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Department of Environmental Conservation

Division of Hazardous Waste Remediation

Storonske Cooperage Site

Operable Unit 2, Groundwater
Site Number 4-42-021
Town of Schodack
Rensselaer County, New York

Record of Decision

March 1993

New York State Department of Environmental Conservation
MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*

STORONSKE COOPERAGE SITE
TOWN OF SCHODACK, NEW YORK
SITE NO.: 4-42-021

RECORD OF DECISION
OPERABLE UNIT 2, GROUNDWATER
MARCH 1993

PREPARED BY:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

DECLARATION STATEMENT - RECORD OF DECISION

SITE NAME AND LOCATION:

Storonske Cooperage Site
Town of Schodack
Rensselaer County, New York
Site ID #: 4-42-021
Funding Source: 1986 Environmental Quality Bond Act

STATEMENT OF PURPOSE:

This Record of Decision (ROD) sets forth the selected remedial action plan for the Storonske Cooperage Site Operable Unit No. 2, Groundwater. This remedial plan was developed in accordance with the New York State Environmental Conservation Law and Regulations, and is consistent with the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), 42 US Section 9601, et. seq, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). It should be noted that the ROD for Operable Unit No. 1, On-Site Soil was issued in March 1992. The design for the remedies selected under the March, 1992 ROD is currently ongoing and will be supplemented by the remedy selected for Operable Unit #2.

STATEMENT OF BASIS:

This decision is based upon the Administrative Record for the Storonske Cooperage Site and upon public input to the Proposed Remedial Action Plan (PRAP). A copy of the Administrative Record is available at the New York State Department of Environmental Conservation, 50 Wolf Road, Albany, New York. A Document Repository is located in the Town of Schodack Town Hall and the East Greenbush Library in Schodack and East Greenbush, New York respectively. A Responsiveness Summary that documents the public's expressed concerns has been included in Appendix A of this document.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site if not addressed by implementing this response action, present a current or potential threat to public health, welfare or the environment.

DESCRIPTION OF SELECTED REMEDY:

The major components of the selected remedy for Operable Unit #2 (groundwater) can be summarized as follows:

Water Supply: The Selected Remedy for water supply is Alternative 1B - **"Individual Well Head Treatment"**

The components of the remedy are:

- Replacement of the two existing granular activated carbon filter systems with better, more effective systems;
- Semi-annual monitoring/maintenance for 5 years of the carbon filter systems;
- Provision for additional granular activated carbon filter systems if the monitoring program documents the need for treatment of other individual well supplies;
- Semi-annual monitoring of all potentially impacted private and commercial water supply wells in the study area;
- Re-evaluation of the site at the end of the 5 year monitoring period.

Groundwater: The selected remedy for groundwater contamination is Alternative 2A - **"No Action"** The rationale and components of the remedy are: The NYSDEC March 1992 ROD for Operable Unit #1 (on-site soils) provides for installation and operation of a soil vapor extraction system. This remedy when implemented in late 1993, is expected to reduce the continuing source of volatile organic chemical contamination to the groundwater and to accelerate the rate of natural attenuation of the groundwater contamination which is currently taking place at the site. Therefore, the interim selected remedy for groundwater treatment is No Action with continued groundwater monitoring. This action will be re-evaluated after the review of data from the monitoring before and after the implementation of soil vapor extraction system. Should there be a need to treat the groundwater after the review of the data, reconsideration would be given to Extraction and Treatment of the groundwater which would include:

- Installation of 5 recovery wells each pumping 10 gallons per minute to remove contaminated groundwater for treatment,
- Treatment of the recovered contaminated groundwater by air stripping process; and

- Reinjection of the treated groundwater into the affected aquifer.

DECLARATION

The selected remedies are designed to be protective of human health and the environment, are designed to comply with applicable State environmental quality standards and are cost effective. These remedies satisfy the Department's preference for treatment that reduces the toxicity, mobility or volume of hazardous substances, pollutants or contaminants as the principal goal.

March 15, 1993
Date

Ann DeBarbieri
Deputy Commissioner
Office of Environmental Remediation

Table of Contents

Section		Page
1.	Site Location and Description	1
2.	Site History	1
3.	Current Status	2
4.	Finding of Remedial Investigation	2
	a. Groundwater	3
	b. Water Supply	3
	c. Surface Water and Sediment	3
5.	Summary of Site Risks	3
6.	Enforcement Status	5
7.	Remedial Objectives	5
8.	Summary of Remedial Alternatives	6
9.	Summary of the Government Decision	11
	a. Water Supply	11
	b. Groundwater	11
10.	Rationale for Selection of Remedies	12
11.	Conclusions	14
12.	Public Participation	15

Tables

1.	Volatile Organic Compounds (VOCs) Detected in the Groundwater	3-1
2.	Heavy Metals Detected in Groundwater	3-1
3.	VOCs Detected in Private Water Supply Wells	3-2
4.	Comparison of Estimated State Costs of Remedial Alternatives for water supply	10-1
5.	Comparison of Estimated State Costs of Remedial Alternatives for Groundwater	10-2

Appendices

A.	Responsiveness Summary	A-1
B.	Administrative Record Index	B-1

I. Site Location and Description

The Storonske Cooperage Site is approximately a 5-acre parcel of land located on the north side of Kraft Road immediately east of the intersection of Routes 9 and 20 in the Town of Schodack, Rensselaer County, New York.

The site is situated immediately adjacent to both residential and commercial establishments: to the north is a trailer park (Rensselaer Estates); to the east is a low lying wooded area and a small apartment complex (on Lisa Lane); to the south are seven residences on Kraft Road with private well water supplies and the Schodack Plaza water supply; and to the west there are businesses on Routes 9 and 20 (see figure 1).

