APPENDIX J

FINELINE FISH AND WILDLIFE IMPACT ANALYSIS (STEP I)

FISH AND WILDLIFE IMPACT ASSESSMENT PHASE I

Former Lagoon Site (Nepera, Inc.)
Town of Hamptonburgh
Orange County, New York

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1.0 INTRODUCTION

A biotic survey of selected areas in the vicinity of the Nepera Incorporated, Former Lagoon Site (Lagoon Site, Site) was conducted during May 1995. The purpose of the survey was to provide a qualitative description of fish and wildlife resources that may be or may have been significantly affected by Site conditions, and to provide appropriate information to support a qualitative risk assessment of identified resources. This survey was performed in accordance with Step I of the New York State Department of Environmental Conservation (NYSDEC) guidance document titled "Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites", dated October 1994 (NYSDEC Guidance Document).

This report provides natural resource, vegetation covertype and topographic/drainage maps and descriptions of fish and wildlife resources within selected areas in the vicinity of the Lagoon Site.

2.0 SITE DESCRIPTION

The Lagoon Site is located in the Town of Hamptonburgh, Orange County, New York. The Site is located approximately 1.5 miles south of the Village of Maybrook, New York and consists of 29.3 acres of undeveloped primarily forested land. Natural resource features of the Site and adjacent areas include terrestrial, aquatic, and semi-aquatic covertypes associated with upland forest, Beaverdam Brook, and Otter Kill.

2.1 NATURAL RESOURCE MAPPING

The Natural Resource Map presented as Figure 2.1 indicates the location of the Lagoon Site and fish and wildlife resources documented by NYSDEC in the area within two miles of the perimeter of the Site. The map was prepared from New York State Freshwater Wetland maps titled "Maybrook, N.Y.", and "Goshen, N.Y.". Major documented natural features such as streams, open water, and freshwater wetlands within this area were identified through consultation with NYSDEC Staff and review of existing agency resource information.

2.1.1 Fish and Wildlife Resources Within Two Miles of the Site

A number of New York State Freshwater Wetlands occur in whole or in part in the area within two miles of the Site. Boundaries of mapped New York State Freshwater Wetlands are shown on Figure 2.1. New York State Freshwater Wetlands occurring in this area are identified below:

NY STATE WETLAND	*CLASSIFICATION*	*MUNICIPALITY*
MB-1	Class II	Town of Hamptonburgh
MB-3	Class III	Town of Montgomery, Village of Maybrook
MB-4	Class III	Town of Montgomery, Town of Hamptonburgh Village of Maybrook
MB-7	Class II	Town of Montgomery Town of New Windsor Town of Hamptonburg

NY STATE WETLAND	*CLASSIFICATION*	*MUNICIPALITY*
MB-16	Class II	Town of Hamptonburgh
MB-17	Class III	Town of Hamptonburgh
MB-18	Class I	Town of Hamptonburgh
MB-30	Class III	Town of Hamptonburgh
MB-31	Class III	Town of Hamptonburgh
MB-32	Class II	Town of Hamptonburgh
MB-33	Class III	Town of Hamptonburgh
GO-6	Class II	Town of Montgomery
GO-12	Class II	Town of Hamptonburgh
GO-13	Class II	Town of Hamptonburgh
GO-14	Class II	Town of Hamptonburgh

Portions of the Wallkill River, Otter Kill, Beaverdam Brook and a number of classified tributaries and open water areas also occur within a two mile radius of the Site boundary. These features are identified on Figure 2.1 and are listed below:

INDEX NO.	*NAME*	*DESCRIPTION*	*CLASS/ STANDARD*
H 139-13-39c, 40, 41a, and all tribs.	Tribs of Wallkill River	Enter Wallkill R. between trib. designated as item no. 152 and Mannayunk Kill.	D/D
H 139-13-42, 41b, 42a 43, 43a, 44, 44a, 45,46, and all tribs.	Tribs of Wallkill River	Enter Wallkill R. between Mannayunk Kill and trib.designated as item no. 161.	D/D
H 89-20 portion inc. P 259a,P 260, P263b, and P308	Otter Kill, Browns Pond (P 260), unnamed ponds	From mouth to trib. 20.	C/C
H 89-20-1 inc. P 259c, P 259e, p 259f, P259g; 1a inc. P 260d; P 260a; 2 and P 260b; 3 inc. P 261, and tribs. 1, 2, 3; and 4 and P 261b	Tribs of Otter Kill; Unnamed ponds	Isolated Ponds (P 259c, P 259e, P 260a, P 261b).	D/D
H 89-20-5 portion	Trib of Otter Kill	From mouth to 2.0 miles upstream.	C/C(T)
H 89-20-6 portion	Beaverdam Brook	From mouth to Trib. 1.	D/D

WATERS INDEX NO.	*NAME*	*DESCRIPTION*	*CLASS/ STANDARD*
H 89-20-6 portion inc. P 263d	Beaverdam Brook unnamed pond	From trib. 1 to 2.6 miles above mouth Beaverdam Brook.	A/A
H 89-20-6-1 inc. trib. 1 and P 263c; P265	Trib. and subtrib. of Beaverdam Brook unnamed ponds	Isolated pond (P265)	D/D

2.1.2 Fish and Wildlife Resources More than Two Miles Downstream from the Site

No additional mapped natural resources occur in the area more than two miles downstream and up to four miles downstream from the perimeter of the Site. The closest mapped resources occurring more than four miles downstream include New York State Freshwater Wetland MB-35 and Moodna Creek.

2.2 FEDERAL WETLANDS

A number of mapped federal wetlands also occur in the area within two miles of the Site. These wetlands were identified from the United States Fish and Wildlife Service, National Wetland Inventory maps titled "Maybrook, NY", and "Goshen, N.Y." portions of which are presented in Figure 2.2 National Wetland Inventory Map. Federally regulated wetlands are classified according to ecological system, covertype, and water regime. Federal wetlands with the following classifications are mapped within this area:

FEDERAL WETLAND CLASSIFICATION	*DESCRIPTION*
PFO1A	Palustrine, Forested, Broad leaf deciduous, Temporary
PFO1C	Palustrine, Forested, Broad leaf deciduous, Seasonally flooded
PFO1Ch	Palustrine, Forested, Broad leaf deciduous, Seasonally flooded, Diked/impounded
PFO1E	Palustrine, Forested, Broad leaf deciduous, Seasonally flooded/saturated
PFO/EM1E	Palustrine, Forested, Broad leaf deciduous/Emergent, persistent, Seasonally flooded/saturated
PEM/FO1E	Palustrine, Emergent, persistent/Forested, Broad leaf deciduous, Seasonally flooded/saturated
PSS1E	Palustrine, Shrub scrub, Broad leaf deciduous, Seasonally flooded/saturated
PSSIC	Palustrine, Shrub scrub, Broad leaf deciduous, Seasonally flooded
PSS1Fh	Palustrine, Shrub scrub, Broad leaf deciduous, Semipermanently flooded, diked/impounded
PSS/EM1E	Palustrine, Shrub scrub, Broad leaf deciduous, Emergent, persistent, Seasonally flooded/saturated
PEM1A	Palustrine, Emergent, persistent, Temporary
PEM1B	Palustrine, Emergent, persistent, Saturated
PEM1C	Palustrine, Emergent, persistent, Seasonally flooded
PEM1Cd	Palustrine, Emergent, persistent, Seasonally flooded, Partially drained ditched
PEM1Cx	Palustrine, Emergent, persistent, Seasonally flooded, Excavated
PEM1E	Palustrine, Emergent, persistent, Seasonally flooded/saturated
PEM1F	Palustrine, Emergent, persistent, Semipermanently flooded
PEM1Fh	Palustrine, Emergent, persistent, Semipermanently flooded, diked/impounded

FEDERAL WETLAND CLASSIFICATION	*DESCRIPTION*
PEM1Fx	Palustrine, Emergent, persistent, Semipermanently flooded, Excavated
PEM/SS1E	Palustrine, Emergent, persistent, Shrub scrub, Broad leaf deciduous, Seasonally flooded/saturated
PUBH	Palustrine, Unconsolidated bottom, Permanently flooded
*PUBHh	Palustrine, Unconsolidated bottom, Permanently flooded, Diked/impounded
PUBHx	Palustrine, Unconsolidated bottom, Permanently flooded, excavated
PUBFh	Palustrine, Unconsolidated bottom, Semipermanently flooded, Diked/impounded
PUBFx	Palustrine, Unconsolidated bottom, Semipermanently flooded, excavated
R2UBH	Riverine, Lower perennial, Unconsolidated bottom, Permanently flooded
R2UBHx	Riverine, Lower perennial, Unconsolidated bottom, Permanently flooded, Excavated
R3UBH	Riverine, Upper perennial, Unconsolidated bottom, Permanently flooded
L1UBHh	Lacustrine, Limnetic,Unconsolidated bottom, Permanently flooded, Diked/impounded

2.3 VEGETATION COVERTYPE MAPPING

The Vegetation Covertype Map presented as Figure 2.3 indicates natural vegetative covertypes and locations of field survey observation points in the area within a one-half mile radius of the Site perimeter. The map was prepared from interpretation of aerial photographs, review of agency resource information, and observations made during field reconnaissance conducted during May 1995. Detailed field data sheets and representative photographs corresponding to numbered locations on the covertype map are presented in Appendix B.

Mapping units for the Vegetation Covertype Map are based on discrete community types and are identified in accordance with descriptions and classifications used by the New York Natural Heritage Program (NHP). It should be noted that covertype boundary locations are based on interpretation of recent (1993) aerial photographs and are approximate. No attempt was made to delineate jurisdictional wetland areas during the field survey.

2.4 TOPOGRAPHIC AND DRAINAGE MAPPING

A Topographic and Drainage Map is presented as Figure 2.4. This map was prepared from United States Geological Survey (USGS) maps Titled "Maybrook", and "Goshen, N.Y." Surface water drainage patterns, based upon observations of flow and obvious topographic detail, for the area within a one-half mile radius of the Site are indicated by flow direction arrows.

3.0 FISH AND WILDLIFE RESOURCES

Fish and wildlife resources in the vicinity of the Site include components of riverine, palustrine, and terrestrial systems. These components are identified as distinct community types based on descriptions of the New York Natural Heritage Program (Reschke, 1990). Though edaphic and other variations in broadly defined communities were observed, no unique covertypes, not described by the Natural Heritage Program, were identified through review of agency resource information or during the field survey. The following describes fish and wildlife resources of natural communities that occur on the Site and within a one-half mile radius of the perimeter of the Site.

3.1 RIVERINE SYSTEM

"Main Channel Stream"

A segment of the Otter Kill occurs in the proximity of the Site. This stream flows from west to east in the Site area and is a tributary of Moodna Creek. The Otter Kill enters Moodna Creek at the confluence of Cromline Creek approximately one mile west of Washingtonville, New York. The portion of the Otter Kill adjacent to and within a one half mile radius of the Site boundary is classified by NYSDEC as a Class "C" surface water.

