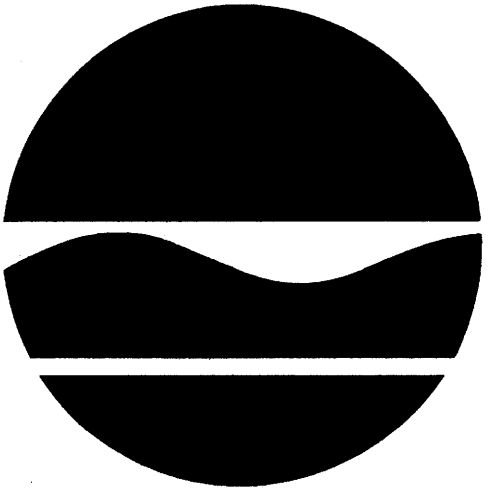
SARATOGA TREE NURSERY SITE

Saratoga Springs (C), Saratoga County, New York
Site No. 5-46-043

PROPOSED REMEDIAL ACTION PLAN

September 1996



Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

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SECTION 1: PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) is proposing On-Site Thermal Desorption for the Saratoga Tree Nursery, Route 50 Facility. This remedy is proposed to address the threat to human health and the environment created by the presence of DDT, DDE and DDD in soil and sediment at the Saratoga Tree Nursery Site.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the rationale for this preference. The NYSDEC will select a final remedy for the site only after careful consideration of all comments submitted during the public comment period.

The NYSDEC has issued this PRAP as a component of the citizen participation plan developed pursuant to the New York State Environmental Conservation Law (ECL) and 6 NYCRR Part 375. This document summarizes the information that can be found in greater detail in the Remedial Investigation (RI) and Feasibility Study (FS) reports available at the document repositories.

The NYSDEC may modify the preferred alternative or select another alternative based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

To better understand the site, and the alternatives evaluated, the public is encouraged to review the project documents which are available at the following repositories:

NYSDEC
Division of Environmental Remediation
50 Wolf Road
Albany, NY 12233-7010
contact: Mr. Michael Ryan, P.E.
phone: (518) 457-4343
hours: 8:30am-4:45 pm, Mon.-Fri.

Saratoga Springs Public Library
49 Henry Street
Saratoga Springs, NY
phone: (518) 584-7860
hours: 9:00am-9:00pm, Mon.-Thur.
9:00am-6:00pm, Fri.
9:00am-5:00pm, Sat.
1:00pm-5:00pm, Sun.

Written comments on the PRAP can be submitted to Mr. Ryan, at the above address.

DATES TO REMEMBER:

September 3, 1996-October 3, 1996: Public comment period on RI/FS Report, PRAP, and preferred alternative.

September 12, 1996: Public meeting at the Gideon Room, Saratoga Capital District Park Administration Building, 7:00-9:00 pm.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Saratoga Tree Nursery, Site No. 5-46-043, is located at 431 Route 50 South in the City of Saratoga Springs, Saratoga County. The site is situated on the west side of Route 50, west of the D&H railroad tracks. The site is located in a commercial/residential setting and occupies approximately 12 acres of the 130-acre Nursery property. Site topography is relatively flat, gently sloping to the southeast. The Nursery Site in question is one of two State-operated Nursery parcels located in the City of Saratoga which are used for the production of tree and shrub seedlings for conservation planting throughout New York State. Figure 1 shows the site location.

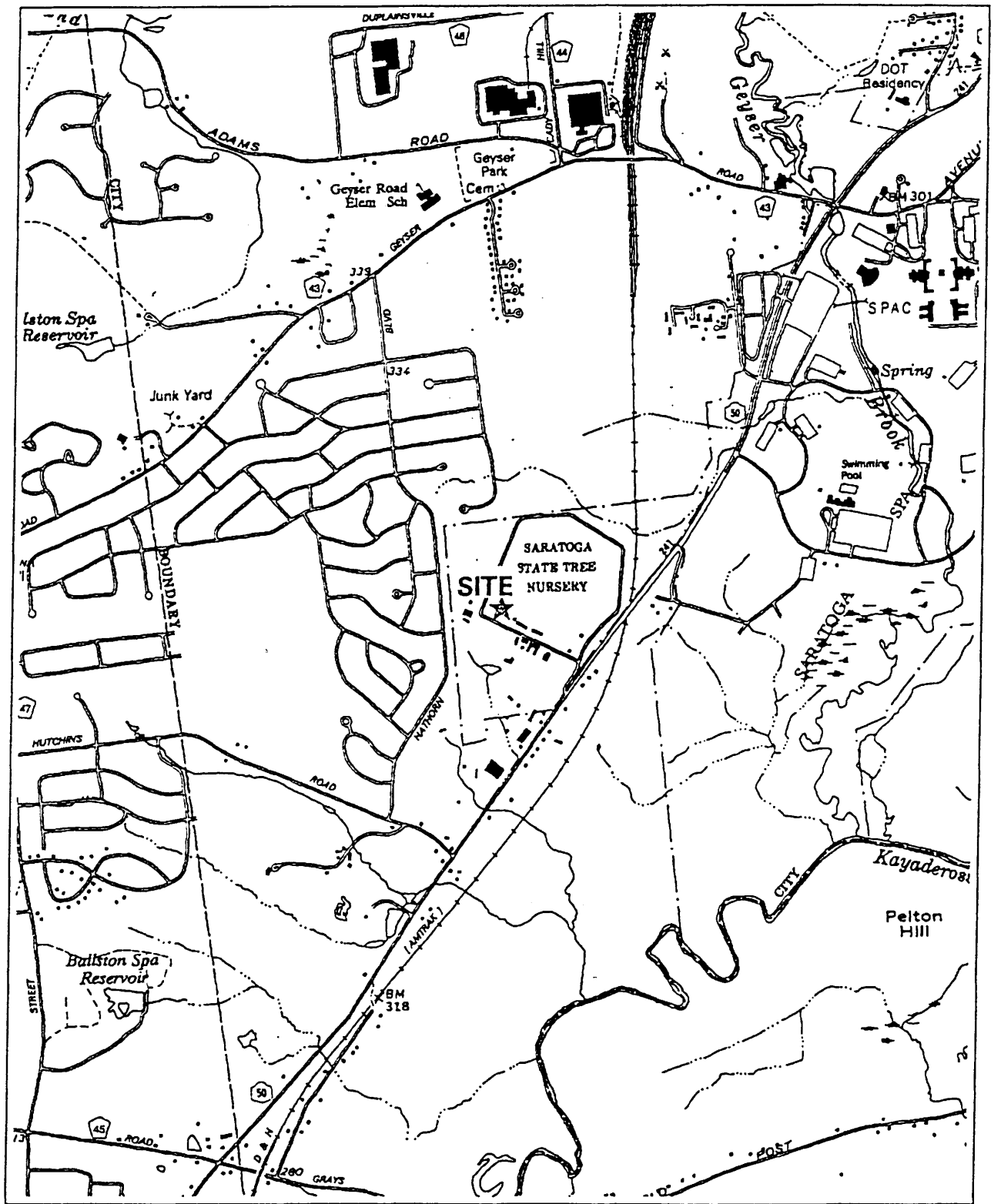
SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The State of New York has operated a Tree Nursery at the Route 50 location since 1911. Because of the acreage available and the proximity to the Saratoga County Airport, the facility was also used as a pesticide storage and mixing facility by the Conservation Department's Bureau of Forest Insect and Disease Control. From the 1940s until 1966, the Bureau used the facility as a storage site for DDT powder and as a formulation/transfer station for DDT emulsion used in aerial spraying operations. These spraying operations were part of an effort to control the gypsy moth population in Saratoga County and surrounding regions. DDT, or dichlorodiphenyltrichloroethane, is a highly effective insecticide which was widely used throughout the United States until its ban in 1972. The formulation process used by the Bureau 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.

It is reported that following daily operations, the tanker trucks returned to the site and were rinsed and flushed with water to remove the residual emulsion. It is reported that the rinsing operations were conducted in the vicinity of the present Mechanic Shop (ref. Figure 2, Structure A). It is believed contaminated rinse waters flowed to a low area at the western edge of the Route 50 facility.