There are, at present, no municipal water services in the areas surrounding the Storonske Cooperage Site. All residences and commercial establishments rely on individual wells developed in either the overburden or bedrock aquifer for water supply. The site has contaminated surrounding groundwater and some private wells. Granular activated carbon (GAC) treatment units have been installed, where appropriate, on these wells.

II. Site History

The Storonske Cooperage facility was used for the cleaning and reconditioning of 55 gallon drums from 1973 until it closed in 1992. Prior to 1973, the property was utilized by the Albany-Nassau Bus Company as a bus garage and depot. Wastewater from the operation was stored in an unlined concrete block lagoon which eventually leaked into the soil and groundwater.

The site came to the attention of NYSDEC in March 1984 when DEC staff conducted a facility inspection under the RCRA (Resource Conservation and Recovery Act) program. The sludge in the former wastewater lagoon was sampled and found to fail the EP Toxicity test for lead. This resulted in Storonske Cooperage, Inc., entering into a Consent Order with the State of New York in March 1986 to remove the lagoon from operation and to conduct an investigation of the impacts of the lagoon.

As part of the Focused Remedial Investigation, primarily to address on-site contamination and remediation, the PRP contracted Malcolm Pirnie, Inc. to undertake a soil sampling program to better delineate the horizontal and vertical extent of soil contamination on the Storonske Cooperage Site. Based on the investigation, the soil was found to be

contaminated with various volatiles, semi-volatiles, metals and PCBs.

Based on the results of the RI/FS performed by the PRP on the effect of soil contamination at the site (Operable Unit 1), a Record of Decision was issued in March 1992 to perform in-situ vacuum extraction and excavation of contaminated soil at the site. The work assignment for the design of the on-site vacuum extraction system was issued to a consulting engineer in early October 1992 by the NYSDEC.

III. Current Status

The NYSDEC contracted Dvirka and Bartilucci Consulting Engineers in March 1989 to conduct a focused Remedial Investigation/Feasibility Study (RI/FS) at the site. This investigation was designed to determine the nature and extent of groundwater and water supply contamination originating from the site, and to evaluate appropriate remedial alternatives.

A Phase 1 Remedial Field Investigation (RI) was completed in 1990. Based on the results of this investigation, groundwater on-site and downgradient of the site was found to be contaminated by volatile organic compounds (VOCs) and heavy metals at concentrations exceeding groundwater standards and guidelines. Adjacent water supply wells were also found to be contaminated above drinking water standards and guidelines. A Phase II RI was initiated in the Spring of 1992 to further define the extent of groundwater contamination on and off site.

Based on the conclusions and recommendations of the RI Report, a Feasibility Study was conducted to develop and evaluate available remedial action alternatives suitable for implementation at the site.

IV. Finding of Remedial Investigation

The Phase I Field Investigation was completed in 1990 and based on the results of this investigation, groundwater on-site and downgradient of the site was found to be contaminated by volatile organic compounds (VOCs) and heavy metals at concentrations exceeding groundwater standards and guidelines (summary of the analytes of concern and their respective concentrations is found in tables 1, 2 and 3). Some nearby water supply wells were also found to be contaminated above drinking water standards and guidelines.

A Phase II RI was also initiated in the Spring of 1992 to further define the extent of groundwater contamination on and off site. This Phase II investigation revealed the following:

Groundwater

- There has been a significant reduction in the concentrations of contaminants in the groundwater based on sampling done during the Phase II RI compared to the Phase I RI (see tables 1 and 2).

- The most significant reduction in contaminant concentrations occurred on-site and directly downgradient of the former lagoon area.

- Contamination for selected metals (barium, chromium, iron and manganese) does not appear to be related to contamination from the site.

Water Supply

- VOCs are present in both the overburden and shallow bedrock aquifer used for water supply.

- Two water supply wells downgradient from the site are still affected by contamination from the site above drinking water standards and guidelines.

- There has been a downward trend in the concentration of volatile organic chemical contaminants in private wells by the site (see table 3).

Surface Water and Sediment

- No impact as a result of contamination from the site.

A summary of the Phase I and Phase II results is found in tables 1 thru 3.

V. Summary of Site Risks

A Limited Baseline Human Health Risk Assessment was conducted to evaluate the risks associated with groundwater contamination at this site.

The results of this risk assessment, in combination with the results of the RI/FS, are used to help identify applicable remedial alternatives and to select a remedy. The baseline health risk assessment represents the health risks associated with the site if no remedial actions were performed, and if no steps were taken to reduce human exposure. It should be noted, that granular activated carbon (GAC) treatment units have been installed on affected wells to mitigate the risk associated with the site. The

Table 1

Volatile Organic Compounds Detected in the Groundwater

Contaminant	Max. Value of Concentration (ug/l)		NYSDEC Class GA Standards Guidelines/ (ug/l)	NYSDOH Drinking Water Standards (ug/l)
	Phase I	Phase II		
1,1-Dichloroethane	83	30	5 ST	5
1,1,1-Trichloroethane	27	15	5 ST	5
Trichloroethane	29	19	5 ST	5
Benzene	5	7	ND ST	5
Tetrachloroethene	20	10	5 ST	5
Chlorobenzene	34	8	5 ST	5
Ethylbenzene	130	7	5 ST	5
*Xylene (Total)	200	63	5 ST*	5*

Table 2

Heavy Metals Detected in Groundwater

Contaminant	Max. Value of Concentration (ug/l)		NYSDEC Class GA Standards Guidelines/ (ug/l)	NYSDOH Drinking Water Standards (ug/l)
	Phase I	Phase II		
Barium	3360	4580	1000 ST	1000
Cadmium	10.7	ND	10 ST	10
Chromium	305	13	50 ST	50
Iron	92,900	39,400	300 ST	300
Manganese	13,700	7,500	300 ST	300

Notes:
ST: Standard
* : Applies to each isomer individually
ND: Not Detected

TABLE 3

Volatile Organic Compounds (concentrations in ug/l) Detected in Private Water Supply Wells Kraft Road