The best usages of these waters as identified by New York State, Codes, Rules, and Regulations, Title 6, Chapter X, Part 701.8 are as follows:

The best usages of Class C waters is fishing. These waters shall be suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes."

The portion of the Otter Kill in the vicinity of the Site can be best described as exhibiting "main channel stream" characteristics. The

stream channel in this area is approximately 30 feet wide with a slight meander pattern. The course of the channel is well defined within steep to gently sloping banks composed of sandy loam and silty clay soils. Substrates observed at representative locations included stone, rocks, gravel, and mud. No exposed depositional bars were observed in the channel during field reconnaissance.

Flow conditions and water depths in this area are seasonally variable with high water conditions occurring in spring and fall. Under base flow conditions the flow is sluggish and without distinct riffle and pool areas. Water depths in mid-channel were estimated to be three feet or less. Floodplain areas show evidence of periodic high water conditions including debris drift and high water marks on streamside vegetation.

Submergent and emergent aquatic vegetation observed in shallow water areas during field reconnaissance included; pondweeds (*Potamogeton* spp.), coontail (*Ceratophyllum demersum*), duckweed (*Lemna minor*), and spatterdock (*Nuphar luteum).*

No information was obtained from NYSDEC regarding water quality of the Otter Kill in the vicinity of the Site.

"Marsh Headwater Stream"

A portion of Beaverdam Brook, (H 89-20-6), and two of its unnamed tributaries (H 89-20-6-1 and H 89-20-6-1a) occur within one half mile of the Site. Flow from these small tributaries enter the main channel of the Otter Kill near the southwest corner of the Site. The dominant characteristics of these tributaries are typical of a "marsh headwater stream" though the segment adjacent to the Site, near its confluence with the Otter Kill, includes typical backwater slough and rocky stream conditions.

Representative areas of the stream exhibit widths of five to ten feet and water depths of two feet or less. Substrates include cobbles, stones, gravel, sand and silt. Observations of debris drift and high water marks indicate that the flow regime is variable and surrounding areas may be

seasonally inundated. Low flow and clear water conditions were observed during the field survey.

No water quality information specific to these tributary streams was found during review of NYSDEC file information. The portion of Beaverdam Brook from the mouth to tributary 1 (H 89-20-6-1) is classified by NYSDEC as a Class "D" surface water. The portion of the creek and its tributaries above tributary 1 and up to 2.6 miles upstream of the mouth are classified as a Class "A" surface water.

The best usages of these waters as identified by New York State, Codes, Rules, and Regulations, Title 6, Chapter X, Part 701.6 and 701.9 are as follows:

"The best usages of Class A waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish propagation and survival."

"The best usage of Class D waters is fishing. Due to such conditions as intermittency of flow, water conditions not conducive to propagation of a game fishery, or stream bed conditions, the waters will not support fish propagation. These waters shall be suitable for fish survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

Establishment of submergent aquatic vegetation in this tributary is limited by fluctuations in water level, unstable substrates in open marsh areas, variations in water level, shading by overhanging vegetation, and by the substrate in rocky segments. The "backwater slough" area near the mouth is influenced by conditions in the Otter Kill and contains similar emergent and submergent vegetation.

The locations of areas exhibiting marsh headwater stream rocky stream and backwater covertype characteristics on this tributary are

identified on Figure 2.3. Detailed field data for representative locations in this covertype are presented in Appendix B.

3.2 PALUSTRINE SYSTEMS

Major community types occurring in the palustrine system in the Site vicinity are open mineral soil wetlands and forested mineral soil wetlands. Communities characteristic of open wetlands are "shallow emergent marsh" and "shrub swamp". Forested wetlands in the Site area include "floodplain forest"and "red maple-hardwood swamp" areas. At many locations, the covertypes that characterize these wetland communities intergrade with each other and with more upland covertypes. No attempt was made to delineate wetland boundaries for jurisdictional purposes during the field survey. Descriptions of these community types are presented below:

"Shallow Emergent Marsh"

Communities in the vicinity of the Site described as "shallow emergent marsh" are dominated by hydrophytic vegetation, occur on nearly level hydric soils, and are saturated or inundated during a significant portion of the growing season. Shallow emergent marsh communities in the Site area commonly intergrade with shrub swamp, floodplain forest, and more upland community types. Representative vegetation typical of shallow emergent marsh communities in the Site vicinity is presented below:

Common name	***Scientific Name***
	Trees and Shrubs
Green Ash	*Fraxinus pennsylvanica*
Pin Oak	*Quercus palustris*
Red Maple	*Acer rubrum*
Silky Dogwood	*Cornus amomum*
Greystem dogwood	*Cornus foemina*
Meadowsweet	*Spirea alba*
Honeysuckle	*Lonicera tartarica*

Common name	*Scientific Name*
	Herbs
Purple Loosestrife	*Lythrum salicaria*
Broadleaf Cattail	*Typha latifolia*
Reed Canary Grass	*Phalaris arundinacea*
Burr Reed	*Sparganium americanum*
Common Smartweed	*Polygonum hydropiper*
Grass-leaved Goldenrod	*Euthanium graminifolia*
Jewelweed	*Impatiens* spp.
Arrowhead	*Sagittaria latifolia*
Water Hemlock	*Cicuta maculata*
Blue Flag	*Iris versicolor*
Sensitive Fern	*Onoclea sensibilis*
Skunk Cabbage	*Symplocarpus foetidus*
Soft Rush	*Juncus effusus*
Tussock sedge	*Carex stricta*
Sedges	*Carex* spp.

The locations of areas exhibiting shallow emergent marsh conditions and approximate locations of field observation points in this covertype are shown on Figure 2.3. Field data and representative photographs of the "shallow emergent marsh"covertype in the Site vicinity are presented in Appendix B.

"Shrub Swamp"

Communities in the vicinity of the Site described as "shrub swamp" are dominated by hydrophytic woody shrub species, occur on nearly level hydric soils, and are saturated or inundated during a portion of the growing season. The shrub swamp communities identified in the Site area occur in similar areas and contain many of the same plant species as emergent marsh and floodplain forest communities. Representative vegetation typical of "shrub swamp" communities in the Site vicinity is presented below:

Common Name	*Scientific Name*
	Trees
Red Maple	*Acer rubrum*
Green Ash	*Fraxinus pennsylvanica*
	Shrubs
Meadowsweet	*Spirea alba*
Silky Dogwood	*Cornus amomum*
Alder	*Alnus serrulata*
Arrowwood	*Viburnum dentatum*
	Herbs
Grass-leaved Goldenrod	*Euthania graminifolia*
Reed Canary Grass	*Phalaris arundinacea*
Boneset	*Eupatorium perfoliatum*
Burreed	*Sparganium americanum*
Sensitive Fern	*Onoclea sensibilis*
Broadleaf Cattail	*Typha latifolia*
Soft Rush	*Juncus effusus*
Sedge species	*Carex* spp.
Skunk Cabbage	*Symplocarpus foetidus*
Tussock sedge	*Carex stricta*

The locations of areas in the vicinity of the Site dominated by "shrub swamp" conditions and approximate locations of field observation points in this covertype are shown on Figure 2.3. Field data sheets and photographs representative of "shrub swamp" conditions in the Site vicinity are presented in Appendix B.

"Floodplain Forest"

Low lying wooded areas contiguous with the main channel of the Otter Kill and Beaverdam Brook and tributaries include forested mineral soil wetland communities dominated by "floodplain forest" conditions. Watermarks on trees, water stained leaves, and other indirect evidence of inundation observed during the field survey are indicative of seasonal flooding in these communities.

The "floodplain forest" is a broadly defined community type. The vegetation of these communities in the vicinity of the Site is dominated by deciduous northern hardwoods. The shrub and herbaceous

understory layers are relatively open. Representative plant species of this community are presented below:

Common Name	*Scientific Name*
	Trees
American Elm	*Ulmus americana*
Red Maple	*Acer rubrum*
Black Ash	*Fraxinus nigra*
Green Ash	*Fraxinus pennsylvanica*
Black Willow	*Salix nigra*
Black Cherry	*Prunus serotina*
Sycamore	*Platanus occidentalis*
	Shrubs
Honeysuckle	*Lonicera tartarica*
Arrowwood	*Viburnum dentatum*
Silky Dogwood	*Cornus amomum*
Greystem Dogwood	*Cornus foemina*
Poison Ivy	*Toxicodendron radicans*
Riverbank Grape	*Vitus riparia*
Blackberry	*Rubus allegheniensis*
	Herbs
Garlic Mustard	*Alliaria officinalis*
Water Pepper	*Polygonum hydropiper*
Jewell Weed	*Impatiens* spp.
Skunk Cabbage	*Symplocarpus foetidus*
Moneywort	*Lysimachia nummularia*
Purple Loosestrife	*Lythrum salicaria*
White Avens	*Geum canadense*

The locations of areas in the vicinity of the Site dominated by flood plain forest conditions and approximate locations of field observation points in this covertype are shown on Figure 2.3. Field data sheets and photographs representative of this covertype are presented in Appendix B.

"Red Maple-Hardwood Swamp"

Communities most closely resembling the"red maple-hardwood swamp" covertype in the Site area consist of forested mineral soil wetlands containing a broadly defined community typically dominated by red maple (*Acer rubrum*) and a variety of northern hardwood tree species

adapted to wet soil conditions. Representative plant species found in red maple-hardwood swamp areas in the vicinity of the Site are presented below:

Common Name	*Scientific Name*
	Trees
Red Maple	*Acer rubrum*
Green Ash	*Fraxinus pennsylvanica*
American Elm	*Ulmus americana*
Pin Oak	*Quercus palustris*
	Shrubs
Silky Dogwood	*Cornus amomum*
Arrowwood	*Viburnum dentatum*
Tartarian Honeysuckle	*Lonicera tartarica*
Highbush Blueberry	*Vaccinium corymbosum*
	Herbs
Poison Ivy	*Toxicodendron radicans*
Jack-in-the Pulpit	*Arisaema triphyllum*
Cinnamon Fern	*Osmunda cinnamomea*
Sensitive Fern	*Onoclea sensibilis*
Royal Fern	*Osmunda regalis*
Tussock Sedge	*Carex stricta*
Skunk Cabbage	*Symplocarpus foetidus*

3.3 TERRESTRIAL SYSTEMS

The terrestrial community in the vicinity of the Site is characterized by naturally occurring and culturally influenced covertypes. These covertypes are dominated by forested uplands and to a lesser extent include successional old field, shrub, and forest communities. Forested upland areas may have historically been logged, however, only very limited evidence of recent logging was observed during the field reconnaissance.