It has been reported that six underground storage tanks were utilized as part of the pesticide mixing process. These tanks were located in the area west of the loading dock (ref. Figure 2, Structure F). These tanks are believed to have been used for storage of fuel oil, DDT/fuel oil mixture and the oil/water emulsion. These tanks have since been removed. A barn (Figure 2, Structure E), also located west of the loading dock, was reported to have been used for storage of DDT and



Site Location Map

546043 Saratoga Tree Nursery

NYSDOT Planimetric Quadrangle(s):

N

0 500 1000 1500 2000

FEET

Scale 1:24,000

March 13, 1996

FIGURE 1

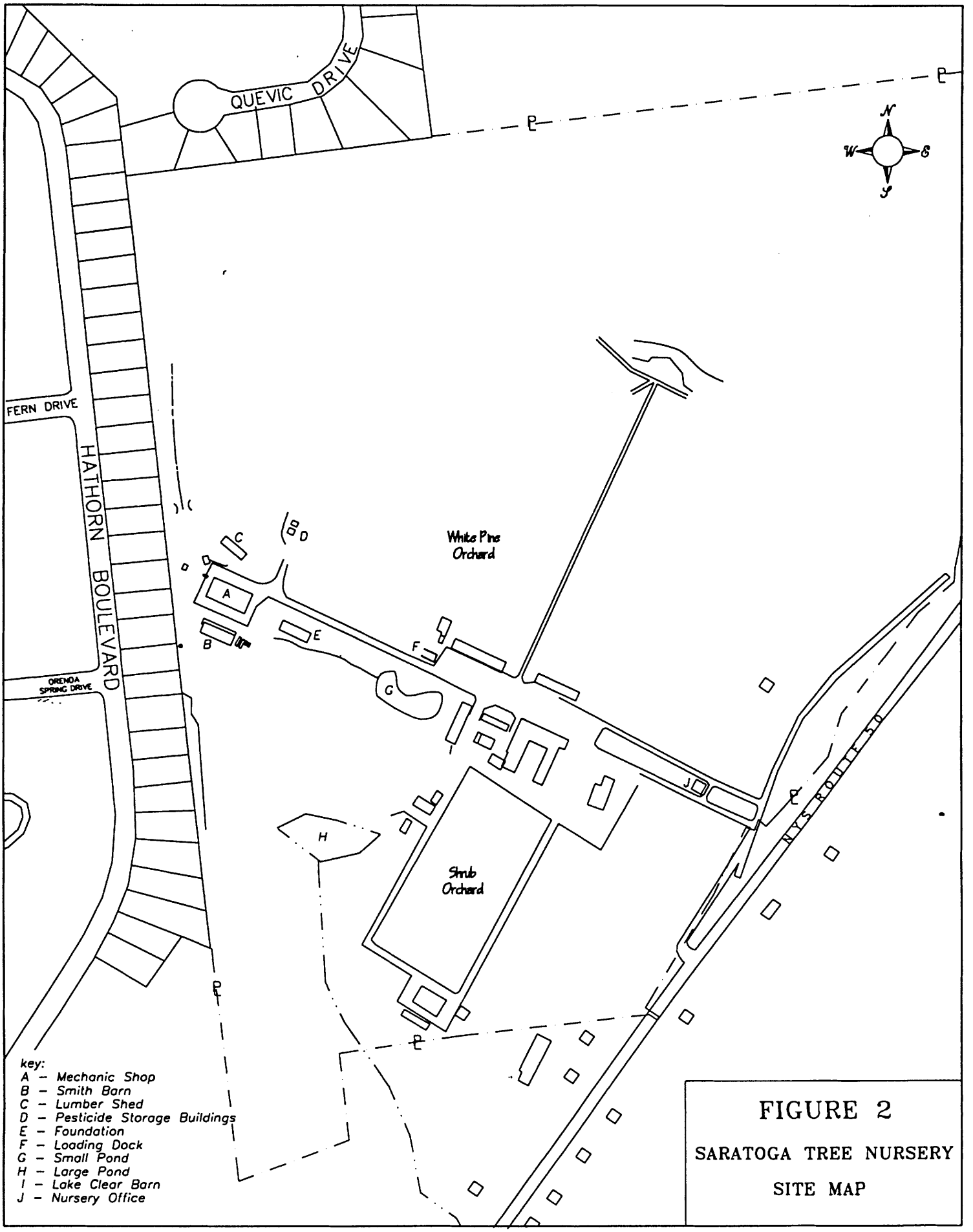


FIGURE 2

SARATOGA TREE NURSERY

SITE MAP

other pesticides, during the period associated with pesticide mixing operations at the Nursery. Only the building foundation currently remains.

Through the early 1980s, pesticides awaiting final disposition are reported to have been stored in a number of on-site structures including: two small storage buildings, the Lumber Barn, the Mechanic Shop, the loading dock, the Smith Barn and in the former storage building of which only a foundation remains (ref. Figure 2).

3.2: Remedial History

In May of 1994, DDT was detected in soil samples collected at the Route 50 facility. The samples were collected as part of routine sampling for petroleum contamination required when the existing underground fuel tanks near the Mechanic Shop were replaced. Based on this discovery, Nursery staff requested the assistance of the NYSDEC Division of Environmental Remediation (DER), to further evaluate the nature and extent of the identified contamination.

In response to the request by Nursery staff, the DER tested additional locations in the vicinity of the former tanks for pesticide contamination. This follow-up sampling was conducted beginning in the Fall of 1994. Sampling was conducted in three separate events between October 1994 and January 1995. The sampling involved collection of soil samples and groundwater samples from existing on-site water supply wells. Soil samples were collected along the western property boundary of the facility, including nine locations adjacent to properties on Hathorn Boulevard in the Geyser Crest Community. Samples were analyzed for pesticides as well as lead and arsenic since the pesticide lead-arsenate was also reported to have been stored at the Nursery. The use of lead-arsenate was discontinued in the 1950s.

These sampling events confirmed the presence of DDT and its breakdown products as high as 1,200 parts per million (ppm) in soil. The investigation detected low levels of DDT in groundwater in one on-site water supply well. Elevated levels of lead and arsenic were not detected in soil or groundwater samples.

Based on the findings of the preliminary on-site sampling, an off-site investigation was developed during February of 1995 and conducted during the months of March and April. This investigation included an extensive soil sampling program which focused on private properties adjacent to the Nursery. The investigation also included background soil sampling, sampling of private well points and installation of three temporary well points. Ten residential properties which border the Nursery property were included in the off-site sampling program. Investigations revealed DDT contamination in soil above remedial levels of concern, on seven of the properties sampled.

Based on the findings of the Off-Site Sampling program, an Interim Remedial Measure (IRM) Soil Removal Program was planned and implemented. The work, which began in September 1995, resulted in the excavation and removal of approximately 250 cubic yards of contaminated soil from the seven residential properties. The IRM is discussed in Section 4.2.

In order to determine the nature and extent of contamination present at the Nursery, the DER next focused on areas onsite where DDT was reported to have been stored, handled or disposed. The findings of the RI revealed widespread contamination by DDT in soil in the area reportedly used for disposal of DDT rinsate following daily operations, the pesticide storage buildings and the former mixing areas. The findings of the RI are discussed in Section 4.1.1.

SECTION 4: CURRENT STATUS

In response to a determination that the presence of hazardous waste at the Site presents a significant threat to human health or the environment, the NYSDEC has recently completed a Remedial Investigation/Feasibility Study (RI/FS).

4.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted in two phases. The first phase, the Off-Site Investigation, was conducted between March and April, 1995. The second phase, the On-Site Investigation, commenced in June 1995 and was completed in December 1995. A report entitled "Remedial Investigation Report for the Saratoga Tree Nursery" dated April 1996, has been prepared describing the field activities and findings of the RI in detail.