Compounds	2424				2426				2434				2450*				2452*				2456				Schodack Plaza*				NYSDEC Class GA Standards/ Guidelines (ug/l)	NYSDOH Drinking Water Standards (ug/l)
	88	90	91	92	88	90	91	92	88	90	91	92	88	90	91	92	88	90	91	92	88	90	91	92	88	90	91	92		
1,1-Dichloroethane	2	1	2	1.2	22	2	1	1.6	–	24	0	ND	75	45	52	22	1.2	0.7	0.8	1.0	<1	ND	–	–	4	–	ND	6.7	5 ST	5
1,1,1-Trichloroethane	–	0	0	0	1	0.6	–	–	–	23	0	ND	43	31	26	20	7.8	8	7	5.0	<1	ND	–	–	11	–	ND	10	5 ST	5

NOTES:
- * These homes are equipped with GAC Systems
- + A new well has been installed - no contaminants detected
- ST Standard
- ND No Detection

Samples taken and analyzed in 1988 through 1992

SC962-7A/12

components of the risk assessment for this site include:

- Identification of site-related chemicals and media (groundwater contamination) of concern;
- An evaluation of the toxicity of the contaminants of concern;
- Identification of the possible exposure routes and pathways; and
- Estimating the added risk of experiencing health effects.

Exposure routes are the mechanisms by which contaminants enter the body (e.g., inhalation, ingestion, absorption). Exposure pathways are the environmental media (e.g., groundwater, soil, air, etc.) through which contaminants are carried.

The selected alternative must result in a remedy which is protective of public health and the environment. The remedy selected must address the following exposure pathway to be protective of public health:

- Ingestion of drinking water.
- Inhalation during showering and cooking; and
- Dermal contact during washing.

The results of the risk assessment for the worst possible scenario from samples taken in 1990 during the Phase 1 RI, indicate that, left unremediated the site may potentially pose an increased incremental risk of developing cancer. The increased risk was estimated as 70 additional cases per 100,000 persons from ingestion of untreated groundwater/water supply, while 30 additional cases of cancer per 100,000 persons could potentially develop from inhalation of untreated groundwater/water supply during showering etc. These cases are for people exposed to maximum, observed, site-related contaminants in groundwater for 70 years.

Performing the same analysis using the results from the Phase II Remedial Investigation conducted in the Spring of 1992, indicates that if 100,000 people were exposed to the maximum level of site contaminants for 70 years, approximately 2 additional cases of cancer could potentially develop from ingestion of contaminated groundwater, and approximately 4 additional cases of cancer could potentially develop from inhalation of contaminated groundwater during showering etc. This significant reduction in carcinogenic risk is attributed to the natural attenuation mechanism that is believed to be taking place at the site and the cessation of use of the waste lagoon. Further, these potential risks are for the use of untreated contaminated groundwater by the

site. Currently, wells impacted above drinking water standards are equipped with GAC filters and exposure to these potential increased risks has been mitigated.

Enforcement Status:

On October 5, 1987, the Attorney General of the State of New York sued the responsible party, N. Storonske Cooperage, Inc., and its late president, Michael Greenberg, for cleanup of the site and for damages for injury to the natural resources of the State. On July 6, 1989, the responsible party voluntarily entered into a court order which provided for the investigation on-site soil contamination. The investigation was completed in October, 1991. The State of New York funded the investigation related to on and off site groundwater contamination.

Judgement against the responsible party was entered in January 1990 making it fully responsible for all cost of investigation and cleanup of the site. The New York State Attorney General's Office is currently negotiating a settlement with the responsible party.

VI. Remedial Objectives

The overall objective of the remediation is to reduce the concentrations of contaminants and the routes of exposure to levels which are protective of human health and the environment. The site-specific objectives for the units are:

Water Supply

The goal of the selected remedial alternative for the water supply unit is to mitigate the potential health risks of drinking and using contaminated water. This can be accomplished by treating the water supplies to meet all drinking water standards and guidelines or by providing an alternative water supply.

Groundwater

The goal of the selected alternative for this option is to protect groundwater and to reduce the current contaminant concentrations to levels which are protective of human health and the environment.

Natural attenuation currently taking place in the groundwater at the site, if continued or accelerated by the vacuum extraction system to be installed under Operable Unit #1, may make the contamination at the site a relatively short term problem (5± years).

VII. Summary of Remedial Alternatives

Remedial Alternatives were developed for two remediation units at this site:

1. The water supply of selected residences in the study area; and

2. On-Site groundwater.

1. Alternatives evaluated for the water supply option are:

A. No Further Action
B. Individual Well Head Treatment
C. Extension of the existing public water supply
D. Development of a New Community Water Supply

Alternative 1.A - No Further Action

Present Worth:	$ 139,000
Capital Cost:	$ 0.00
Annual O&M:	$ 32,000

Under this alternative, the water supply wells that are currently exceeding drinking water standards and are treated by GAC systems would continue to be maintained. No modifications to the existing systems or installation of new systems would occur. No other remedial activities would be performed; natural attenuation would be allowed to take place over time and semi-annual monitoring of the two existing GAC filter systems and nearby private water supply wells would be continued.
(Note: Monitoring wells would also be monitored under any groundwater remediation alternative selected).

Alternative 1.B - Individual Well Head Treatment

Present Worth:	$ 191,000
Capital Cost:	$ 37,300
Annual O&M:	$ 35,500

This alternative would provide any needed modification of existing GAC filter systems, along with monitoring at private residence and commercial water supply wells on a semi-annual basis in the study area. GAC filter systems would be installed on additional private wells if the monitoring program reveals contamination above drinking water standards. The systems would be installed in accordance with current New York State Department of Health (NYSDOH) guidance. These systems are point of use systems, usually consisting of two GAC filters in series, ultraviolet light disinfection and sampling taps before, between and after the filters. The systems are usually installed

after the pump and hydropneumatic tank, but prior to the first point of use. For the purpose of this analysis, the installation of 4 additional filter systems has been assumed.