Successional communities in the vicinity of the Site include the former lagoon areas of the Site that have been altered by filling and an inactive off-Site gravel pit. These areas are dominated by pioneering plants adapted to disturbed soils. Covertypes in these areas can be characterized as successional old field and successional shrub communities.

Other successional communities in the area include successional northern hardwood areas. The presence of relict hedgerows indicate that the areas were historically farmed. Natural terrestrial communities in the Site vicinity exhibiting terrestrial covertypes are described below:

"Appalachian Oak-Hickory Forest"

Large wooded tracts including portions of the Site and other areas in the Site vicinity contain communities that can best be described as "Appalachian oak-hickory forest". This is a broadly defined covertype that occurs on well drained soils of ridges and upper slopes. Species characteristic of this covertype found in the Site area are listed below:

Common Name	*Scientific Name*
	Trees
Black Cherry	*Prunus serotina*
Red Oak	*Quercus rubra*
White Oak	*Quercus alba*
Red Maple	*Acer rubrum*
Sugar Maple	*Acer saccharum*
American Elm	*Ulmus americanum*
Shagbark Hickory	*Carya ovata*
Butternut	*Juglans cinera*
White Ash	*Fraxinus americana*
Hawthorn	*Crataegus* spp.
	Shrubs
Grey -stem Dogwood	*Cornus foemina*
Flowering Dogwood	*Cornus florida*
Honeysuckle	*Lonicera tartarica*
American Barberry	*Berberis canadensis*
Choke Cherry	*Prunus virginiana*
Smooth Blackhaw	*Viburnum prunifolium*
	Herbs
Virginia Creeper	*Parthenocisus quinquefolia*
Poison Ivy	*Toxicodendron radicans*
Trout Lily	*Erythronium americanum*
Goldenrod	*Solidago* spp.
Wild Spikenard	*Smilacina racemosa*
Moneywort	*Lysimachia nummularia*
Garlic Mustard	*Alliaria officinalis*
Impatiens	*Impatiens* spp.

Common Name	*Scientific Name*
	Herbs
Jack-in-the-Pulpit	*Arisaema atrorubens*
Dog Violet	*Viola conspersa*
Common Cinquefoil	*Potentilla simplex*
Solomons Seal	*Polygonatum pubescens*

"Appalachian Oak-Hickory Forest" conditions occur in areas indicated on Figure 2.3. Field data sheets and photographs of representative areas are presented in Appendix B.

"Successional Northern Hardwood Forest"

"Successional northern hardwood forest" conditions occur in areas that have been historically disturbed by timbering, farming, or other disturbances. This is a broadly defined community type composed of species adapted to establishment on disturbed soils. Trees of the forest canopy are sun-tolerant species with wind dispersed seeds. The shrub and herb species present are characteristic of successional shrub and successional old field communities. Plant species characteristic of "successional northern hardwood forest" communities in the vicinity of the Site are presented below:

Common Name	*Scientific Name*
	Trees
Quaking Aspen	*Populus tremuloides*
Eastern Cottonwood	*Populus deltoides*
Red Maple	*Acer rubrum*
Black Cherry	*Prunus serotina*
American Elm	*Ulmus americana*
Shagbark Hickory	*Carya ovata*
Hawthorn	*Crategus* sp.
White Ash	*Fraxinus americanum*
Green Ash	*Fraxinus pennsylvanica*
Sycamore	*Platanus occidentalis*
	Shrubs
Silky Dogwood	*Cornus amomum*
Grey-stem Dogwood	*Cornus foemina*
Common Blackberry	*Rubus allegheniensis*
Staghorn Sumac	*Rhus typhina*

Common Name	*Scientific Name*
	Shrubs
Honeysuckle	*Lonicera tartarica*
Poison Ivy	*Toxicodendron radicans*
Grape species	*Vitis* spp
	Herbs
Garlic Mustard	*Alliaria officinalis*
Enchanters Nightshade	*Circaea quadrisiculata*
Moneywort	*Lysimachia nummularia*
Trout Lily	*Erythronium americanum*
White Avens	*Geum canadense*

"Successional northern hardwood forest" conditions were observed in the Site vicinity in areas indicated on Figure 2.3. Field data sheets and photographs of representative areas are presented in Appendix B.

"Successional Old Field"

"Successional old field communities" in the vicinity of the Site occur in areas that have been disturbed by filling, by sand and gravel mining, and other human alterations. Vegetation of these areas is dominated by pioneering plants, grasses, and forbs. Shrub species present comprise less than fifty percent of the cover. Plant species characteristic of "successional old field" communities in the vicinity of the Site are presented below:

Common Name	*Scientific Name*
	Trees
Quaking Aspen	Populus tremuloides
Gray Birch	Betula populifolia
Staghorn Sumac	Rhus typhina
	Shrubs
Multiflora Rose	*Rosa multiflora*
Greystem Dogwood	*Cornus foemina*
Honeysuckle	*Lonicera tartarica*
	Herbs
Tall Goldenrod	*Solidago altissima*
Common Cinquefoil	*Potentila simplex*
Birdfoot Trefoil	*Lotus corniculatus*
Queen Anns Lace	*Daucus carota*
Red Clover	*Trifolium pratense*

Common Name	*Scientific Name*
	Herbs
Ox-eye Daisy	*Chrysantheum leucanthemum*
Common Milkweed	*Asclepius syriaca*
Evening Primrose	*Oenothera biennis*
Hawkweed	*Hieracium pilosella*
Wild Strawberry	*Fragaria virginiana*

The approximate boundaries of successional old field communities in the vicinity of the Site are shown on Figure 2.3. Field data sheets and photographs representative of this covertype in the vicinity of the Site are presented in Appendix B.

"Successional Shrubland"

"Successional shrubland" communities occur in locations and under conditions similar to successional old field communities. This community type is broadly defined and is a transitional stage between old field and wooded community types. Successional shrublands are typified by covertypes containing more than fifty percent shrub species and less than fifty percent trees. Plant species representative of "successional shrubland" in the vicinity of the Site are presented below:

Common Name	*Scientific Name*
	Trees
Black Cherry	*Prunus serotina*
American Elm	*Ulmus americana*
Red maple	*Acer rubrum*
Hawthorn	*Crataegus* spp.
Staghorn Sumac	*Rhus typhina*
Grey Birch	*Betula populifolia*
Red Cedar	*Juniperus virginiana*
	Shrubs
Honeysuckle	*Lonicera tartarica*
Greystem Dogwood	*Cornus foemina*
Common Blackberry	*Rubus allegheniensis*
	Herbs
Garlic Mustard	*Alliaria officinalis*
Tall Goldenrod	*Solidago altissima*
Red Clover	*Trifolium pratense*

Common Name	*Scientific Name*
	Herbs
Spotted Knapweed	*Centaurea maculosa*
Common Milkweed	*Asclepius syriaca*
Black Mustard	*Brassica nigra*
Queen Anns Lace	*Daucus carota*

Areas exhibiting "successional shrubland" conditions in the vicinity of the Site are shown on Figure 2.3. Field data and photographs representative of successional shrubland conditions in the Site vicinity are presented in Appendix B.

4.0 FAUNA EXPECTED WITHIN EACH COVERTYPE

The fish and wildlife species that may be associated with habitats within the vicinity of the Site were determined through review of NYSDEC file information, standard natural history references, and from observations during field reconnaissance. NYSDEC information sources included: Region 3 Bureau of Wildlife, Region 3 Division of Fisheries, and the New York Natural Heritage Program, Wildlife Resources Center.

Information from the New York Natural Heritage Program indicates that there are no known occurrences of wildlife species that are rare or endangered, or species of special concern within two miles of the Site boundary. It should be noted that information regarding the specific occurrence of some wildlife species in the vicinity of the Site is not available. No netting, trapping, subsurface examination of substrate, or other collecting procedures were conducted during field reconnaissance in accordance with the NYSDEC Guidance Document. The species listed as expected to occur in association with covertypes found in the Site vicinity is not intended to be all-inclusive.

4.1 RIVERINE SYSTEMS

Species that utilize the main channel of Otter Kill and its tributaries include fish and other water-dependant wildlife. Though little fisheries information is available for locations within the specific Site vicinity, the results of historical NYSDEC fishery collections in Beaverdam Brook and other segments of the Otter Kill watershed may be representative of the Site area. Fish species found during NYSDEC stream surveys are presented below:

Common Name	*Scientific Name*
	Fish
Lake Chubsucker	*Erimyzon sucetta* (*Erimyzon o. oblongatus*)
Golden shiner	*Notemigonus c. crysoleucas*
Redfin Pickerel	*Esox americanus*
Chain Pickerel	*Esox niger*
Rock Bass	*Ambloplites rupestris*
Largemouth Bass	*Micropterus salmoides* (*Aplites salmoides*)
Redbreast Sunfish	*Lepomis auritus*
Black Crappie	*Pomoxis nigromaculatus* (*Pomoxis sparoides*)
Pumpkinseed	*Lepomis gibbosus* (*Eupomotis gibbosus*)

From: NYSDEC small stream survey July 1936.

Water-dependant wildlife that utilize resources of riverine systems for all or a portion of their life cycles include some mammals, birds, reptiles, and amphibians. The species likely to be present in the Site vicinity are indigenous species and are presented below:

Common Name	*Scientific Name*	***NY State Protective Status***
	Amphibians	
Bullfrog	*Rana catesbeiana*	Game species
Green Frog	*Rana clamitans*	Game species
Wood Frog	*Rana sylvatica*	Game species
Pickerel Frog	*Rana palustris*	Game species
Leopard Frog	*Rana pipiens*	Game species
Spring Peeper	*Hyla crucifer*	Unprotected
American Toad	*Bufo americanus*	Unprotected
	Reptiles	
Snapping Turtle	*Chelydra serpentina*	Unprotected
Painted Turtle	*Chrysemys picta*	Unprotected
Northern Water Snake	*Nerodia sipedon*	Unprotected

Common Name	*Scientific Name*	*NY State Protective Status*
	Birds	
Woodduck	*Aix sponsa*	Game species
Mallard	*Anas platyrhynchos*	Game species
Great Blue Heron *	*Ardea herodias*	Protected
Belted Kingfisher	*Ceryle alcyon*	Protected
	Mammals	
Muskrat	*Ondatra zibethicus*	Game species
Mink	*Mustela vison*	Game species

From: "Checklist of the Amphibians, Reptiles, Birds, and Mammals of New York State, Including Their Protective Status" (NYSDEC, 1987).

4.2 PALUSTRINE SYSTEMS

Communities identified as components of the palustrine system in the Site vicinity include, shallow emergent marsh, shrub swamp, and floodplain forest. These communities are transitional between upland and aquatic communities and exhibit a seasonally variable water regime. These communities may be flooded during spring and fall and may be relatively dry during other seasons.