The RI included the following activities:

- Collection of surface and subsurface soil samples from seven designated Areas of Concern (AOCs). Samples were analyzed to determine the extent of contamination associated with past DDT handling at the site.
- Installation of monitoring wells. Eight shallow monitoring wells and two deep monitoring wells were installed across the site to assess groundwater quality. Groundwater samples were analyzed for lead, arsenic, pesticides and volatile parameters.
- Excavation of test pits. Test pits were excavated in areas which were reportedly used for pesticide mixing and/or disposal. These locations included the former truck rinsing area (AOC 1), the former underground storage tank area (AOC 5), the former pesticide mixing area (AOC 6) and the wood pallet/shade frame disposal area (AOC 7). The AOCs are depicted on Figure 3.
- Collection of surface water and sediment samples. Surface water and sediment samples were collected for analysis from the two on-site ponds to assess the impact, if any, on the ponds.
- Collection of soil or sediment samples from on-site drainage ways or areas of historic flooding. Samples were collected from the swale located behind the old building foundation, the swale behind the pesticide storage buildings, and the creek/drainage ditch running along the western Nursery property line.

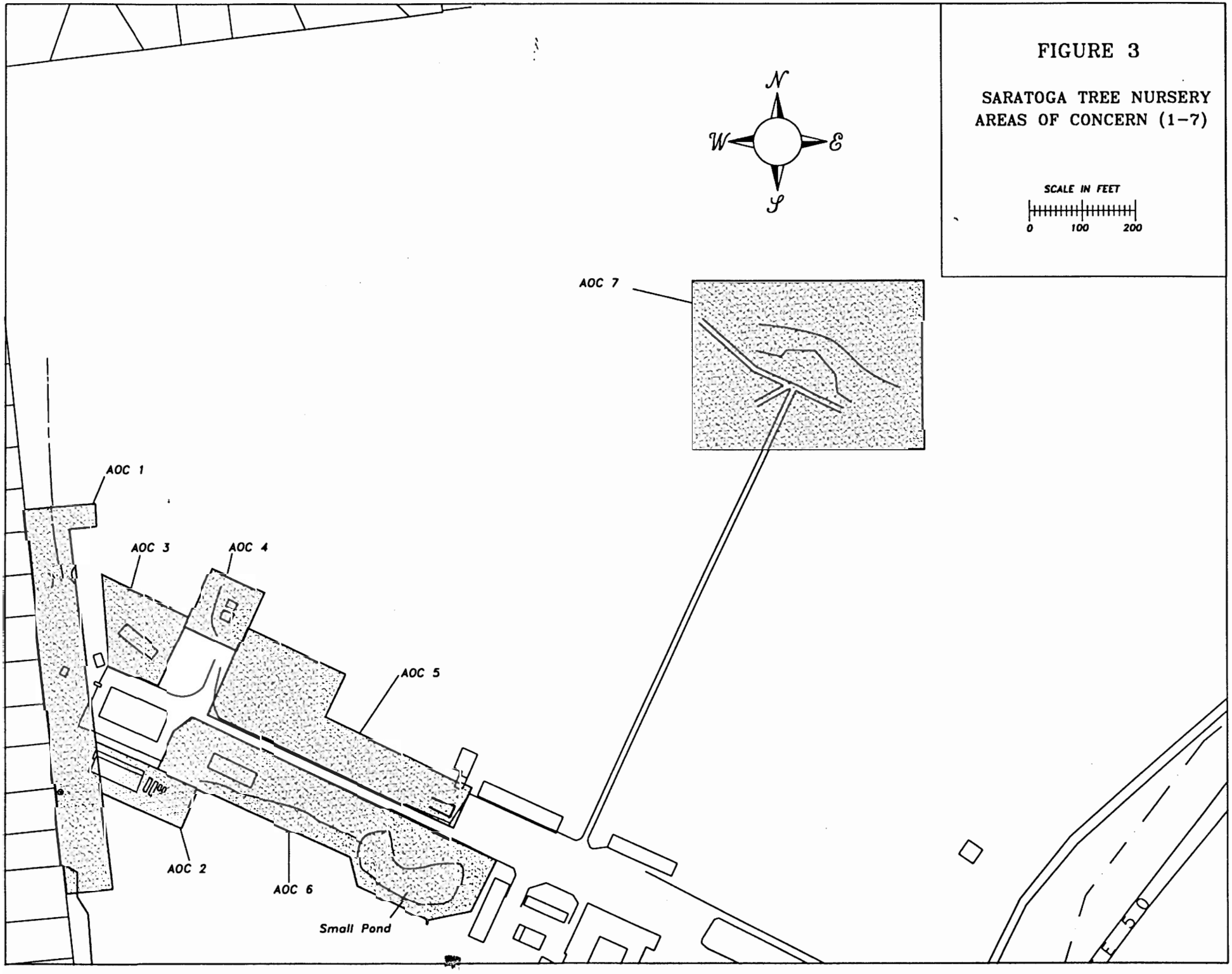


FIGURE 3
SARATOGA TREE NURSERY
AREAS OF CONCERN (1-7)
SCALE IN FEET
0
100
200
N
W
E
S
AOC 7
AOC 1
AOC 3
AOC 4
AOC 5
AOC 2
AOC 6
Small Pond

- Sampling of the pesticide storage buildings. Soil samples were collected from within and in the vicinity of two former pesticide storage buildings (AOC 4), situated north of the Mechanic Shop.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the Saratoga Tree Nursery site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. NYSDEC TAGM 4030 soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used as SCGs for soil and the Division of Fish and Wildlife Technical Guidance for Screening Contaminated Sediments is used for surface water sediments.

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media of the site require remediation. These are summarized below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb) and parts per million (ppm). For comparison purposes, SCGs are given for each medium.

4.1.1: Nature of Contamination:

As described in the RI Report, many soil, sediment and groundwater samples were collected at the Site to characterize the nature and extent of contamination.

The primary contaminants detected at this site are pesticides. The pesticide DDT and its breakdown products DDD and DDE represent the predominant contamination present in soil, sediment and groundwater. To a lesser extent the metal arsenic was observed in elevated concentrations in soil in the vicinity of the pesticide storage buildings. The presence of arsenic in this area of the site is attributed to the past storage of the pesticide lead-arsenate in these two storage buildings.

4.1.2: Extent of Contamination:

Table 1 summarizes the extent of contamination for the contaminants of concern in soil, sediment and groundwater and compares the data with the proposed remedial action levels (SCGs) for the Site. The following are the media which were investigated and a summary of the findings of the investigation.

Soil

The findings of the RI revealed widespread contamination by DDT in soil in the area reportedly used for disposal of DDT rinsate following daily operations (AOC 1), the pesticide storage buildings (AOC 4) and the former mixing areas (AOC 5 and AOC 6). An isolated area of contamination was also observed beneath the tank trailers adjacent to the Smith Barn (AOC 2).

The RI revealed that, in general, the depth of the DDT contamination in soil is shallow, typically within two feet of the ground surface.

TABLE 1

Saratoga Tree Nursery - Nature and Extent of Contamination

Media	Class	Contaminant of Concern	Concentration Range	SCG	Frequency Exceeding SCGs
Soil	Pesticides	DDT, DDD, DDE	ND->10,000 ppm	DDT: 2.1 ppm DDD: 2.9 ppm DDE: 2.1 ppm	155 of 418
	Metals	Lead	ND-11,000 ppm	500	1 of 47
		Arsenic	ND-3,800 ppm	SB	11 of 47
Sediment	Pesticides	DDT, DDD, DDE	ND-223 ppm	0.05 ppm	15 of 18
Groundwater	Pesticides	DDT	ND-0.44 ppb	ND	5 of 10
		DDD	ND-1.5 ppb	ND	4 of 10
		DDE	ND-0.06 ppb	ND	2 of 10
	Metals	Lead	ND	25 ppb	0 of 10
		Arsenic	ND	25 ppb	0 of 10
	Volatiles	Chloroform	ND-28 ppb	7 ppb	1 of 10
	Semi-volatiles	Phenanthrene	ND-48 ppb	50 ppb	0 of 5
		Various (non-target)	ND-630 ppb	50 ppb	2 of 5
Surface Water	Pesticides	DDT	ND	0.001 ppb (D)	0 of 2
		DDD	ND-0.015J ppb	0.001 ppb (D)	1 of 2
		DDE	ND-0.002J ppb	0.001 ppb (D)	1 of 2

KEY: SB - Site Background (Typ. Range for Albany Area - Arsenic: 0.1-6.5 ppm).
ND - Non Detect.
J - Value reported is an estimate.
D - SCG corresponds to Class D surface waters.
SCG - State standards, criteria and guidelines.