Alternative 1.C - Extension of Existing Public Water Supply

Present Worth: $ 588,000
Capital Cost: $ 449,000
Annual O&M $ 32,000

In this alternative, the private residences and commercial establishments which are or may become contaminated above drinking water standards in the study area would be connected to the nearest available public water supply located in the Town of East Greenbush, approximately 1.5 miles northwest of the site. Existing filter systems would need to be maintained and private water supply wells in the Kraft Road Area would also need to be monitored during the time, 3 to 5 years, needed to implement this alternative. In this alternative, several legislative and administrative issues would have to be addressed prior to implementation. These issues includes:

- Formation of a Water District by the residents of the area.
- Agreement from a neighboring water system to sell water to the proposed water district.
- Acquisition of relevant permits and approvals from all involved parties/agencies.
- Agreement by the Water District to install operate and maintain the system.
- Agreement on the level of funding provided by the State. Typically, the State would provide funding to address engineering and administrative costs and capital costs to install the minimum size water system needed to serve drinking water to the affected area. Any increase in the scope of the project would be funded by the proposed Water District.

Alternative 1.D - Development of New Community Water Supply

Present Worth: $ 478,200
Capital Cost: $ 339,200
Annual O&M: $ 32,000

This alternative would require the development of a new water supply well outside the limits of the existing contamination plume: The affected private water supply wells, including any commercial wells, which are or may become contaminated above drinking water standards would be connected to the new community water supply.

Existing filter systems would need to be maintained and private water supply wells in the Kraft Road Area would also need to be monitored during the time, 3 to 5 years, needed to implement this alternative.

The new water supply source would be developed sufficiently distant from the contamination plume to avoid any potential impacts. This alternative would consist of a new well, pumping, treatment, storage and distribution facilities. Factors, such as the location of proposed wells, quality of water and physical facilities needed to distribute the water, affect the implementation of this option.

2. **ALTERNATIVES EVALUATED FOR ON-SITE GROUNDWATER OPTION ARE:**

A. No Action,
B. Extraction/Collection (3 technology alternatives),
C. Treatment (3 technology alternatives), and
D. Discharge of treated groundwater.

Alternative 2.A - No Action

Present Worth: $ 43,000
Capital Cost: $ 0,000
Annual O&M: $ 10,000

In this alternative, on-site groundwater would not be treated. No remedial activities would be performed. Reduction of contaminant concentrations would likely be achieved by natural attenuation. A periodic monitoring program would be initiated.

Alternative 2.B - Extraction/Collection

Extraction/Collection technologies available for evaluation include:

- Recovery wells;
- Well point systems; and
- Subsurface gravity drains.

Each of these technologies is described below:

2.B.1 - Recovery Wells

Present Worth: $ 136,000
Capital Cost: $ 72,700
Annual O&M: $ 14,550

Five individual wells pumping 10 gpm each would be installed to remove a plume of contaminated groundwater for treatment. The extraction wells would be installed downgradient of the location of the former waste lagoon in the flow path of the contamination plume.

* 2.B.2 - Well Point Systems

This technology involves the installation of a system of small diameter interconnected recovery wells connected by a manifold and pumped by a suction pump. This technology employs a vacuum to pull the groundwater from the series of well points to the surface for treatment. This technology is however, limited to a total suction lift of 22 feet.

* 2.B.3 - Subsurface Drains

This technology involves the installation of a buried conduit to collect and convey groundwater by gravity flow. This method requires a drain pipe or gravel bed at the foot of a deep trench, backfilled to avoid ponding, and a pump system to remove collected groundwater for treatment.

Alternative 2.C - Treatment (3 technology alternatives)

Three treatment technologies available for evaluation are:

- Ultraviolet Radiation - Enhanced Oxidation
- Carbon adsorption; and
- Air Stripping

2.C.1 - Ultraviolet (UV) - Enhanced Oxidation

Present Worth:	$ 1,194,000
Capital Cost:	$ 484,300
Annual O&M:	$ 133,200

This process will destroy a mixed assortment of organic contaminants while they remain dissolved in the groundwater. Ultraviolet light treatment results in the chemical oxidation of VOCs in the groundwater through the combination of the effect of UV light and reaction with a catalyst.

2.C.2 - Carbon Adsorption

Present Worth:	$ 575,000
Capital Cost:	$ 288,200
Annual O&M:	$ 66,200

This technology includes the removal of VOCs from the contaminated groundwater using granular activated carbon (GAC). GAC adsorption systems are composed of adsorption filter units, a pump, and associated piping.

2.C.3 - Air Stripping

Present Worth:	$ 556,000
Capital Cost:	$ 356,800
Annual O&M:	$ 46,100

This technology is an economical, efficient and popular process for removing volatile organic contaminants from groundwater. Air stripping is a process whereby contaminated groundwater is introduced into the top of a tower filled with a bed of packing media while at the same time, air is being forced upwards through the tower. Decontaminated water is collected at the base of the unit while the air can be dispersed into the atmosphere or conveyed to a further treatment system for removal of the VOCs.

Discharge of Treated Groundwater

Two options for discharge of treated groundwater are available for evaluation. They are:

- Discharge to groundwater
- Discharge to surface water

Discharge to Groundwater

Present Worth:	$ 78,000
Capital Cost:	$ 62,100
Annual O&M:	$ 3,600

This process would be achieved by reinjecting treated groundwater into the affected aquifer at approximately the same rate as extraction. It consists of constructing a trench filled with crushed stone, which allows large volumes of water to be stored while infiltration is taking place.