"Shallow Emergent Marsh/Shrub Swamp"

Shallow emergent marsh and shrub swamp conditions occur at a number of locations adjacent to Beaverdam Brook. Evidence of debris drift and water marks on persistent vegetation indicate that these wetland areas are periodically inundated. Seasonally flooded areas in this covertype could be utilized as spawning/nursery areas for some fish species such as Redfin Pickerel (*Esox americanus*) and Chain Pickerel (*Esox niger*).

Areas of permanent open water within this covertype are restricted to the creek channel. These open water and adjacent marsh areas, though not extensive, are suitable for nesting, resting, and feeding habitat for some water-dependant birds such the mallard duck (*Anas platyrhynchos*).

Other water-dependant bird species that may utilize emergent marsh and shrub swamp habitats in the Site vicinity are indigenous migratory species including the following:

Common Name	*Scientific Name*	*NY State Protective Status*
	Birds	
Mallard	*Anas platyrhynchos*	Game species
Woodcock	*Scolopax minor*	Game species
Marsh Wren	*Cistothorus palustris*	Protected
Redwing Blackbird	*Agelaius phoeniceus*	Protected

Other wildlife that can be expected to utilize emergent marsh areas for at least a portion of their life cycles include amphibian and reptile species. No site specific information regarding the occurrence of these species was found during review of agency resource information. Species that can be expected to occur in the area would include species typical of the region. These would include the following species:

Common Name	*Scientific Name*	*NY State Protective Status*
	Amphibians	
Bullfrog	*Rana catesbeiana*	Game species
Green Frog	*Rana clamitans*	Game species
Wood Frog	*Rana sylvatica*	Game species
Spring Peeper	*Hyla crucifer*	Unprotected
Pickerel Frog	*Rana palustris*	Game species
	Reptiles	
Snapping Turtle	*Chelydra serpentina*	Unprotected
Northern Water Snake	*Nerodia sipedon*	Unprotected

Mammals that may occur in emergent marsh/shrub swamp communities in the Site vicinity include, muskrat (*Ondatra zibethicus*), white-tailed deer (*Odocoileus virginianus*), and raccoon (*Procyon lotor*).

"Floodplain Forest"

Wildlife that can be expected to occur in "floodplain forest" communities in the vicinity of the Site include amphibians, reptiles, birds, and mammals. Floodplain forest areas are inundated during the spring and fall. Characteristic wildlife species of "floodplain forest" communities in the vicinity of the Site include:

Common Name	*Scientific Name*	*NY State Protective Status*
	Birds	
Yellow Warbler	*Dendroica petechia*	Protected
Louisiana Waterthrush	*Seiurus motacilla*	Protected
Alder Flycatcher	*Empidonax alnorum*	Protected
Blue-gray Gnatcatcher	*Polioptila caerulea*	Protected
Wood Duck	*Aix sponsa*	Game species
Green-backed Heron	*Butorides striatus*	Protected
Barred Owl	*Strix varia*	Protected
	Mammals	
White tailed Deer	*Odocoileus virginianus*	Game species
Muskrat	*Ondatra zibethicus*	
Mink	*Mustela vison*	Game species

4.3 TERRESTRIAL SYSTEMS

Terrestrial covertypes occurring in the vicinity of the Site include: successional old field, successional shrub, successional northern hardwood forest and Appalachian oak-hickory forest. In general, these communities are on well drained ridges and hillsides, and are dominated by upland community types. Wildlife species that can be expected to occur in these covertypes are presented below:

"Successional Old Field" and "Successional Shrub"

The major occurrence of these covertypes in the area is restricted to disturbed areas of the Site and an off-Site gravel pit. Wildlife species that can be expected to occur in these communities include

amphibians, reptiles, birds, and mammals. Amphibian and reptile species that can be expected to occur in these covertypes would consist of indigenous species including American toad (*Bufo americanus*), and snakes including the common garter snake (*Thamnophis sirtalis*).

Characteristic bird species likely to occur in old field and shrub areas in the vicinity of the Site include hawks and owls including, northern harrier (*Circus cyaneus*), sharp-shinned hawk (*Accipiter striatus*), Red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*B. lagopus*), American kestrel (*Falco sparverius*), great horned owl (*Bubo virginianus*), and northern saw-whet owl (*Aegolius acadicus*). Other bird species that can be expected to occur in this habitat include a variety of passerine species.

Mammal species expected to occur in old field and shrub habitats in the Site vicinity include small resident mammals with limited territorial ranges such as mice and voles, and larger more freely ranging mammals that exploit a variety of covertypes such as white-tailed deer.

Mammal species expected to occur in this habitat are presented below:

Common Name	*Scientific Name*	*NY State Protective Status*
Deer Mouse	*Peromyscus maniculatus*	Unprotected
Meadow Vole	*Microtus pennsylvanicus*	Unprotected
House Mouse	*Mus musculus*	UnprotectEastern
Cottontail	*Sylvilagus floridanus*	Game species
Red Fox	*Vulpes vulpes*	Game species
Raccoon	*Procyon lotor*	Game species
Striped Skunk	*Mephitis mephitis*	Game species
Woodchuck	*Marmota monax*	Unprotected
White-tailed Deer	*Odocoileus virginianus*	Game species

"Successional Northern Hardwood Forest"

Wildlife species expected to occur in this community type include birds and mammals. Characteristic species would include:

Common Name	*Scientific Name*	*NY State Protective Status*
	Birds	
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Protected
Downy Woodpecker	*Picoides pubescens*	Protected
Hairy Woodpecker	*P. villosus*	Protected
Northern Flicker	*Colaptes auratus*	Protected
Eastern Phoebe	*Sayornis phoebe*	Protected
Blue Jay	*Cyanocitta cristata*	Protected
American Crow	*Corvus brachyrhynchos*	Game species
Black-capped Chickadee	*Parus atricapillus*	Protected
Tufted Titmouse	*Parus bicolor*	Protected
Red-breasted Nuthatch	*Sitta canadensis*	Protected
White-breasted Nuthatch	*Sitta corolinensis*	Protected
Brown Creeper	*Certhia americana*	Protected
Gray catbird	*Dumetella carolinensis*	Protected
	Mammals	
White-tailed Deer	*Odocoileus virginianus*	Game species
Eastern Chipmunk	*Tamias striatus*	Unprotected
Gray Squirrel	*Sciurus carolinensis*	Game species

"Appalachian Oak-Hickory Forest"

Wooded areas in the vicinity of the Site are dominated by conditions that can be best characterized as "Appalachian oak-hickory forest". These areas support a variety of wildlife including the following:

Common Name	*Scientific Name*	*NY State Protective Status*
	Birds	
Great Horned Owl	*Bubo virginianus,*	Protected
Northern Saw-whet Owl	*Aegolius acadicus*)	Protected
Red-bellied Woodpecker	*Melanerpes carolinus*	Protected
Whip-Poor-Will	*Caprimulgus vociferus*	Protected
Wild Turkey	*Meleagris gallopavo*	Game species
Downy Woodpecker	*Picoides pubescens*	Protected
Hairy Woodpecker	*P. villosus*	Protected
Northern Flicker	*Colaptes auratus*	Protected
Eastern Phoebe	*Sayornis phoebe*	Protected
Blue Jay	*Cyanocitta cristata*	Protected
American Crow	*Corvus brachyrhynchos*	Game species
Black-capped Chickadee	*Parus atricapillus*	Protected
Tufted Titmouse	*Parus bicolor*	Protected
Red-breasted Nuthatch	*Sitta canadensis*	Protected
White-breasted Nuthatch	*Sitta corolinensis*	Protected
Brown Creeper	*Certhia americana*	Protected
Gray catbird	*Dumetella carolinensis*	Protected
	Mammals	
White-tailed Deer	*Odocoileus virginianus*	Game species
Eastern Chipmunk	*Tamias striatus*	Unprotected
Gray Squirrel	*Sciurus carolinensis*	Game species

5.0 OBSERVATIONS OF STRESS POTENTIALLY RELATED TO SITE CONTAMINANTS

No obviously contaminated areas or conditions resulting in stressed vegetation were observed at any locations at the Site or in the vicinity of the Site during field reconnaissance.

6.0 FISH AND WILDLIFE RESOURCE VALUES

6.1 VALUE OF HABITATS TO WILDLIFE

The wildlife resources in the vicinity of the Site can be best described as a complex of interacting community systems. In general, natural communities in the Site vicinity have not been significantly altered by human activities. Acreage adjacent to and in the vicinity of the Site is partially developed as agricultural, recreational (Otter Kill Country Club), and residential.

Aquatic Systems

Natural communities of the aquatic system of the Site area include the main channel of the Otter Kill, its local tributaries, and seasonally inundated wetlands. Though little Site-specific information regarding wildlife populations is available from file information, the covertype characteristics of these areas meet the habitat requirements for some fish, migratory waterfowl, and other water-dependant wildlife species.

The main channel of the Otter Kill includes localized beds of aquatic vegetation, though other cover is sparse. These main channel conditions adjacent to the Site meet the full life cycle requirements for feeding, spawning, and nursery areas of some warm water fish species such as largemouth bass, a variety of panfish, and rough fish including carp. Historical (1926-1935) fish stockings of the Otter Kill in the region have included release of small mouth bass, yellow perch, brook trout, largemouth bass, and other fish species.

It is likely that marsh and swamp areas adjacent to Beaverdam Brook and its local tributaries are inundated during spring high water periods. Spring flood conditions in these areas would meet the spawning and early nursery requirements for pickerel species historically known from the area.

Historical (1936) NYSDEC fish stocking recommendations for stream segments upstream of tributary 1 of Beaverdam Brook include release of brook trout. This area of the watershed does not appear to be heavily developed. It may be possible that conditions in this area remain suitable for this fishery.

Other water-dependant wildlife that can be expected to utilize aquatic communities in the vicinity of the Site would include amphibians and some mammals. No information regarding the amphibian population of the Site area was available from review of file information. Amphibians that are likely to be present include a variety of species indigenous to New York. In general, amphibians require moist habitat conditions for survival and are dependant on aquatic habitats for breeding and egg development.

Terrestrial Systems

Communities present in the terrestrial system of the Site area include successional old field, shrubland, and deciduous forest. No Site-specific information regarding the wildlife that may utilize these habitats was obtained from file information. The covertype characteristics of these areas meet the habitat requirements for a variety of resident and migratory species including reptiles, birds, and mammals.

Reptiles that are likely to be present include a variety of snake species indigenous to New York. These species can be considered to be resident species. Habitat conditions in the Site area are suitable to support the full life cycle requirements for these species.

Birds that are likely to utilize terrestrial communities in the vicinity of the Site include a variety of birds of prey, passerine, and other bird species. In general, structural habitat conditions in the area, including culturally influenced areas such as agricultural land and hedgerows, are diverse and can be considered to be attractive to birds. Resources of the area are well suited for providing feeding, nesting, roosting, and other requirements of these species.