These findings are consistent with the reported mixing, handling and rinsing activities associated with the site. Drilling and test pitting revealed that there are areas of the site, however, where DDT extends to depths of eight feet or more. While these areas of the site make up a relatively small portion of the total area requiring action, they will require special consideration in light of the shallow water table and high DDT concentrations associated with these areas.

It appears that the presence of DDT at deeper intervals is the result of transport in the emulsion with petroleum, which functions as a carrier. DDT is a relatively insoluble compound in water with a strong tendency to adhere to soil particles, however, it dissolves fairly readily into oil, which is why fuel oil was used as a mixing/emulsifying agent. It is for this reason that those areas where DDT was observed at deeper intervals (in soil and groundwater) are believed to be the result of petroleum contamination, which also exists, and which has combined with the DDT.

Figure 4 illustrates the estimated areal extent of contamination. The estimated total volume of contaminated soil is 12,250 cubic yards.

Sediments

Six sediment samples from three locations were collected from the small pond adjacent to AOC 6 (ref. Figure 2). Results revealed concentrations of DDT ranging from 34 ppm to 223 ppm in the upper sediment horizon (0-8"). The lower sediment horizon (8"-16") showed significantly lower concentrations of contamination with concentrations ranging from 0.10 ppm to 3.4 ppm.

The second of the two on-site ponds is located in the southern portion of the Nursery, a considerable distance (550') from the former mixing and storage areas. Eight sediment samples from three locations were collected from this pond. Elevated levels of DDT were not detected in any of the sediment samples collected. Concentrations of DDT for each of the sediment samples were below 1 ppm, with the exception of one sample which had a concentration of 1.10 ppm.

Sediment samples were also collected from the creek/drainage ditch that flows along the western property boundary. This ditch, which has a sustained flow of approximately five gpm, is approximately two feet wide and three to six inches deep. The ditch flows along the Nursery's western property boundary and eventually to an off-site pond situated south of the Nursery property boundary.

A total of three sediment samples were collected from the ditch at approximately 25 foot spacings during the RI. During the preliminary investigations, one sediment sample was also collected from the ditch bottom. Analysis revealed DDT levels of 1.6, 2.5 and 0.2 ppm respectively, progressing from upstream to downstream. The sample collected during the preliminary investigation contained 0.3 ppm DDT. The results of the ditch sampling support that there has been no significant impact on the ditch.

The RI revealed that the contaminated sediment is limited to the small pond. The estimated volume of contaminated sediment in the pond is 1,000 cubic yards.

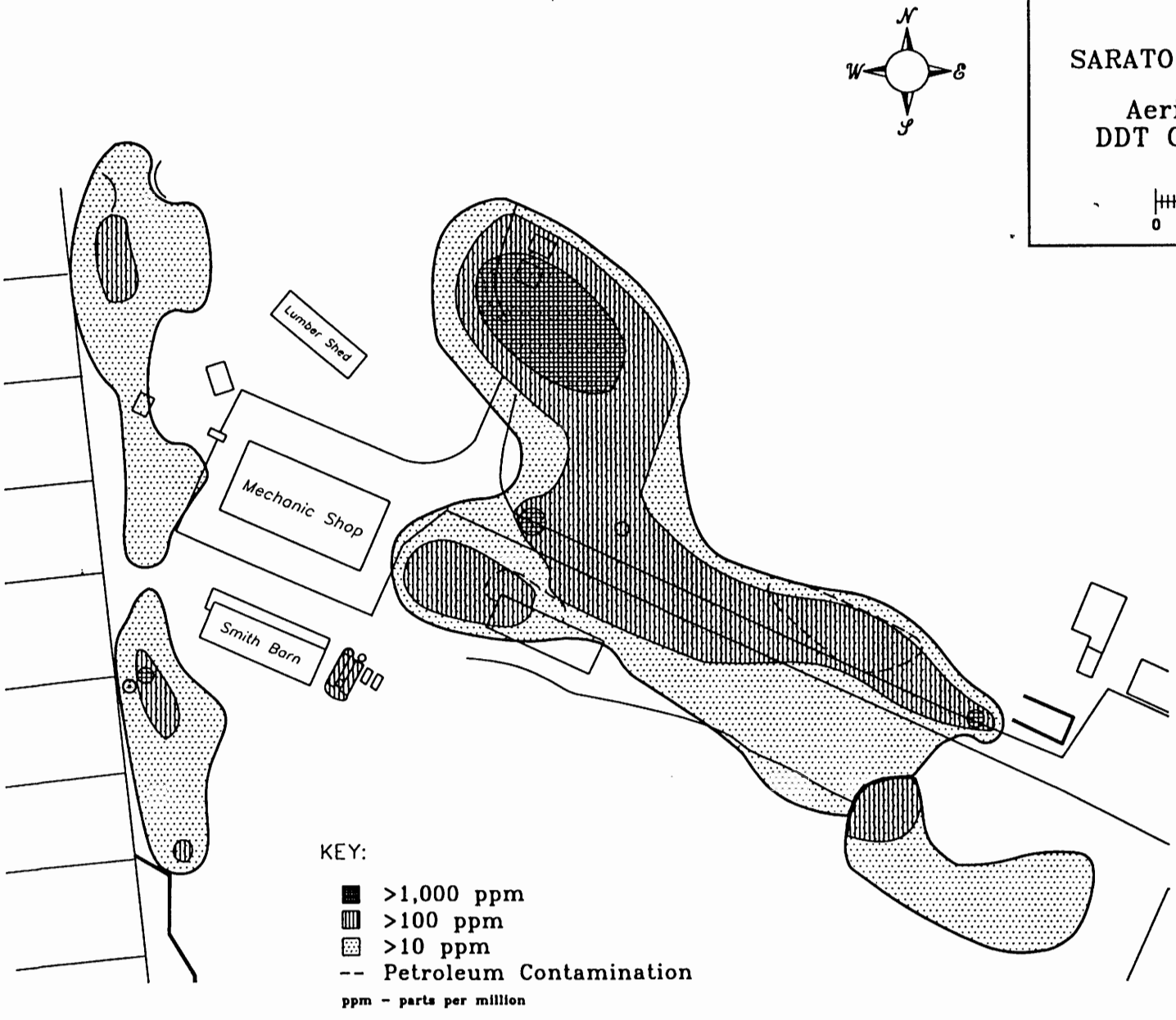
FIGURE 4

SARATOGA TREE NURSERY

Aerial Extent of
DDT Contamination

Scale in Feet

0 50 100 150



Groundwater

The RI revealed that groundwater contamination by DDT and its breakdown products exists at the site, but that the groundwater contamination is not widespread. Groundwater contamination was observed in five of the ten monitoring wells, including one shallow/deep well couplet. The groundwater data is illustrated on Figure 5. Analysis of groundwater samples for downgradient wells, including monitoring wells 5S and 5D as well as onsite water supply wells near the Lake Clear Barn and the Nursery Office (ref. Figure 2, Structures I & J), support that the groundwater contamination is confined. Further, the data revealed that the groundwater contamination coincides with areas of petroleum contamination. Data supports that the deeper contamination observed, in both groundwater and soil, is attributable to the presence of petroleum contamination in these areas. Evidence of petroleum, either visual or analytical, was encountered in nearly every instance where DDT was detected at deeper intervals.

Surface Water

Surface water samples were collected from the two on-site ponds. The results of the surface water sampling showed an estimated concentration of 0.002 ppb DDE and an estimated concentration of 0.015 ppb DDD in the small pond. The results from analysis of the surface water sample from the large pond revealed no detectable concentrations of DDT, DDE or DDD. The New York State aquatic standard for Class D surface waters is 0.001 ppb. This data supports that there is a potential risk to wildlife associated with the surface water in the small pond.

Waste Materials

Two trailer-mounted tanks and two storage tanks currently on cradles are presently stored on the east side of the Smith Barn. It has been reported that these tanks were previously situated in the pesticide mixing area (AOC 5) and were moved here after the DDT use at the site had ceased. Two of the tanks contain some residual of the oil/DDT mixture, which is likely the source of the soil contamination identified in this area. The tank contents were sampled and analysis revealed concentrations of DDT as high as 15,000 ppm.