* Discharge to Surface Water

The treated groundwater can be disposed by discharging directly to the North Branch of Moordener Kill which is about 2000 feet to the northeast of the Storonske Cooperage Site. This may also be accomplished by discharging to a storm sewer on Route 20.

Monitoring

A periodic monitoring program would be developed and initiated to evaluate the effectiveness of all the groundwater remedial alternatives. This program would supplement the monitoring of private water supplies needed in the area and could involve the installation of additional monitoring wells. Results of the monitoring would be reviewed on a ongoing basis and a 5 year reassessment of the selected remedial alternative made.

* Cost estimates for these alternatives are not provided because they are technically less practical.

Table 4

Comparison of Estimated State Costs of Remedial Alternatives

Water Supply Remedial Alternatives

Unit		Alternative	Estimated Capital Cost	Estimated Annual O&M	Estimated Total Cost
-		No Further Action	$0	$32,000	$139,000
-		Individual Well Head Treatment			
-	*	Six Units	$37,300	$35,500	$191,000
-		Two Units	$12,400	$32,000	$151,400
-	**	Extension of Existing Water Supply	$449,000	$32,000	$588,000
-	**	Development of New Water Supply	$339,200	$32,000	$478,200

* Assumes installation of 4 additional systems and upgrade of 2 systems.

** O&M is State cost to monitor private wells and monitor and maintain two existing filter systems during time (3 to 5 yrs.) needed to implement this alternative. Future O&M cost to the Water District will be dependent on many variables and has not been estimated.

Table 5

Comparison of Estimated State Costs of Remedial Alternatives

Groundwater Remediation Alternatives

Unit	Alternative	Estimated Capital Cost	Estimated Annual O&M	Estimated Total Cost
Extraction Procedure				
-	No Action	$0	$10,000	$ 43,000
-	Recovery Wells	$72,700	$14,550	$136,000
*	well points system	-	-	-
*	subsurface drains	-	-	-
Treatment				
-	High Intensity UV-Enhanced Oxidation	$484,300	$133,200	$1,194,000
-	Low Intensity UV-Enhanced Oxidation	$587,000	$ 65,500	$ 871,000
-	GAC Adsorption	$288,200	$ 66,200	$ 575,000
-	Low Profile Air Stripping	$337,800	$ 47,800	$ 535,000
-	Packed Air Stripping	$356,800	$ 46,100	$ 556,000
Discharge				
-	On-Site	$ 62,100	$ 3,600	$ 78,000
*	Surface Water	-	-	-

Note: * Cost estimates for these alternatives are not provided because they are technically less practical.

IX. Summary of the Government Decision

Water Supply

Based upon the evaluation of all the available alternatives for this unit, the NYSDEC selects Alternative 1B-**Individual Well Head Treatment** as the remedy for the water supply portion of the remedial program.

Under this alternative, the two existing GAC filter systems would be replaced with better and more effective systems. All private and commercial water supply wells in the study area would be monitored on a semi-annual basis. Additional GAC systems would be installed on private water supply wells if monitoring results detect organic chemical contamination above standards and demonstrate the need. The new systems would be monitored and maintained semi-annually for a period of five years. The site will be re-evaluated after a five year period. Based on the monitoring results, a decision would be reached to either continue or discontinue the GAC systems or provide a more permanent remedy. The individual well head treatment consists of two granular activated carbon adsorption units installed in series followed by UV light disinfection. For purposes of this analyses, it has been assumed that no more than 4 additional GAC systems will be needed. This alternative is estimated to have a present worth cost of $191,000 if 6 systems need to be installed or $151,400 if only the two existing systems need to be upgraded.

On-Site Groundwater

Based upon the evaluation of existing data trends and of all available alternatives for this unit, the NYSDEC selects Alternative 2A - **No Action** for the groundwater portion of the remedial program.

Currently, natural attenuation of the plume seems to be occurring (see tables 1-3). The NYSDEC March 1992 ROD for Operable Unit 1 provides for installation and operation of the soil vapor extraction system to remove residual soil contamination which may still be contributing to groundwater contamination. Therefore, a decision was made that consideration of groundwater treatment be postponed until at least one round of grou[illegible] conducted after the implementation of the s[illegible]raction system. It is believed that the so[illegible] reduce the volatile contamination entering [illegible] will accelerate the natural attenuation of [illegible]ation to a degree that could negate the need for groundwater pump and treat.

Also, the design of the vacuum extraction process, under Operable Unit #1, will evaluate whether a modified vacuum extraction process that includes treatment of groundwater that can be implemented simultaneously and efficiently. Should there be a need to treat the groundwater after the review of data from the first round of groundwater sampling, reconsideration would be given to **"The pump and treat system"** which consists of recovery wells for extraction, air stripping for treatment,

and discharge to the groundwater. This alternative is estimated to cost $770,000.

Rationale for Selection

Each of the alternatives evaluated in this study is assessed against the following criteria:

- Compliance with New York State Standards, Criteria and Guidelines
- Protection of Human Health and the Environment
- Short-term Impacts and Effectiveness
- Long-term Effectiveness and Permanence
- Reduction of Toxicity, Mobility and Volume
- Implementability
- Cost
- Community Acceptance

Each criterion is addressed below relative to the preferred alternative:

Compliance with New York State Standard, Criteria and Guidelines (NYS SCGs)

Water Supply - Individual well head treatment systems, when properly maintained, would produce drinking water meeting State Standards, Criteria and Guidelines. Analytical results of past sampling of existing units have demonstrated the effectiveness of carbon filter units in treating contaminated water.

Groundwater - The Phase II Remedial Investigation completed in April 1992 has revealed that natural attenuation of the groundwater contamination is taking place at the site. This mechanism is expected to be accelerated after the installation and operation of the soil vapor extraction system as provided by the NYSDEC March 1992 ROD for Operable Unit 1. Sampling would be conducted after the implementation of the vapor extraction system and depending on the analytical results, a pump and treat system may be implemented, if necessary, to treat the groundwater to meet the NYS SCGs.