Mammals that can be expected to utilize resources of the area include resident and more transient species. Resident species would include small mammals with limited territorial requirements such as mice, voles, chipmunks, and squirrels. These species can be considered to be "site resident" in that habitat conditions found in the Site area support their full life cycle requirements.

Though covertype conditions found in the Site vicinity meet the habitat requirements for a number of larger mammal species such as deer and fox, these species are free ranging and may not depend on Site resources alone for their habitat requirements. Covertypes found on the Site and in the Site vicinity provide the requirements for feeding, bedding, breeding, denning, and seasonal cover for these species.

6.2 VALUE OF RESOURCES TO HUMANS

Resources in the Site vicinity have recreational and economic values to humans though the extent to which these resources are utilized is largely undocumented. Some areas in the vicinity are controlled and used by hunting clubs. The occurrence of tree stands and discarded spent cartridges in some locations indicate that these areas are hunted for deer, wild turkey and probably other game species. Other potential recreational opportunities in the area of the Site include; bicycle, ATV and snowmobile use, fishing, observation of wildlife, and scientific study.

All areas in the Site vicinity have been logged at some time in the past. No evidence of commercial timbering was observed during field reconnaissance. Some hardwood tree species in the area are marketable, though the potential for future commercial timbering in the area is likely to be driven by economic forces.

6.3 APPLICABLE FISH AND WILDLIFE REGULATORY CRITERIA

Both contaminant-specific and Site-specific criteria applicable to the remediation of fish and wildlife resources in the vicinity of the Site are identified below.

Applicable contaminant-specific regulatory criteria include: "Water Quality Regulations-Surface Water and Groundwater Classifications and Standards"(NYCRR Title 6, Chapter X, Parts 701-705); NYSDEC Division of Water, "Ambient Water Quality Standards and Guidance Values" (NYSDEC, October 1993); and NYSDEC Division of Fish and Wildlife, "Technical Guidance for Screening Contaminated Sediments"(NYSDEC, November 1993). These criteria establish specific numeric water and sediment contaminant concentrations to be protective of human health and aquatic life and are applicable to class designated surface waters and sediments.

Potentially applicable Site-specific regulatory criteria include both New York State and federal regulations including the following:

New York State:

- Freshwater Wetlands Law (Evaluation of remedial alternatives with respect to wetlands) (ECL Article 24 in Title 23);

- New York State Freshwater Wetlands Permit Requirements and Classification (6NYCRR 663 and 664);

- New York State Water Pollution Control Regulations Use and Protection of Waters (6NYCRR 608);

- New York State Floodplain Management Act and Regulations (ECL Article 36 and 6 NYCRR 500);

- New York State Flood Hazard Area Construction Standards (Evaluation of remedial alternatives with respect to floodplains).

Federal:

- Executive Orders on Floodplain Management and Wetlands Protection (CERCLA Floodplains and Wetlands Assessments) #11988 and 11990;

- RCRA Location Requirements for 100-Year Floodplains (40 CFR 264.18(b));

- Fish and Wildlife Coordination Act (16 USC Section 661 *et seq.*);

- Endangered Species Act (16 USC 1531);

- Coastal Zone Management Act (16 USC 1451 *et seq.*);

- Clean Water Act Section 404 (Evaluation of remedial alternatives with respect to wetlands) (40 CFR 230);

- Army Corps of Engineers Regulations for Construction and Discharge of Dredged or Fill Materials in Navigable Waterways (33 CFR 320-33-);

- Wetlands Construction and Management Procedures (40 CFR6, Appendix A);

- National Historic Preservation Act (16 USC 470) Section 106 *et seq..*, (36 CFR 800).

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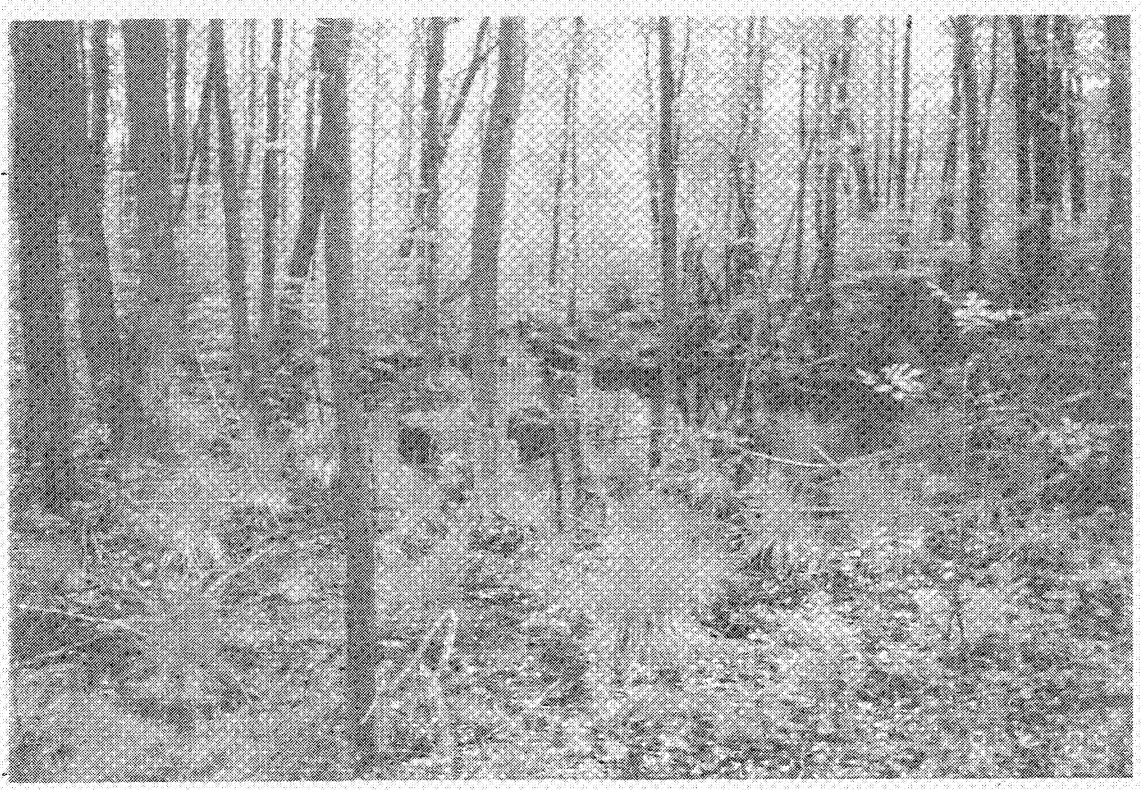
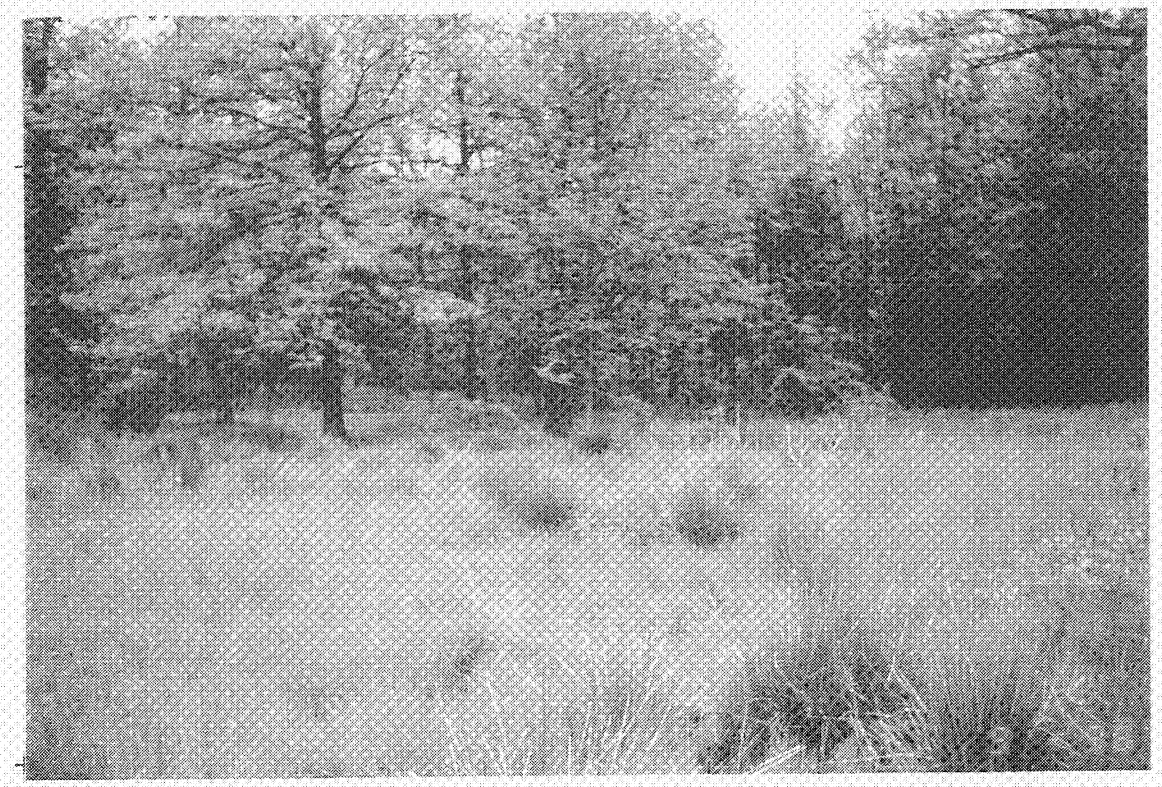