The two pesticide storage buildings located in AOC 4 contain miscellaneous equipment and debris. Soil/waste samples collected from the floors of the buildings revealed concentrations of DDT of 766 ppm in Building A and in excess of 1000 ppm in Building B (ref. Figure 2, Structure D).

4.2: Interim Remedial Measures:

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

Based on the findings of the Off-Site Sampling program, an Interim Remedial Measure (IRM) Soil Removal Program was planned. In August of 1995 the NYSDEC finalized a Work Plan to address the identified off-site contamination. In September the IRM program commenced. The work resulted in the excavation and removal of approximately 250 cubic yards of contaminated soil from the six properties identified during the off-site

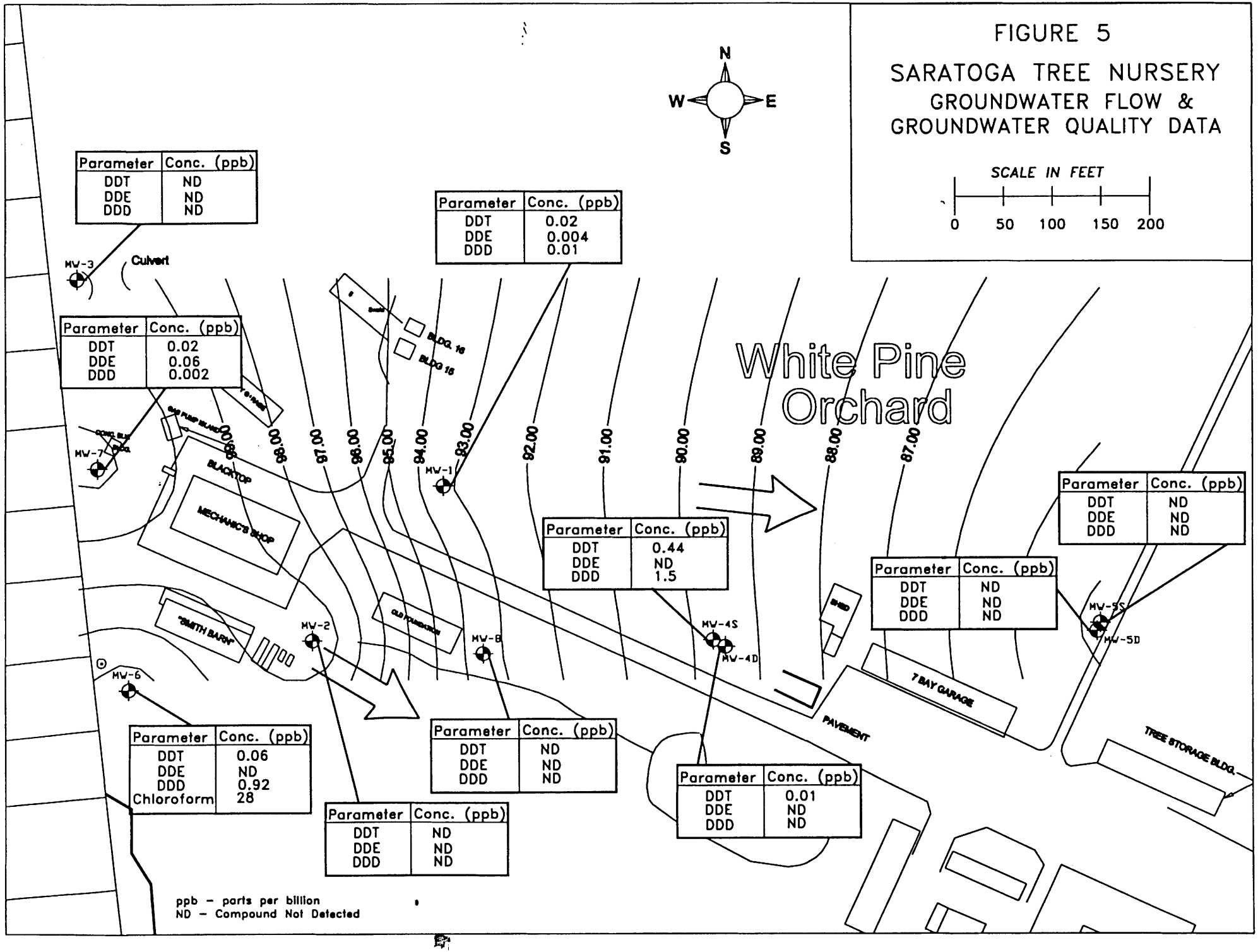


FIGURE 5
SARATOGA TREE NURSERY
GROUNDWATER FLOW &
GROUNDWATER QUALITY DATA
SCALE IN FEET
0 50 100 150 200
N
W E
S
White Pine Orchard
MW-1
MW-2
MW-3
MW-4S
MW-4D
MW-5S
MW-5D
MW-6
MW-7
MW-8
Culvert
BLDG. 16
BLDG 18
BLACKTOP
MECHANIC'S SHOP
SMITH BARN
OLD FOUNDATION
SHED
7 BAY GARAGE
PAVEMENT
TREE STORAGE BLDG.
97.00
96.00
95.00
94.00
93.00
92.00
91.00
90.00
89.00
88.00
87.00
Parameter | Conc. (ppb)
DDT | ND
DDE | ND
DDD | ND
Parameter | Conc. (ppb)
DDT | 0.02
DDE | 0.004
DDD | 0.01
Parameter | Conc. (ppb)
DDT | 0.02
DDE | 0.06
DDD | 0.002
Parameter | Conc. (ppb)
DDT | 0.44
DDE | ND
DDD | 1.5
Parameter | Conc. (ppb)
DDT | ND
DDE | ND
DDD | ND
Parameter | Conc. (ppb)
DDT | ND
DDE | ND
DDD | ND
Parameter | Conc. (ppb)
DDT | 0.06
DDE | ND
DDD | 0.92
Chloroform | 28
Parameter | Conc. (ppb)
DDT | ND
DDE | ND
DDD | ND
Parameter | Conc. (ppb)
DDT | ND
DDE | ND
DDD | ND
Parameter | Conc. (ppb)
DDT | 0.01
DDE | ND
DDD | ND
ppb – parts per billion
ND – Compound Not Detected

sampling program. A small area of contamination was identified on a seventh property during the IRM. This area was also addressed as a part of the IRM. Excavations were backfilled with topsoil and seeded. The excavated soil is presently stockpiled on the Nursery property. The soil pile is presently located on a contaminated section of AOC 5, is covered with UV-resistant plastic and routinely inspected to insure adequate controls remain in place to prevent migration due to wind, rain, etc. This soil stockpile will be dealt with in conjunction with the contaminated soil identified onsite, by the remedy addressed by this PRAP.

The findings of the Off-Site Sampling Program and the IRM Program revealed that the DDT contamination in soil was generally shallow in depth. The contamination was typically limited to within the top two feet of the ground surface, supporting that migration of this contamination has been limited. The deepest DDT contamination encountered was at a depth of approximately 8 feet, in the area associated with petroleum contamination. The IRM program is detailed in the report entitled "IRM Soil Removal Program, Saratoga Tree Nursery" dated February 1996.

4.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 5.2 of the RI Report.

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events. All of these elements must be present for a pathway to be complete.

Based on an evaluation of the data collected during the RI, the NYSDOH indicated that there is not an immediate health threat posed by the levels of contamination present at the Nursery, because the area is restricted and activities in contaminated areas are limited. The NYSDOH recommended that on-site workers avoid direct contact with contaminated soil and avoid situations which might increase the potential for inhalation of dust from these areas. The NYSDOH indicated that the levels of DDT and its breakdown products in soil are above those recommended for unrestricted use. Further, because DDT has migrated to groundwater in some areas of the site, threatening a source of water used locally for drinking, a third potential exposure pathway (i.e. ingestion of drinking water) exists. Three off-site residential well points were sampled as part of the RI. Sampling revealed that these well points had not been affected by the onsite contamination.