Protection of Human Health and the Environment

Water Supply - With the provision of the individual well head treatment at the affected homes, the risk to human health is mitigated provided the units are properly maintained. These units would be monitored to ensure their effectiveness in treating the contaminated water.

Groundwater - With the natural attenuation mechanism taking place at the site and with the belief that this mechanism may be accelerated by the implementation of soil vapor extraction system, the risk associated with the groundwater is correspondingly reduced. Further, a pump and treat remedy could be implemented if necessary.

Short-term Impacts and Effectiveness

Water Supply - Individual well head treatment, when properly monitored and maintained, would eliminate short-term public health risks associated with this site. There is minimal risks to workers changing treatment units.

Groundwater - Given the simplicity and ready availability of the pump and treat technologies, the short-term impacts at this site are considerably minimized. Workers installing the wells and treatment unit may have short term exposure. However, this exposure can be minimized by following proper health and safety protocols.

Long-term Effectiveness and Permanence

Water Supply - An alternate water supply would present better long-term effectiveness and permanence at this site. However, difficulties in implementability and cost differential compared with individual well head treatment make the water supply alternatives less feasible for the limited areas to be covered. With proper maintenance, individual well head treatment would provide a long term effective remedy. Further, other remedial actions to be taken at the site may restore groundwater to meet standards with time.

Groundwater - Natural attenuation of contamination is likely to eventually reduce exposure risk to an acceptable level. This action will likely be accelerated by the implementation of the soil vapor extraction to treat contaminated on-site soils. A pump and treat system may not provide significant increased removal over natural attenuation, but can be implemented if needed.

Reduction of Toxicity, Mobility and Volume

Water Supply - The water supply alternative being evaluated has no impact on the reduction of toxicity, mobility, or volume of contaminants present in the environment, and are therefore not applicable for analysis.

Groundwater - There would be a gradual reduction of contaminant toxicity and volume in the groundwater with time as the contaminants are degraded under natural attenuation.

If a pump and treat system is implemented, the mobility, as well as the volume and toxicity of the contaminant would be reduced considerably.

Implementability

Water Supply - Individual well head treatment alternative is easily implemented at the site due to its simplicity. Contractors for these services are readily available. Administrative and technical concerns pose obstacles to the other alternate water supply options (e.g. extending a waterline, or developing a community water system). In addition, these other alternatives would take a few years to implement during which time individual well head treatment must still be provided.

Groundwater - The natural attenuation mechanism that is currently taking place at this site requires no implementation. Should there be a need, a pump and treat system is easily implemented. Contractors for these services are readily available.

Cost

Water Supply - The capital cost for the individual well head treatment (if six units are installed) is estimated to be $37,300. The annual operating and maintenance (O & M) cost is estimated at $35,500. The total present worth cost, using a five percent interest rate for 5 years, is estimated to be $191,000. If only two units are needed, the capital cost would be $12,400 and the annual O & M cost would be $32,000. The present worth cost, using a five percent interest rate for five years, is estimated to be $151,400 for this latter scenario.

Groundwater - The capital cost for the pump and treat system (if installed) is estimated at $491,600. The annual operating and maintenance cost is estimated to be $64,250. The total present worth cost, using a five percent interest rate for 5 years, is estimated as $770,000. The no action alternative, if implemented, would have no capital cost. The annual operating and maintenance cost is estimated at $10,000. The total present worth cost, using a five percent interest rate for 5 years, is estimated to be $43,000.

- **Conclusions**

  The NYSDEC considers the selected remedial alternatives to be the best balanced remedies for this site. These alternatives are anticipated to satisfy the goal of protecting human health and the environment, to be in compliance with State Standards Guidelines and

Criteria, and are cost-effective.

Public Participation

The NYSDEC relies on public input to ensure that the remedies selected for this site meet the needs and concerns of the community and that the remedies are an effective solution to the problem.

As part of the RI/FS, a Citizen Participation Plan was prepared in September 1991. The principal objectives of the Citizen Participation Plan were:

1. To provide area residents with an understanding of the New York State Superfund process. Such an understanding promotes realistic public expectations about the activities, complexities and time involved with site investigation.

2. To provide accurate, understandable information concerning the RI/FS program to interested citizens. NYSDEC provided information through project updates and public meetings.

3. To provide the community with information needed to express their views and to discuss issues of concern with NYSDEC during the RI/FS process. Documents and data were made available for public review. Citizens and town officials were asked to express their views and discuss issues of concern with NYSDEC.

4. To establish a good relationship with the local media so that accurate information about RI/FS activities would be reported.

The following public participation activities were carried out:

1. Document repositories were established at the East Greenbush Town Library and the Schodack Town Hall. Pertinent reports and documents related to the RI/FS have been placed there during the project.

2. A public meeting was held on February 2, 1993 at the Schodack Town Hall to discuss the findings and conclusions of the RI/FS, to present the proposed remedial alternatives for the site and solicit public comment on NYSDEC's chosen remedial alternative. Questions and answers recorded during this meeting and responses received during the 30 day public comment period (January 22, 1993 to February 22, 1993) were used to develop the Responsiveness Summary, presented in Appendix A of this document.

APPENDIX A

RESPONSIVENESS SUMMARY

Storonske Cooperage Site
(# 4-42-021)
Town of Schodack, Rensselaer County, New York

▶ Responsiveness Summary ◀

This Responsiveness Summary was prepared to answer the public's comments about the New York State Department of Environmental Conservation's (NYSDEC's) Proposed Remedial Action Plan (PRAP) to deal with contaminated groundwater and water supply (Operable Unit #2) at the Storonske Cooperage Site.

NYSDEC invited the public to comment about the proposal through a mailing to the site's contact list and at a public meeting held on February 2, 1993. This Responsiveness Summary addresses public comments received at that meeting and during the public comment period which ran from January 22, 1993 until February 22, 1993.