OBSERVATION POINT 1

NEPERA LAGOON SITE
MAYBROOK, NY
MAY 1995



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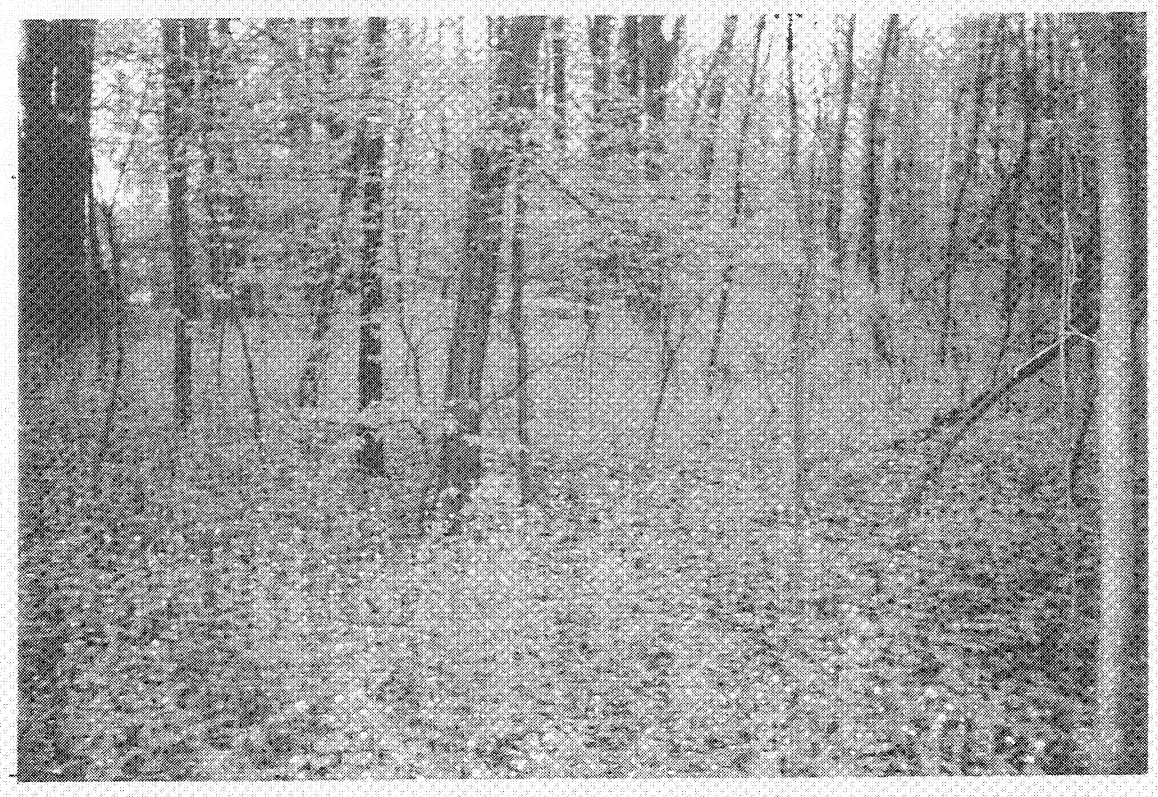

OBSERVATION POINT 3

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MAY 1995

OBSERVATION POINT 4

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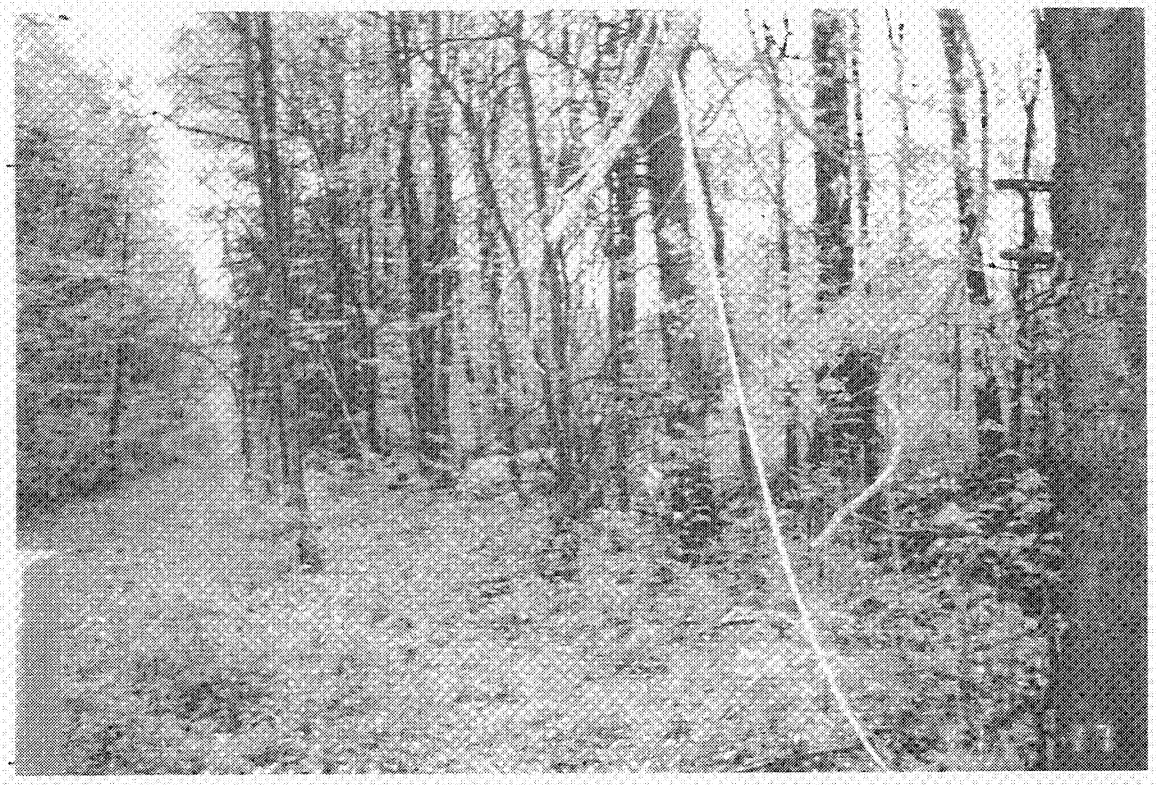
MAYBROOK, NY
MAY 1995

OBSERVATION POINT 5

NEPERA LAGOON SITE
MAYBROOK, NY
MAY 1995

OBSERVATION POINT 6

NEPERA LAGOON SITE
MAYBROOK, NY
MAY 1995



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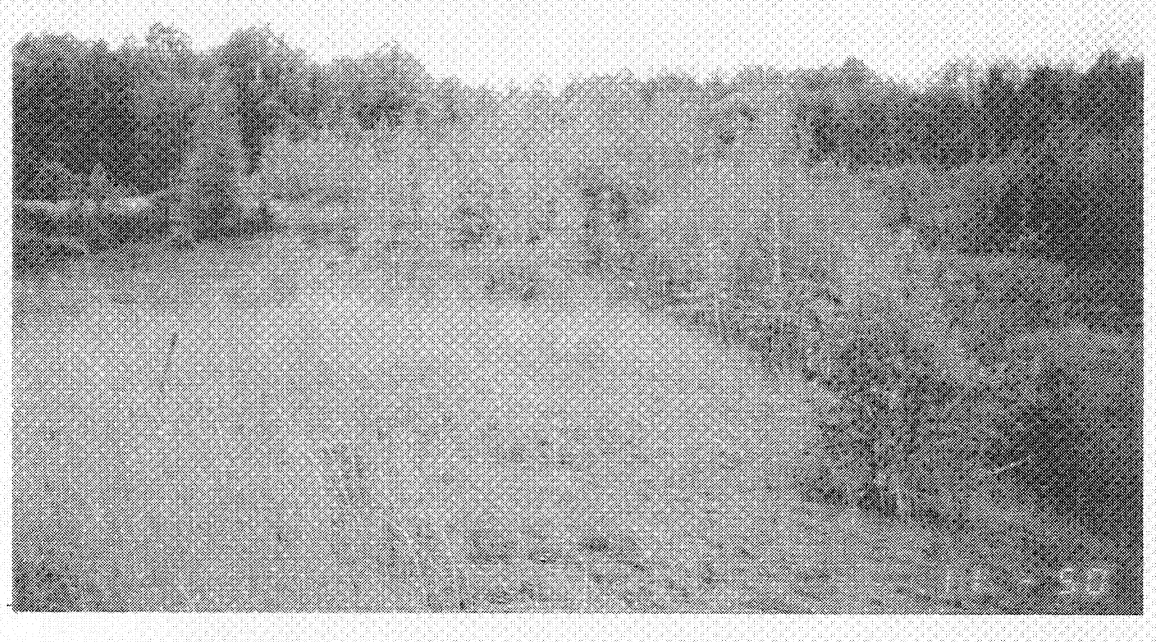

OBSERVATION POINT 8

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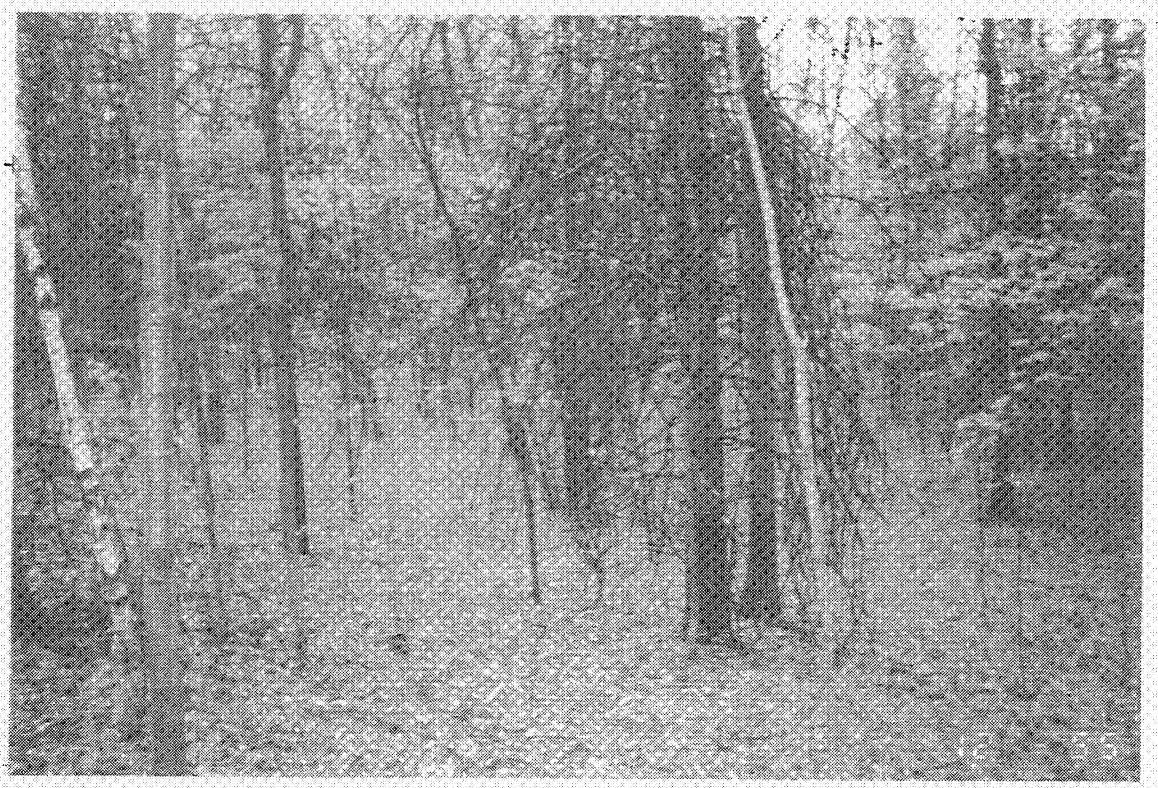
MAY 1995

