesment of the LD50

SECTION III PHYSICAL DATA

For the solvent:

MELTING POINT	BOILING POINT	DENSITY	VAPOR PRESSURE	VAPOR DENSITY	EVAPORATION RATE (Butyl acetate=1
98 C	64.6 C	0.791	97 mm@20 C	1.11	NOT AVAILABLE

ODOR	COLOR	PHASE	SOLUBILITY IN WATER
NOT AVAILABLE	Colorless	Liquid	Miscible with

SECTION IV FIRE AND EXPLOSION HAZARD DATA

For the solvent:
FLASH POINT: 11 C This is a flammable chemical.
EXTINGUISHING MEDIA: Carbon dioxide or dry chemical powder. DO NOT USE WATER!
UPPER EXPLOSION LIMIT: 36% **LOWER EXPLOSION LIMIT:** 6.7%

SECTION V HEALTH HAZARD DATA

For the solvent:
Contact lenses should not be worn in the laboratory.
All chemicals should be considered hazardous - Avoid direct physical contact!
Can be fatal if absorbed through the skin! Can be fatal if inhaled!
Can be fatal or cause blindness if swallowed.
Repeated exposure to vapors and/or dust can cause eye injury.
Can cause gastro-intestinal disturbances. Can cause liver injury. Can cause kidney injury.
Can cause cardiovascular system injury. Can cause convulsions.

SECTION VI FIRST AID

For the solvent:
An antidote is a substance intended to counteract the effect of a poison. It should be administered on by a physician or trained emergency personnel. Medical advice can be obtained from a POISON CONTROL CENTER.

In case of contact: Flush eyes continuously with water for 15-20 minutes. Flush skin with water fo 15-20 minutes. If no burns have occurred-use soap and water to cleanse skin.
If inhaled remove patient to fresh air. Administer oxygen if patient is having difficulty breathin
If patient has stopped breathing administer artificial respirations.
If patient is in cardiac arrest administer CPR.
Continue life supporting measures until medical assistance has arrived.
Get medical attention if necessary.
Do not wear shoes or clothing until absolutely free of all chemical odors.

SECTION VII REACTIVITY DATA

For the solvent:
Flammable. Hygroscopic. Incompatible with strong acids. Reacts with Acid halides and anhydrides. Incompatible with strong oxidizing agents. Incompatible with strong reducing agents. Incompatible with active metals (e.g. Sodium). Decomposition liberates toxic fumes.

SECTION VIII SPILL OR LEAK PROCEDURES

Spills or leaks: Evacuate area. Wear appropriate OSHA regulated equipment. Ventilate area. Absorb on vermiculite or similar material. Sweep up and place in an appropriate container. Hold fo disposal. Wash contaminated surfaces to remove any residues.
DISPOSAL: Burn in a chemical incinerator equipped with an afterburner and scrubber.

SECTION IX PRECAUTIONS TO BE TAKEN IN HANDLING

This chemical should be handled only in a hood. Eye shields should be worn. Use appropriate OSHA/MSHA approved safety equipment. Avoid contact with skin, eyes and clothing. Keep tightly closed in a cool dry place. STORE UNDER NITROGEN. Store only with compatible chemicals.

SECTION X SPECIAL PRECAUTIONS AND COMMENTS

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MATERIAL SAFETY DATA SHEET

PPO-8S
09/10/90
Last revised June 1989

SECTION I PRODUCT SPECIFICATIONS

CAT NO. F92S 0.1mg/ml 4.4'DDT in Methanol.
CAS NO. 50-29-3
Supplied by CHEM SERVICE, Inc. PO BOX 3108, WEST CHESTER, PA, 19381 (215)692-3026
EMERGENCY PHONE #: 215-386-2100

SECTION II TOXICITY DATA

Since this solution contains a very low concentration of active component, the primary hazard is from the solvent.
The LD50 for the minor component (4.4'DDT): 87mg/kg
The following information is for the solvent:

RAT OR MOUSE LD50	RTECS#	OSHA PEL	ACGIH TLV
5628mg/kg	PC1400000	200 ppm (260 mg/m3)	200 ppm(260 mg/m3)

This compound is generally considered to be non-toxic.
This statement is based upon OSHA's assesment of the LD50

SECTION III PHYSICAL DATA

For the solvent:

MELTING POINT	BOILING POINT	DENSITY	VAPOR PRESSURE	VAPOR DENSITY	EVAPORATION RATE (Butyl acetate=1
98 C	64.6 C	0.791	97 mm@20 C	1.11	NOT AVAILABLE

ODOR	COLOR	PHASE	SOLUBILITY IN WATER
NOT AVAILABLE	Colorless	Liquid	Miscible with

SECTION IV FIRE AND EXPLOSION HAZARD DATA

For the solvent:
FLASH POINT: 11 C This is a flammable chemical.
EXTINGUISHING MEDIA: Carbon dioxide or dry chemical powder. DO NOT USE WATER!
UPPER EXPLOSION LIMIT: 36% **LOWER EXPLOSION LIMIT:** 6.7%

SECTION V HEALTH HAZARD DATA

For the solvent:
Contact lenses should not be worn in the laboratory.
All chemicals should be considered hazardous - Avoid direct physical contact!
Can be fatal if absorbed through the skin! Can be fatal if inhaled!
Can be fatal or cause blindness if swallowed.
Repeated exposure to vapors and/or dust can cause eye injury.
Can cause gastro-intestinal disturbances. Can cause liver injury. Can cause kidney injury.
Can cause cardiovascular system injury. Can cause convulsions.

SECTION VI FIRST AID

For the solvent:
An antidote is a substance intended to counteract the effect of a poison. It should be administered only by a physician or trained emergency personnel. Medical advice can be obtained from a POISON CONTROL CENTER.

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If inhaled remove patient to fresh air. Administer oxygen if patient is having difficulty breathing.
If patient has stopped breathing administer artificial respirations.
If patient is in cardiac arrest administer CPR.
Continue life supporting measures until medical assistance has arrived.
Get medical attention if necessary.
Do not wear shoes or clothing until absolutely free of all chemical odors.

SECTION VII REACTIVITY DATA

For the solvent:
Flammable. Hygroscopic. Incompatible with strong acids. Reacts with Acid halides and anhydrides. Incompatible with strong oxidizing agents. Incompatible with strong reducing agents. Incompatible with active metals (e.g. Sodium). Decomposition liberates toxic fumes.

SECTION VIII SPILL OR LEAK PROCEDURES

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DISPOSAL: Burn in a chemical incinerator equipped with an afterburner and scrubber.

SECTION IX PRECAUTIONS TO BE TAKEN IN HANDLING

This chemical should be handled only in a hood. Eye shields should be worn. Use appropriate OSHA/MSHA approved safety equipment. Avoid contact with skin, eyes and clothing. Keep tightly closed in a cool dry place. STORE UNDER NITROGEN. Store only with compatible chemicals.

SECTION X SPECIAL PRECAUTIONS AND COMMENTS

The above information is believed to be correct on the date it is published and must not be considered all inclusive. The information has been obtained only by a search of available literature and is only a guide for handling the chemicals. OSHA regulations require that if other hazards become evident, an upgraded MSDS must be made avalible to the employee within three months. Responsibility for updates lies with the employer and not with CHEM SERVICE, Inc. Persons not specifically and properly trained should not handle this chemical or its container. This MSDS is provided without any warranty expressed or implied, including merchantability or fitness for any particular purpose.

This product is furnished FOR LABORATORY USE ONLY! Our products may NOT BE USED as drugs, cosmetics, agricultural or pesticidal products, food additives or as household chemicals.