* * *

COMMENT: What exactly is the proposal DEC is making to clean up the groundwater and water supply?

RESPONSE:

The State's approach to remediation is a three-part strategy. We are addressing the contaminated soil on the Storonske site. The contaminated on-site soil is a continuing source of contamination to the groundwater. In 1992 DEC chose the technology of vacuum extraction to remove contaminants from the on-site soils. The State will begin implementing this soil remedy through pilot testing of the technique on-site beginning this year.

Dealing with the contaminated water supply is the second part of the strategy. DEC reviewed alternatives and recommends individual well head treatment for the affected residential wells on Kraft Road, across from the Storonske site. This treatment program would include:

- replacing the two existing granular activated carbon filter systems with better, more effective systems;
- providing up to four additional granular activated carbon filter systems on other homes if needed;
- semi-annual monitoring and maintenance of the granular activated carbon filters for five years;
- monitoring of potential impacted homes and businesses around the site;
- re-evaluating the site at the end of five years.

On-Site groundwater represents the third part of the program. Through regular groundwater monitoring, DEC is seeing a decline of contaminants and their concentrations in the groundwater at the site. As mentioned above, the State will be treating the contaminated site soil, which is contributing to the groundwater contamination. DEC believes this soil treatment could further accelerate the decline of contaminants in groundwater. Therefore, DEC recommends that the decision to treat groundwater be postponed until after the soil cleanup. Groundwater samples then will be taken to see if the process accelerates reduction of contaminant concentrations at the site. If the sampling results show that there is still a need to treat the groundwater, DEC's preferred alternative would be a pump and treat system, which conceptually features:

- installation of five recovery wells pumping 10 gallons/min. each to remove contaminated groundwater for treatment;
- treatment of the recovered, contaminated groundwater by air stripping process;
- reinjection of the treated groundwater into the affected aquifer.

The exact components of a pump and treat system would be further developed or modified during design.

COMMENT:

Instead of maintaining filters on the wells, why didn't the State decide to hook the Kraft Road residents up to an alternative, public water system such as Troy or East Greenbush?

RESPONSE:

Schodack has additional water potentially available for its use from the East Greenbush system, but does not have the capacity to handle or deliver this additional water. DEC talked with East Greenbush and determined that it would not be easy to provide the water. Water connections would have to be made between Schodack and East Greenbush. The delivery process probably would take three to five years. In addition, only two homes have water supplies impacted above the drinking water standards for contaminants, and we could not justify the cost involved in extending public water in this case.

What would the process be to extend public water to an area such as Kraft Road? Normally, the State would negotiate with a community to extend the water to an area. This is usually done by providing the community with money through a State assistance contract. To happen here, first the community would have to form a water district. For that to happen, owners of 51% of the assessed property value in the area would have to vote to have the water district. Also, the State would normally only fund the minimum size line needed to supply the actual impacted homes. Anything extra that the water district might want, such as fire protection would have to be funded by the Water District. Third, the water district would have to assume the operation and maintenance costs of the water district. One of the key factors would be how many people would be interested in participating in a water district. If the people along Route 9 did not want to operate and maintain the water system, the people on Kraft Road alone would have to be responsible for operating and maintaining the whole water line. Then you would have to negotiate with East Greenbush regarding the conditions and rates at which they would sell water to your water district. All during this time, the individual treatment systems on the impacted homes would still have to be maintained.

COMMENT:

The State established an estimated cost of $449,000 for the alternative of extending public water supply. How did you come up with this figure?

RESPONSE:

The major projected costs included: an 8-inch diameter pipeline, 6500 feet at $20/foot which was $130,000; engineering costs at $50,000; miscellaneous site work at $50,000; trench excavation $18,000; miscellaneous asphalt and concrete repair at $100,000; pumping station $50,000; six service connections at $6,000. A pumping station would be needed because it would put a drain on the East Greenbush system. It's based on drawing a certain gallons-per-minute from their system that their system was not designed for.

COMMENT:

You've listed the different alternatives you considered, as well as their estimated costs. When you considered the alternative of extending the existing water supply, why did you include a $32,000 annual operation and maintenance cost?

RESPONSE:

As we pointed out, extending the existing water supply would have taken between three and five years. During that time, we still would be required to maintain the existing granular activated carbon filtration systems on the impacted wells in homes on Kraft Road, and to monitor the homes around the site.

COMMENT:

What is the timeframe for conducting the proposed remedy for contaminated groundwater and water supply?

RESPONSE:

If the State's proposed remedy of upgrading the granular activated carbon filters on the private wells is chosen, the State would issue a work assignment before the end of this year to perform the remedy. The existing carbon filters will continue to be maintained, and the State will continue to sample the monitoring wells around the site.

One of the first things the State must do is determine if the responsible party is willing to fund the upgrading and maintenance of the granular activated carbon filters for the private wells. If the responsible party is not willing to do that, the State would assign it to one of its standby contractors to upgrade the existing systems and to perform operation and maintenance of the carbon filters. What we could possibly do is develop a contract in which the filters would be upgraded in the near term, during the Summer, for example, and then the operation and maintenance might take a little longer, but it would be something that would be done during this calendar year.

COMMENT:

Is the State maintaining the carbon filters on the private wells? I thought it was the responsible party who was maintaining them.

RESPONSE:

The responsible party is currently maintaining the carbon filter systems. If the State's proposal to treat the individual well heads is adopted, the State would require the responsible party to fund and maintain the carbon filter systems. If the responsible party is not willing to fund the upgrade and maintenance of the carbon filters for the private wells, the State would take over the function of upgrading and maintaining the systems for five years. At that point the State would assess how its remedial actions at the site have affected the groundwater reaching these wells. As we've pointed out, contamination levels in groundwater are dropping. The additional measures we will take to clean up on-site soils (vacuum extraction) should help to limit additional contamination that might enter the groundwater.