OBSERVATION POINT 9

NEPERA LAGOON SITE
MAYBROOK, NY
MAY 1995



OBSERVATION POINT 16

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MAYBROOK, NY
MAY 1995

OBSERVATION POINT 17

NEPERA LAGOON SITE
MAYBROOK, NY
MAY 1995

OBSERVATION POINT 18

NEPERA LAGOON SITE
MAYBROOK, NY
MAY 1995

APPENDIX A

CONTACT / ADDRESS	SUBJECT	DATE SENT	REPLY DATE
Kathy Schneider Information Services Significant Habitat Unit NYSDEC 700 Troy-Schenectady Road Latham, New York 12110 May 10, 1995	NATURAL HERITAGE PROGRAM SIGNIFICANT HABITATS	5/10/95	5/23/95
Timothy Preddice Environmental Disturbance Investigation Unit NYSDEC Hale Creek Field Station 182 Steele Avenue Extension Gloversville, New York 12078	OBSERVED EFFECTS INFO.	5/10/95	5/16/95
Margaret Duke Supervisor of Regulatory Affairs NYSDEC Region 3 21 South Putt Corners Road New Paltz, New York 12561-1696	FRESHWATER WETLAND & STREAM CLASSIFICATION	5/10/95	5/31/95
Wayne Elliot Fisheries Manager NYS Dept. of Environmental Conservation Region 3 21 South Putt Corners Road New Paltz, New York 12561-1696	FISHERIES RESOURCES	5/10/95	5/24/95

CONTACT / ADDRESS	SUBJECT	DATE SENT	REPLY DATE
Theodore Kerpez NYSDEC Region 3 21 South Putt Corners Road New Paltz, New York 12561-1696	SIGNIFICANT HABITATS	5/10/95	6/6/95
Ward Stone Wildlife Pathology Unit NYS Dept. of Environmental Conservation Wildlife Resource Center Delmar, New York 12054	OBSERVED EFFECTS	5/10/95	
Glen Cole Wildlife Manager NYS Dept. of Environmental Conservation Region 3 21 South Putt Corners Road New Paltz, New York 12561-1696	WILDLIFE RESOURCES	5/10/95	
Ralph O'Keefe Lockwood Mapping, Inc. 36 Karlan Drive Rochester, New York 14617	AERIAL PHOTOGRAPHY	6/6/95	6/14/95

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Wildlife Resources Center
700 Troy-Schenectady Road
Latham, NY 12110-2400
(518) 783-3932

May 23, 1995

Mark A. Lindberg
Fine Line Technical Services
12492 Smith Road
Medina, New York 14103

Dear Mr. Lindberg:

We have reviewed the New York Natural Heritage Program files with respect to your recent request for biological information concerning two Remedial Investigation sites, Nepera Former Lagoon, and Harriman sites, as indicated on your enclosed maps, Towns of Hamptonburgh and Harriman, Orange County, New York State.

Enclosed is a computer printout covering the area you requested to be reviewed by our staff. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

This response applies only to known occurrences of rare animals, plants and natural communities and/or significant wildlife habitats. You should contact our regional office, Division of Regulatory Affairs, at the address enclosed for information regarding any regulated areas or permits that may be required (e.g., regulated wetlands) under State Law.

If this proposed project is still active one year from now we recommend that you contact us again so that we can update this response.

Sincerely,
Information Services
New York Natural Heritage Program

Encs.
cc: Reg. 3, Wildlife Mgr.
Reg. 3, Fisheries Mgr.
Peter Nye, ESU, Delmar
Dean Bouton, Fisheries, Wolf Rd.

BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 22 MAY 1995
Prepared by N.Y.S.D.E.C. Natural Heritage Program, Latham New York

(This report contains sensitive information which should be treated in a sensitive manner. Refer to the users guide for explanation of codes and ranks.)

* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PRECISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE	USE
* ORANGE												
WOODBURY	POPOLOPEN LAKE 411941 740654	M	1957	F	CLEMMYS MUHLENBERGII BOG TURTLE	REPTILE	E	C2	G3 S2	ESU	4107431	8
WOODBURY	POPOLOPEN LAKE 411747 740615	M	1924	H	ERIMYZON SUCETTA LAKE CHUBSUCKER	FISH	T		G5 S1	FISHERIES	4107431	1

2 Records Processed

USERS GUIDE TO NATURAL HERITAGE DATA

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BIOLOGICAL AND CONSERVATION DATA SYSTEM (BCD) ELEMENT OCCURRENCE REPORTS:

COUNTY NAME: County where the element occurrence is located.
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SCIENTIFIC NAME: Scientific name of the element occurrence.
COMMON NAME: Common name of the element occurrence.
ELEMENT TYPE: Type of element (i.e. plant, community, other, etc.)
LAST SEEN: Year element occurrence last observed extant at this location.
EO RANK: Comparative evaluation summarizing the quality, condition, viability and defensibility of this occurrence. Use in combination with LAST SEEN and PRECISION.

A-E = Extant: A=excellent, B=good, C=marginal, D=poor, E=extant but with insufficiently data to assign a rank of A - D.
F = Failed to find. Did not locate species, but habitat is still there and further field work is justified.
H = Historic. Historic occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.

NYS STATUS - animals: Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E = Endangered Species: any species which meet one of the following criteria:
1) Any native species in imminent danger of extirpation or extinction in New York.
2) Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T = Threatened Species: any species which meet one of the following criteria:
1) Any native species likely to become an endangered species within the foreseeable future in NY.
2) Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC = Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).

P = Protected Wildlife (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.

U = Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.

G = Game (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NYS STATUS - plants: The following categories are defined in regulation 6NYCRR part 193.3 and apply to New York State Environmental Conservation Law section 9-1503.

(blank) = no state status
E = Endangered Species: listed species are those with:
1) 5 or fewer extant sites, or
2) fewer than 1,000 individuals, or
3) restricted to fewer than 4 U.S.G.S. 7 1/2 minute topographical maps, or
4) species listed as endangered by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.
T = Threatened: listed species are those with:
1) 6 to fewer than 20 extant sites, or
2) 1,000 to fewer than 3,000 individuals, or
3) restricted to not less than 4 or more than 7 U.S.G.S. 7 and 1/2 minute topographical maps, or
4) listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.
R = Rare: listed species have:
1) 20 to 35 extant sites, or
2) 3,000 to 5,000 individuals statewide.
U = Unprotected
V = Exploitably vulnerable: listed species are likely to become threatened in the near future throughout all or a significant portion of their range within the state if causal factors continue unchecked.

NYS STATUS - communities: At this time there are no categories defined for communities.

continued on next page

FEDERAL STATUS (plants and animals): The categories of federal status are defined by the United States Department of the Interior as part of the 1974 Endangered Species Act (see Code of Federal Regulations 50 CFR 17). The species listed under this law are enumerated in the Federal Register vol. 50, no. 188, pp. 39526 - 39527.

(blank) = No Federal Endangered Species Act status.
LE = The taxon is formally listed as endangered.
LT = The taxon is formally listed as threatened.
LELT = The taxon is formally listed as endangered in part of its range and threatened in other parts.
PE = The taxon is proposed as endangered.
PT = The taxon is proposed as threatened.
C1 = Candidate, category 1 - There is sufficient information to list the taxon as endangered or threatened.
C2 = Candidate, category 2 - The taxon may be appropriate for listing but more data are needed.
3A = The taxon considered extinct by the U. S. Fish and Wildlife Service.
3B = The taxon is no longer considered taxonomically distinct by the U.S. Fish and Wildlife Service & thus not appropriate for listing.
3C = The taxon has been shown to be more abundant, widespread, or better protected than previously thought and therefore not in need of official listing.
* = The taxon is possibly extinct.
** = The taxon is thought to be extinct in the wild but extant in cultivation.

Additional codes:
(C2NL) = Heritage code indicating that the taxon is a candidate in some areas, not listed in other areas.
(E/SA) = Heritage code indicating that the taxon is endangered because of similarity of appearance to other endangered species or subspecies.

FEDERAL STATUS (communities): At this time there are no categories defined for communities.

GLOBAL AND STATE RANKS (animals, plants, communities and others): Each element has a global and state rank as determined by the NY Natural Heritage Program. These ranks carry no legal weight. The global rank reflects the rarity of the element throughout the world and the state rank reflects the rarity within New York State. Infraspecific taxa are also assigned a taxon rank to reflect the infraspecific taxon's rank throughout the world.

GLOBAL RANK:
G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences), or very few remaining acres, or miles of stream) or especially vulnerable to extinction because of some factor of its biology.
G2 = Imperiled globally because of rarity (6 - 20 occurrences, or few remaining acres, or miles of stream) or very vulnerable to extinction throughout its range because of other factors.
G3 = Either rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. a physiographic region), or vulnerable to extinction throughout its range because of other factors.
G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
GH = Historically known, with the expectation that it might be rediscovered.
GX = Species believed to be extinct.
GU = Status unknown.

STATE RANK:
S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.
S2 = Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.
S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.
S4 = Apparently secure in New York State.
S5 = Demonstrably secure in New York State.
SH = Historically known from New York State, but not seen in the past 15 years.
SX = Apparently extirpated from New York State.
SA = Accidental or casual in the state.
SE = Exotic, not native to New York State.
SP = Element potentially occurs in the state but there are no occurrences reported.
SR = Reported in the state but without persuasive documentation.
SU = Status unknown.

TAXON (T) RANK: The T-ranks (T1 - T5) are defined the same way the Global ranks (G1 - G5) are but the T-rank only refers to the rarity of the subspecific taxon of the species as a whole.
T1 through T5 = See Global Rank definitions above.
Q = Indicates a question exists whether or not the taxon is a good taxonomic entity.
? = Indicates a question exists about the rank.

OFFICE USE: Information for use by the Natural Heritage Program.

SIGNIFICANT HABITAT REPORTS:

REPORT ID: Significant habitat file code.
NAME OF AREA: Site name where the significant habitat is located.
TYPE OF AREA: Type of significant habitat.
COUNTY/TOWN OR CITY: County and town where the significant habitat is located.
QUADRANGLE: Name of the USGS 7.5 minute topographic map where the significant habitat is located.
LATITUDE: Latitude coordinates (degrees, minutes, seconds) for the location of the significant habitat.
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STATUS - communities: At this time there are no categories defined for communities.

continued on next page

New York State Department of Environmental Conservation
21 South Putt Corners Road, New Paltz, NY 12561-1696
(914) 256-3000 - Division of Regulatory Services
FAX (914) 255-3042

Michael D. Zagata
Commissioner

May 31, 1995

MR MARK LINDBERG
FINE LINE TECHNICAL SERVICE
12492 SMITH RD
MEDINA NY 14103

RE: Freshwater Wetlands and Stream Classifications within a 2 mile radius of "Harriman Site" Town of Woodbury and "Former Lagoon Site" Town of Hamptonburg, Orange County

Dear Mr. Lindberg:

In response to your letter dated May 10, 1995, I am providing copies of our NYS Freshwater Wetlands Maps on which I have also identified the Stream Index numbers for streams within a 2 mile radius of your sites. I have highlighted in yellow on the maps streams with a classification of C(t) or higher. I have also enclosed copies of the Freshwater Wetlands Classification sheets and copies of pages from the NYS Codes, Rules and Regulations on which I have highlighted the portions that are pertinent to your areas of interest. Enclosed also please find a list of Freshwater Wetland Plant species copied from the NYS DEC Freshwater Wetlands Delineation Manual dated March, 1995.