The NYSDOH indicated that until the identified areas of contamination have been remediated, on-site workers and site visitors should avoid unnecessary activities in these areas.

4.4: Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site. The Fish and Wildlife Impact Assessment included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources.

The undeveloped areas of the Nursery provide habitat for wildlife species typically found in woodlands and woodland edges. During the investigation, wildlife observed on the site included white-tailed deer, cottontail rabbit, gray squirrel, and turkey.

DDT, or dichlorodiphenyltrichloroethane, is a persistent pesticide that is known to accumulate and magnify in food chains. (The term DDT is used to include its degradation products DDD and DDE.) The compound has a well-documented history of producing adverse effects in wildlife. Most notably, DDT was associated with the population decline of species such as the peregrine falcon, the osprey, and the brown pelican. This was brought about by DDT's ability to inhibit successful reproduction in birds by causing egg shell thinning. Such eggs are susceptible to breakage during incubation. DDT can also be acutely toxic to wildlife. Mortality to robins in suburban areas caused by the spraying of DDT to control Dutch elm disease first brought the insecticide to the public's attention.

In terrestrial systems, DDT in soil is taken up by earthworms and other soil invertebrates including insect larvae. Contamination is passed up the food chain and can pose a risk to mammal predators such as shrews and moles, and to upper trophic level organisms preying on these mammals. Also, birds feeding directly on earthworms and other soil invertebrates or on insects whose larvae resided in contaminated soil can be at risk. An additional pathway for both birds and mammals is the direct ingestion of soil. At the Nursery, DDT at the concentrations found in the soil poses a potential hazard to wildlife.

Two ponds exist on the property. The smaller pond (G, Figure 2) is approximately 12 inches in depth. It has no inlet but outlets to a small culvert at the pond's eastern end. The larger pond (H, Figure 2) is periodically used for irrigation at the Nursery. It is reported to contain pickerel, rock bass, largemouth bass, bullhead, and sunfish.

Sampling of the small pond revealed levels of DDT which may present a threat to wildlife. Wildlife may be exposed through the consumption of contaminated pond invertebrates and the ingestion of surface water and sediments. The water sample taken from the pond contained DDT at an estimated concentration of 0.017 ppb while the New York State aquatic standard for Class D waters is 0.001 ppb. In addition, the pond may be used by breeding amphibians, and contamination may pose a hazard to egg and larval development. Sampling of the large pond revealed that it was not likely to have a significant effect on its aquatic community

In summary, the Nursery soils are contaminated with significant levels of DDT. Wildlife exposure to potentially harmful concentrations of DDT may occur through the consumption of soil invertebrates and through

the direct ingestion of soil. Contamination may be passed up the food chain to upper trophic level carnivores. The larger pond and the drainage ditch along the western boundary contain low level contamination in the sediments which is unlikely to pose a wildlife hazard. The smaller pond contains levels of DDT in both the sediments and surface water that may present a risk to wildlife.

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria, and Guidance (SCGs) and be protective of human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Reduce, control, or eliminate to the extent practicable the contamination present within the soils on site.
- Eliminate the threat to surface waters by eliminating any future contaminated surface run-off from the contaminated soils on site.
- Eliminate the potential for direct human or animal contact with the contaminated soils on site.
- Prevent, to the extent practicable, continued migration of contaminants to groundwater and prevent contamination of downgradient water supply wells.
- Prevent migration of contaminants to off-site residential properties by wind or surface water erosion.
- Provide for attainment of SCGs for groundwater quality to the extent practicable.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Saratoga Tree Nursery site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled "Feasibility Study Report for the Saratoga Tree Nursery" dated August 1996.

A summary of the detailed analysis follows. As used in the following text, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy or procure contracts for design and construction of the remedy.

6.1: Description of Alternatives

The potential remedies are intended to address the contaminated soil, sediments and groundwater at the site.

Alternative 1 - No Action

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It would require continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2 - Deed Restrictions with Monitoring

Present Worth:	$ 437,000
Capital Cost:	$ 79,000
Annual O&M:	$ 26,000
Time to Implement	6 months

The Department, as the property owner, would maintain warnings on the deed to alert any future owners of this property of the presence of hazardous waste in the soil, sediments and in two of the on-site buildings. Access to all contaminated areas would be limited by fencing. Furthermore, the site would remain on the NYS Registry of Inactive Hazardous Waste Sites as a Class 4 site, which should also serve as a warning to the current property owner of the presence of pesticide contaminated soil. To monitor for possible contaminant migration in groundwater, surface water or sediments, this alternative would include sampling ten groundwater monitoring wells and the adjacent creek annually for 30 years.

Alternative 3A - Consolidation with Off-Site Treatment and Disposal

Present Worth:	$ 6,085,000
Capital Cost:	$ 5,817,000
Annual O&M:	$ 19,400
Time to Implement	6 months-1 year

Areas exhibiting soil contamination with DDT and its breakdown products greater than the site remedial goal of 10 ppm would be excavated and consolidated into one area of contamination on the site. Soil exhibiting petroleum contamination (estimated volume 4000 cubic yards) would be excavated and segregated for off-site treatment and disposal (for costing purposes off-site incineration of the petroleum-contaminated material was assumed). Dewatering of excavations would be necessary for the deeper areas of contamination. The estimated 250 cubic yards of contaminated soils removed during the off-site IRM would be added to the consolidation pile.

The small pond would be pumped out and stored. Water samples from the dewatering activities would be collected to determine appropriate means of disposal. If samples show the water is not contaminated, the water would be discharged to a site drainage area. If samples show the water is contaminated, water would be treated with activated carbon prior to discharge. Once the pond is drained, the top 12 inches of the pond sediment would be removed, dewatered as necessary, and added to the onsite stockpile of contaminated soil.

Confirmatory samples would be collected from all excavations to insure the lateral and vertical extent contamination has been

addressed. Upon confirmation that all soil with DDT concentrations greater than 10 ppm has been removed, all surface soil within 15 feet of the excavation limits will be pulled into the excavation. This action would address any residual levels of DDT in adjacent surface soils.

The two tanker trailers and two tanks used for pesticide mixing and transportation would be emptied of any residual DDT product/waste and pressure washed. Waste liquids would be containerized for proper disposal. The tanker trailers and tanks would be disposed of as non-hazardous scrap metal.

The contents of the two small pesticide storage buildings would be removed and disposed of appropriately. The wood buildings would be torn down and disposed of as non-hazardous waste. The concrete floors would be removed and added to the consolidation pile. In addition to the pesticide contamination, arsenic is also of concern in the buildings and surrounding soil.

The consolidation pile would be graded, compacted, and capped to eliminate possible routes of exposure (direct contact, dust inhalation, run-off to surface water, leaching to groundwater). The cover would consist of a two foot soil cover and geomembrane. The geomembrane would segregate waste from the soil cover, as well as prevent the release of contamination should the soil cover be compromised. Eighteen inches of clean fill and six inches of topsoil would be used as a soil cover. The cap would be seeded to promote vegetation, thereby reducing erosion. A six foot high chain link fence would be constructed to prevent access to the consolidation pile.

It is anticipated that the dewatering activities necessary to address the deeper soil contamination and the pond sediments would address, to a significant degree, the identified groundwater contamination.

Throughout the construction process, the Department would maintain rigorous controls for dust, runoff, noise, etc. to protect the community from any potential exposures associated with the remedial project.

The area of the site where the consolidation pile would be placed would remain on the NYS Registry of Inactive Hazardous Waste Sites as a Class 4 site. It is estimated that approximately two acres of land will be required for the consolidation pile. This area would be subject to long-term operation and maintenance procedures consistent with those required under 6 NYCRR Part 373.

Alternative 3B - Consolidation with On-Site Treatment

Present Worth:	$ 2,690,000
Capital Cost:	$ 2,422,000
Annual O&M:	$ 19,400
Time to Implement	6 months-1 year

This alternative would be identical to Alternative 3A, except that petroleum contaminated soil would be treated by an on-site thermal desorption unit rather than an off-site incinerator. The thermal desorption process is described in detail under Alternative 6 - On-Site Thermal Desorption.