Granular Activated Carbon filters on the Kraft Road private wells might then no longer be needed. Or the State may determine that a more permanent remedy may be needed at that point, such as extending public water, or looking into a new well system.

COMMENT:

How will this cleanup program be paid for?

RESPONSE:

The proposed private well filter upgrade will be paid for by the State Superfund in the event that the owner of the Storonske site refuses to do it. If the State pays for the filter upgrades, appropriate steps will be taken to recover the cost from the responsible parties.

COMMENT:

Is the vacuum extraction plan for on-site soil contamination still on schedule?

RESPONSE:

Yes. The design of that remedy is in the works and is on schedule. Sometime in the Summer or Fall of 1993 the State plans to begin pilot testing of this technique at the site.

COMMENT:

Does the site remain unusable until after you do the vacuum extraction of the contaminants from the soils?

RESPONSE:

Some parts may be usable; some parts DEC may not want used until the cleanup is completed. Some uses for the existing building on the site may be okay, but it really has to

be looked at closely. It depends on the length and success of the cleanup effort, as well as the type of proposed use, and where on the property it is proposed to be conducted. The responsible party is required to notify the DEC of any proposed change in usage of the site, and cannot undertake activities that may interfere with remedial actions.

COMMENT:

It's my understanding that the private homeowner wells along Kraft Road are at different depths, and that it was the shallower ones that were affected by contamination. Wouldn't the answer simply be to drill those shallow wells deeper?

RESPONSE:

That's not really a good solution near a hazardous waste site. If you drilled a deeper well and grouted it to prevent drawing from the shallow groundwater, you may end up not obtaining enough water from deeper layers. If you don't grout it, you'll be drawing from all layers, and are likely to continue to draw in contaminated shallow groundwater.

COMMENT:

One of your charts showed that contamination coming from the site is declining. Why?

RESPONSE:

There are a number of processes that are likely taking place. Natural dilution through movement of the aquifer; some biological processes such as microbial degradation; as well as natural degradation of the compounds. In addition, disposal of wastewater into the lagoon stopped several years ago.

COMMENT:

So are you saying there is no longer a problem on the site?

RESPONSE:

There is still the problem of contaminated soil on the site, and that's what is going to be addressed by the remedy the State selected in 1992: the vacuum extraction of on-site soil contaminants. That will result in the soil at the site itself being cleaned up. Cleaning up soil contamination will help to eliminate a major source of contamination to the groundwater. But you still have contaminated groundwater underneath. That's why the proposal for groundwater includes monitoring it to see just how much lower the concentrations of contaminants become after cleaning up the contaminated soil.

COMMENT:

What are the depths of the monitoring wells you've installed on and around the Storonske site?

RESPONSE:

The depths of the monitoring wells vary. There are deep and shallow wells in each cluster. They are located above the bedrock, and at various depths into the bedrock.

COMMENT:

You said you've seen declining contamination in the monitoring wells. Was there any indication to go deeper or to different locations to check on the contamination?

RESPONSE:

If the contamination was migrating down, you'd catch it at the top of the rock, too. The contaminant plume is following a path from the site out, radially and downward. We do have deep bedrock wells at the site which have shown no contamination, other than the one well which was installed on the site right over where the lagoon had been located.

COMMENT:

You listed a number of compounds detected in the groundwater. Were any of those used in the washing of the barrels during the Storonske operation, or were they residues from the barrels?

RESPONSE:

We really can't answer that. What went into the lagoon at the site was such a mixture of substances, because so many different companies using different products brought their barrels to Storonske, whether they were totally empty or not. Also, there were different washing processes for different drums, based on the residues within them.

COMMENT:

There is another water system, a well in the trailer park (Rensselaer Estates) next to the site. Has monitoring been done of that well and what were the results?

RESPONSE:

The well in the trailer park is upgradient from Storonske. This means that groundwater flowing under the Storonske site flows away from the trailer park well, not toward it. The well was sampled. No contaminants were found.

COMMENT:

Was the new well recently installed over at Schodack Plaza for the Plaza or for Burger King? Who paid for it? Has the Burger King well been tested?

RESPONSE:

The well recently put in over at Schodack Plaza was installed by the owner of Schodack

Plaza at his own expense for use by the Plaza, not for Burger King. The owner has been instructed to maintain granular activated carbon filters on this new well until a track record is developed that demonstrates that this well is going to stay uncontaminated long-term.

Burger King has its own well. It's been sampled over the years and has never shown an impact from the Storonske site.

COMMENT:

Do you think that, down the road, this site will ever be returned to the tax roles?

RESPONSE:

One of the goals of the cleanup is to make the property usable. Many sites have been remediated, taken off the State's registry of hazardous waste sites, and returned to productive use.

APPENDIX B

ADMINISTRATIVE RECORD INDEX

The following documents are included in the Administrative Record:

1. Phase I Remedial Investigation and Feasibility Study Work Plan, Dvirka and Bartilucci (D&B), March 1990

2. Phase I Remedial Investigation and Feasibility Study Project Scope and Management Plan, D&B, May 1990

3. Specifications for Development of Monitoring Wells and Related Services, D&B, June 1990

4. Contract for Surveying Services, D&B, August 1990

5. Phase I Remedial Investigation Field Record Report, D&B, August 1990

6. Contract for Engineering Services Related to Data Validation, D&B, September 1990

7. Phase I Remedial Investigation Report, D&B, March 1991

8. Phase I/Phase II Feasibility Study Report, D&B, November 1991

9. Work Plan Addendum I for Phase II Field Program, D&B, February 1992

10. Phase II Remedial Investigation Report, D&B, August 1992

11. Limited Baseline Human Health Risk Assessment Report, D&B, November 1992.

12. Phase III Feasibility Study Report, D&B, December 1992.