Alternative 4 - On-Site Containment

Present Worth:	$ 4,348,000
Capital Cost:	$ 3,876,000

Annual O&M:	$ 34,500
Time to Implement	6 months-1 year

Contaminated soil and sediment would be excavated and stockpiled, the tanker trailers decontaminated and disposed, the pesticide buildings demolished, and dewatering and water treatment would be implemented as described in Alternative 3A. The total volume of soil, sediment, and waste to be addressed is estimated at 13,250 cubic yards.

A containment cell meeting the requirements of 6 NYCRR Subpart 373-2 would be constructed to encapsulate all soil contaminated above the site cleanup goal. Because of the high water table, the containment cell would be constructed at the ground surface. The major requirements of the containment cell would include an impervious cap; a double composite liner; a leachate detection, collection and removal system; run-on and run-off control systems; and wind dispersion controls. The cap would be seeded to promote vegetation, thereby reducing erosion. A six foot high chain link fence would be constructed to prevent access to the containment cell.

It is anticipated that the dewatering activities necessary to address the deeper soil contamination and the pond sediments would address, to a significant degree, the identified groundwater contamination.

The containment cell would be designated a Corrective Action Management Unit (CAMU). This designation would allow the placement of hazardous remedial waste into a regulated unit, without treatment and/or attainment of land disposal restriction (LDR) treatment standards. This area of the site would remain on the NYS Registry of Inactive Hazardous Waste Sites as a Class 4 site. The containment cell would occupy approximately two acres. This area would be subject to long-term operation and maintenance procedures consistent with those required under 6 NYCRR Part 373.

Alternative 5 - Stabilization

Present Worth:	$ 7,500,000
Capital Cost:	$ 7,368,000
Annual O&M:	$ 9,500
Time to Implement	6 months-1 year

Contaminated soil and sediment would be excavated and stockpiled, the tanker trailers decontaminated and disposed, the pesticide buildings demolished, and dewatering and water treatment would be implemented as described in Alternative 3A. An estimated 4000 cubic yards of soils contaminated with both pesticides and petroleum would be sent offsite for incineration and disposal as hazardous waste. Soil and sediments contaminated with only pesticides (approximately 9,250 cubic yards) would be stabilized in a concrete matrix and placed onsite. By mixing the contaminated soil in a concrete matrix, the potential for migration of contaminants would be greatly reduced. To verify the effectiveness of the solidification process, pieces of the concrete matrix would be pulverized and analyzed using the Toxicity Characteristic Leachate Procedure (TCLP)

The concrete would be placed onsite in an approximately one acre area and designated a CAMU. The site would remain on the NYS Registry of Inactive Hazardous Waste Sites as a Class 4 site. This area would be subject to long-term operation and maintenance

procedures consistent with those required under 6 NYCRR Part 373.

Alternative 6 - On-Site Thermal Desorption

Present Worth:	$ 3,867,000
Capital Cost:	$ 3,839,000
Annual O&M:	$ 6,800
Time to Implement	6 months-1 year

Thermal desorption would be an effective technology for the treatment of organic contaminated soil, sediment, and sludge which generates a lower volume of off-gas, has less environmental impact, and fewer permitting requirements than many other on-site treatment technologies. Thermal desorption would use indirect heat to physically separate organic compounds from a media such as soil. The indirect heat would be provided by hot oil, electric or another source through a metal surface to the wastes. For heavy organic and chlorinated organic compounds (including DDT), a medium temperature thermal desorption unit capable of heating the process materials up to 950°F may be required. The organic compounds that have been desorbed would be condensed and recovered from the off-gas. The recovered contaminants would then either be treated further onsite or sent offsite for treatment and disposal.

Contaminated soil and sediment would be excavated and stockpiled, the tanker trailers decontaminated and disposed, the pesticide buildings demolished, and dewatering and water treatment would be implemented as described in Alternative 3A. The approximately 13,250 cubic yards of excavated soil would be processed through the thermal desorption unit, followed by base catalyzed decomposition (BCD) or a comparable treatment (onsite or offsite) to destroy the condensed DDT.

The soil excavated from AOC 4 would be segregated and subject to treatment separately, due to elevated concentrations of arsenic. Subsequent to treatment, the soil would be analyzed for total metals and TCLP and, if required, shipped offsite for disposal.

Once soil has been treated, it would be analyzed to verify the effectiveness of treatment. If remedial objectives have been achieved, a CAMU would be declared and the treated soil would be backfilled within the CAMU. Once backfilling and proper compaction has been completed, the area would be restored by grading and seeding. The site would then be eligible for removal from the NYS Registry of Inactive Hazardous Waste Sites. While there are no maintenance requirements for this alternative, a short-term groundwater monitoring program would be included to confirm groundwater contamination has attenuated.

Alternative 7 - On-Site High Temperature Incineration

Present Worth:	$ 11,069,000
Capital Cost:	$ 11,040,000
Annual O&M:	$ 6,800
Time to Implement	6 months-1 year

In this alternative, the procedure would be essentially that described in Alternative 6, except that the treatment process would be on-site high temperature incineration. Incineration utilizes temperatures typically in excess of 2000°F to destroy the organic fraction of the waste.

Like the thermal desorption unit, contaminated soil and sediment would be excavated and stockpiled, decontamination measures would be taken, the tanker trailers and tanks would be properly dealt with, and the pesticide buildings would be properly demolished as described in Alternative 3A. The approximately 13,250 cubic yards of excavated soil would be processed through the incinerator. Upon completion of this alternative, the site would be eligible for removal from the NYS Registry of Inactive Hazardous Waste Sites. While there are no maintenance requirements for this alternative, a short-term groundwater monitoring program would be included to confirm groundwater contamination has attenuated.

Alternative 8 - Off-Site High Temperature Incineration

Present Worth:	$ 22,465,000
Capital Cost:	$ 22,436,000
Annual O&M:	$ 6,800
Time to Implement	6 months-1 year

In this alternative, all contaminated soil and waste would be removed as described in Alternative 6. Contaminated soil and waste would then be shipped offsite for incineration and disposal in a permitted landfill. Clean fill and topsoil would be imported to bring excavated areas to their original grade. The site would be eligible for removal from the NYS Registry of Inactive Hazardous Waste Sites. While there would be no maintenance requirements for this alternative, a short-term groundwater monitoring program would be included to confirm groundwater contamination has attenuated.

6.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The No Action and Deed Restriction with Monitoring alternatives would not meet SCGs since they leave high levels of DDT onsite in the presence of petroleum. Consolidation with Off-Site Treatment and Disposal, Consolidation with On-Site Treatment, On-Site Containment, Stabilization, Thermal Desorption, On-Site High Temperature Incineration, and Off-Site High Temperature Incineration, all would comply with SCGs.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

The No Action and Deed Restriction with Monitoring alternatives would not be protective of human health and the environment. The remaining alternatives would be protective of human health and the environment. However, there would be some risk involved with the Consolidation Alternatives (3A and 3B) since high levels of DDT would remain untreated and in contact with groundwater. The Stabilization alternative would also involve the continued presence of DDT and therefore also presents a risk, albeit a lesser risk as the contamination would be stabilized/solidified. If monitoring showed migration of DDT in the groundwater, further measures would have to be implemented to remediate the situation.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

The No Action and Deed Restriction with Monitoring alternatives would cause little or no increased short-term impacts since minimal intrusive work would take place. All the remaining alternatives would involve the excavation and handling of contaminated media. These actions could potentially impact worker health and safety, the environment, and the local community. Consolidation with On-Site Treatment, Stabilization, Thermal Desorption, and On-Site Incineration would involve more extensive soil handling than Consolidation with Off-Site Treatment and Disposal or On-Site Containment, since material would be stockpiled and processed for treatment over a longer period of time. However, the use of engineering controls would minimize and/or eliminate any possible impact. These controls would include air monitoring, personal protective equipment, and dust suppression measures.

Consolidation with Off-Site Treatment and Disposal and Off-Site Incineration would involve hauling contaminated materials offsite. This would involve a short-term risk resulting from truck traffic and possible spilling of contaminated media offsite. This could be mitigated by properly covering contaminated media and by establishing proper emergency spill response measures.

The Thermal Desorption alternative utilizes a technology that would create air emissions that must be treated. This poses a short-term risk should the air emissions control device be breached. On-Site Incineration poses an even greater short-term risk of releasing hazardous waste in air emissions. This risk would be reduced through the use of air treatment devices.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

The No Action and Deed Restriction with Monitoring alternatives would not be effective in the long-term since high levels of DDT in the presence of petroleum would remain onsite.

Consolidation with On-Site Treatment and Consolidation with Off-Site Treatment and Disposal may be effective in the long-term since petroleum-contaminated soil would be treated, surface exposure routes would be minimized, and the spread of contaminants would be minimized. There would, however, be some risk that contaminants could migrate in groundwater. Groundwater monitoring would have to be maintained and further measures would be necessary if groundwater contamination persisted.

The Containment and Stabilization alternatives would be more effective in the long term than Consolidation since contaminants would be encapsulated and would no longer be mobile. Although groundwater monitoring would still be necessary, this alternative would provide a greater degree of certainty as to the effectiveness of the containment.

No Action, Deed Restriction with Monitoring, Consolidation with On-Site Treatment, Consolidation with Off-site Treatment and Disposal, Containment, and Stabilization alternatives would all require that the site remain on the NYS Registry of Inactive Hazardous Waste Disposal Sites as a Class 4 site.

Thermal Desorption, On-Site Incineration, and Off-Site Incineration offer the greatest degree of long term effectiveness since contaminants would be destroyed. These alternatives would require groundwater monitoring to ensure that groundwater SCGs were attained. If groundwater SCGs were attained, the site could be delisted from the NYS Registry of Inactive Hazardous Waste Disposal Sites.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

The No Action and Deed Restriction with Monitoring alternatives would not reduce toxicity, mobility, or volume. The Consolidation Alternatives (3A and 3B) would reduce the volume of contaminated material by destroying soil contaminated by both pesticides and petroleum. The majority of the soil, however, would remain onsite with no change to its toxicity or volume, and only limited reduction in mobility. The Containment and Stabilization alternatives would permanently reduce the mobility of the contaminants, but would not affect the toxicity or volume. Thermal Desorption, On-Site Incineration, and Off-Site Incineration would reduce the toxicity, mobility and volume by destroying all contaminants.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

The No Action and Deed Restriction with Monitoring alternatives would be the easiest to implement since little or no construction would be necessary. The Consolidation with On-Site Treatment, Consolidation with Off-Site Treatment and Disposal, Off-Site Incineration, and Thermal Desorption alternatives would also be easily implemented since they are easily engineered, materials and vendors are readily available, and there are no significant regulatory requirements. The Stabilization and Containment alternatives would require more engineering and a greater amount of quality control, but materials are readily available and there are no significant permit requirements needed for their implementation. Regulatory requirements for operation of an on-site incinerator would be extensive. For these reasons, On-Site Incineration is the least implementable alternative.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is focused upon after public comments on the Proposed Remedial Action Plan have been received.

8. **Community Acceptance** - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan are evaluated. A "Responsiveness Summary" will be prepared that describes public comments received and how the Department will address the concerns raised. If the final remedy selected differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 7: SUMMARY OF THE PREFERRED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 6, the NYSDEC is proposing Alternative 6, Thermal Desorption, as the remedy for this site.

The No Action (Alternative 1) and Deed Restriction (Alternative 2) alternatives would not be protective of human health or the environment, would not meet/satisfy SCGs, and would not satisfy the RAOs. Consolidation with Off-Site Treatment (Alternative 3A), Containment (Alternative 4) and Stabilization (Alternative 5) would be less protective of the environment than alternatives with a lower cost. On-Site Incineration (Alternative 7) would not provide any additional protection of human health or the environment when compared to Thermal Desorption, would have significantly greater implementability concerns, and would have a significantly higher cost than other comparable alternatives. Off-Site Incineration (Alternative 8) would not provide any additional protection of human health or the environment when compared to Thermal Desorption, and would have the highest cost of the alternatives evaluated.

This evaluation left Alterative 6 - Thermal Desorption and Alternative 3B - Consolidation with On-Site Treatment, as possible alternatives. Consolidation with On-Site Treatment would have the advantage of being less expensive than Thermal Desorption. It should be noted however, that this cost savings does not reflect the cost of future land use, which cannot be accurately quantified because of the unknown future use of the property. In addition, the effectiveness of consolidation in protecting human health and the environment would be much more uncertain. Although the RI suggests that DDT may not migrate in groundwater in the absence of petroleum, this cannot be confirmed at this stage. If the consolidation alternative were implemented and groundwater monitoring revealed contravention of groundwater standards, an additional remedial measure would be necessary to mitigate that contamination. This scenario would make the Consolidation with On-Site Treatment much more expensive than Thermal Desorption.

CERCLA and 6 NYCRR 375-1.10 state a preference for remediation which permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances. The NYSDEC gives preference to destructive technologies, since they permanently eliminate the cause of contamination. Consolidation with On-Site Treatment would leave contaminated soil on site that would require extensive monitoring and reporting. Thermal Desorption would eliminate the source of contamination and would be a permanent remedy, eliminating the need for a long-term monitoring program. Furthermore, by eliminating the source of contamination, the site would be free for unrestricted use and could be removed from the NYS Registry of Inactive Hazardous Waste Sites.

The estimated present worth cost to implement the remedy is $ 3,867,000. The cost to construct the remedy is estimated to be $ 3,839,000 and the estimated average annual operation and maintenance cost for five years is $ 6,800.

The elements of the proposed remedy would be as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS would be resolved.

2. Excavation of all contaminated soil and sediments, with transportation of the material to a dedicated onsite staging area. This would involve excavation and removal of the paved roadway which divides AOC 5 and AOC 6. This material would also be subject to treatment in the thermal unit. The stockpiled soil from the IRM program (estimated volume 250 cubic yards) would also be transported to the staging area for treatment.

3. Upon confirmation that all soil with DDT concentrations greater than 10 ppm has been removed, all surface soil within 15 feet of the excavation limits will be pulled into the excavation. This action would address any residual

levels of DDT in adjacent surface soils.

4. Dewatering of soil and sediments as necessary, with temporary storage and subsequent onsite treatment of accumulated water.

5. The stockpiled soil and sediment would be treated by an onsite Thermal Desorption unit. Any air emissions from the process would be condensed and treated by carbon adsorption or other appropriate control technology prior to discharge.

6. Pending the outcome of metals analyses, the need for alternative disposal of the AOC 4 soils would be determined.

7. Demolition and proper disposal of the two pesticide storage buildings located in AOC 4.

8. Decontamination of the four tanks in AOC 2 with shipment off-site for recycling.

9. Throughout the construction process, the Department would maintain rigorous controls for dust, runoff, noise, etc. to protect the community from any potential exposures associated with the remedial project.

10. Based upon achievement of the remediation goals, a selected portion of the site would serve as a CAMU for site remediation purposes. The preferred area would be the existing excavations. The treated soil/sediment from the thermal system would be deposited within the CAMU and graded as appropriate.

11. Site restoration would include: demobilization of equipment; site grading and establishment of vegetative cover; surface water controls; site cleanup; pavement replacement; decontamination of the staging/decon pads, etc.

Table 2				
Remedial Alternative Costs				
Alternative		Capital Cost	Annual O&M	Present Worth Cost
1.	No Action	$ 0	$ 0	$ 0
2.	Deed Restrictions with Monitoring	$ 79,000	$ 26,000	$ 437,000
3a.	Consolidation with Off-Site Treatment and Disposal	$ 5,817,000	$ 19,400	$ 6,085,000
3b.	Consolidation with On-Site Treatment	$ 2,422,000	$ 19,400	$ 2,690,000
4.	On-Site Containment	$ 3,876,000	$ 34,500	$ 4,348,000
5.	Stabilization	$ 7,368,000	$ 9,500	$ 7,500,000
6.	Thermal Desorption	$ 3,839,000	$ 6,800	$ 3,867,000
7.	On-Site High Temperature Incineration	$ 11,040,000	$ 6,800	$ 11,069,000
8.	Off-Site High Temperature Incineration	$ 22,436,000	$ 6,800	$ 22,465,000