I hope this is the information you are looking for.

Sincerely,

Wendy DuBois
Regulatory Services
Region 3

WD:jan

Lindberg.ltr

DIVISION OF FISH AND WILDLIFE

New York State Department of Environmental Conservation

A century of commitment... a foundation for the future

Hale Creek Field Station
182 Steele Avenue Extension
Gloversville, New York 12078
[518] 773-7318
[518] 773-7319 fax

EARTH DAY 25 1995 ENVIRONMENTAL PARTNERS

Michael D. Zagata
Commissioner

May 16, 1995

Mr. Mark A. Lindberg
Five Line Technical Service
12492 Smith Road
Medina, NY 14103

Dear Mr. Lindberg:

I searched our fish kill inventory regarding the Ramapo River. The first investigation in our record is dated 1957 and involved a suspected illegal dumping at the Channel Master Company in Ellenville. The next record involved four separate fish kills attributed to a lagoon at the Nepera Chemical Company near Harriman. These occurred in May, 1962; May, 1966; April, 1974 and May, 1976. The Nepera Chemical Company file is quite extensive and I would suggest that you send a representative to our Gloversville office to determine what information is really needed.

In 1981, the effluent from the Suffern Sewage Treatment Plant (STP) caused a fish kill. In 1986 and 1988, there were fish kills traced to the Orange County STP #1 in the town of Tuxedo. My last record for a Ramapo River fish kill was in 1991 and this was believed due to runoff from a landfill in the town of Tuxedo.

Additional information about macroinvertebrate surveys in the Ramapo River during 1986, 1991 and 1993 can be acquired by contacting Robert Bode at [518] 432-2624 or 2633. I also believe several years ago, Dr. Edward Kuzia may have performed bioassays for the Nepera Chemical Company lagoon. He can be reached at [518] 457-8819. Both of these gentlemen are with the Division of Water, NYS DEC.

If I can be of further assistance, please call me at the above number.

Sincerely,

Timothy L. Preddice

TIMOTHY L. PREDDICE
Biologist I (Aquatic)

P/b

New York State Department of Environmental Conservation
21 South Putt Corners Road, New Paltz, NY 12561-1696
(914) 256-3000 FAX (914) 255-3042

Michael D. Zagata
Commissioner

June 6, 1995

MARK A. LINDBERG
FINE LINE TECHNICAL SERVICES
12492 SMITH ROAD
MEDINA, NY 14103

RE: Fish and Wildlife Impact Analysis;

Nepara Former Lagoon, Town of Hamptonburgh,
Orange County, NY.

Harriman Plant Site, Town of Woodbury,
Orange County, NY.

Dear Mr. Lindberg:

We have reviewed the Significant Habitat and Natural Heritage Program files with respect to the above referenced project as desribed and located on your letter and map of May 10, 1995. We found no records of endangered or threatened species in the area which you indicated the project would be located.

The absence of records does not necessarily mean that endangered or threatened species do not exist on or adjacent to the site, but rather that our files currently do not contain any information on the presence of these species. Our files are continually growing as new occurrences of endangered and threatened species are discovered. In most cases, site-specific or comprehensive surveys have not been conducted. For these reasons, we cannot provide a definitive statement on the presence or absence of species. Therefore, this information should not be substituted for on-site surveys that may be required for environmental impact assessment.

Sincerely,

Ted Kerpez
Senior Wildlife Biologist
Region 3

TK:rs

NYSDEC Bureau of Fisheries
Region 3 Survey Summary
1988

RAMAPO RIVER LOWER HUDSON WATERSHED File #: 1961S
Watershed Index #: NJ-12
Stream Section - RMI 12.7 to RMI 12.7 Stream Length: 19.6 mi

Downstream Site	Upstream Site
Town: TUXEDO	Town: TUXEDO
County: ORANGE	County: ORANGE
Quad: MONROE	Quad: MONROE

Survey Purpose: FISH KILL INVESTIGATION
Survey #: 388986 Date: 07/27/88 Authority: ANGYAL

== Chemistry Data - 07/27/88 ==

Depth (ft)	Temp (F)	pH	DO (mg/l)	Alkalinity (mg CaCO3/l)	Conductivity (umho/cm)
.0	69	7.20	4.0	109.00	620

== Fish Data - 07/27/88 ==

Species	Number Caught	Minimum Length (in)	Maximum Length (in)
CARP	1	2.7	
WHITE SUCKER	2	2.0	7.7
CREEK CHUB	4	1.8	5.1
EASTERN MUDMINNOW	26	1.9	4.0

The following were present (Number caught not recorded):

WHITE SUCKER

== Gear Data ==

of Gear ployments	Gear Type	Inventory Number
1	ELECTROSHOCKER: DC GENERATOR, STREAM BRAIL	None

== Section Previously Surveyed ==
No previous surveys done on this section of water.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FISH COLLECTION OR SMALL STREAM SURVEY

Survey Lower Hudson Date 7/27/88 Authority R. Angyal

Name and key Ramapo River (NJ 12) Quad Monroe

Station location 0.1 mi above T21 County Orange

Length 300' Width 25'(25') Depth 1.4'(2.8') Acres 0.17

Flow 16 cfs Temp: A 70 W 69 Time (EST) 1000 partly cloudy

Gear 220 VDC - 3 paddles Efficiency (yg trout) _____

Young trout per acre (adjusted total) _____

Factors: W 3 N 3 H 1.7 F 2.5 Total _____

General notes:
Random collection entire 300' of shocking run. This section is channelized, and runs immediately adjacent to old Rt. 17. This part of the Ramapo, while suitable for fish survival, remains relatively heavily impacted by the Harriman Sewer Treatment Plant located three miles upstream.

Shade: 80% (excellent due to brushy cover)
Shelter: 0.15 (generally poor; only shelter provided by occasional large boulders and sunken brush)
Bottom: boulder, rubble, muck
Pool: 100% (station consisted of a long deep pool/run due to channelization)
Water turbid with septic smell evident.
Insects: high biomass of oligochaetes, leeches, midges, plus amphipods. Indicative of severe organic enrichment.

Chemistry

Conductivity:	620 µmhos	P alk:	0 ppm
pH:	7.2	MO alk:	109 ppm
Stocking policy:		DO:	4 ppm

94-14-7 (5/76)
Formerly FW-88

Name of species	Abundance	Number and description
Catostomus commersoni		2(2.0",7.7"), 0.20 lb.
Umbra pygmaea		26(1.9"-4.0"), 0.40 lb.
Semotilus atromaculatus		4(1.8"-5.1"), 0.10 lb.
Cyprinus carpio		1(2.7"), Trace weight

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

1961s

STREAM SURVEY

Name & Key of Stream Ramapo River (NJ 12) Quality Classification

Section T20 - T24 Mileage (Section) 3.6 Mileage (Entire) 20.3

County(s) Orange Town(s) Tuxedo & Woodbury

Quadrangle(s) Monroe

Watershed Lower Hudson Date 7/27/88 Authority R. Angyal

Previous Stocking

Postage Mileage (Section) Posted Mileage (Entire)

Accessibility (Section) Accessibility (Entire)

Trout inhabited area (Section) Trout inhabited area (Entire)

Special features (dams, falls, pollution, dredging, erosion, etc.) Survey conducted to assess any lingering effects from 1987 fishkills due to Harriman Sewer Treatment Plant malfunctions. Based on this survey, the fish fauna appears to have recovered to pre-kill conditions.

94-14-15(2/82)

Station Location	Upper (3)	Middle (2)	T21 Lower (1)
Average Width (Actual) (Normal)			25'(25')
Depth			1.4'(2.3')
Volume			16 c
Velocity			0.6 ft/sec
Color			brown
Turbidity			moderate
Altitude			520'
Bottom			bo,rb,muck
Temperature	A. W.	A. W.	70 A. W.
Time-Weather			1000 partly cloudy
Habitat % Pool Shelter Cover	% G.	% G.	2 points 100 % G. 0.15 Hs = 1 0.8 Hc=3
Fertility Forage Soil Type			Ff = 2(4) Fc = 3(620 umhos)
Wild Trout (F) No. per Acre			
Trout: Non-Trout Estimate by Weight			
Shocker Efficiency Adjusted No. per Acre			
Length of Shocker Section (feet)			300'

NEW YORK STATE CONSERVATION D RTMENT

STREAM SURVEY

Number and name of stream: NJ12 (Ramapo River)

Section: trib. 20 to trib. 24 Length:

Tributary to: Wanaque R.-Passaic R.-Newark Bay-Atlantic Ocean Town: Tuxedo & Woodbury

River system: Lower Hudson Quadrangle: Schunemunk

County: Orange Authority: Downs & Bond Date: July 21,1936

Previous stocking:

Remarks: Coll. Bailey #95 - NJ12 (Ramapo R.) just below T24 - Cat. No.3579-3588, inc.

gion Station	Upper	0.1 mile below Middle T24	Lower
dth		5'-10'x4"-18"	
ow		3/4 cfs	
locity		rdpid.	
lor		White	
rbidity		C	
temperature		71°	
ter temperature		73.5	
ir and weather		10:15 pt.clo.	
tude		519	
ls: size, type, frequency		1-3-2	
l grade		B	
Food: ayflies		Fair	
oneflies			
ddisflies		abdt.	
ckflies			
dges		common	
imp			
inows		common-	
ier forage		scuds-Com +	
grade		II+	
n composition		r;gr, sd.	
ition		Elodeo,potomo-geton,arrow,algae	
s tion			
and temperature			
ind Falls ion		above road at Station P10l6M	

Req. 356. FG0Je38. 6-13-38-10,000 (16-9048) Survey Lower Hudson

Drainage N.J. Ramapo Coll. no. Bailey #95

Locality NJ12 (Ramapo R.) just above T24
2.2 mi. S.W. of Central Valley

County Orange Quadrangle Schunemunk Elevation 530'

Water Clear white Flow 1 cfs Width 6'-20'

Vegetation elodea, and chara abundant

Bottom Rubble, sd., gr. Current Mod.-swift

Shore Meadow Distance from shore shore to shore

Temperature: Air 70°F Water 74°F Time 10:50A. Weather Clear

Depth of capture 0 - 2' Depth of water 0 - 2'

Method of capture 6' seine

Collected by R.M.Bailey, K.F. Sagler Date July 30,1936

Orig. preserv. formalin 10% Time 10;30-10:50 AM

General notes: History of stocking and angling; fishing conditions and size of fish, etc.

Collection taken just below a pond. Stream here rather small for game fish - otherwise well suited for largemouth bass.

Name of species	Abundance	Seine	Gill net	Number and description
Catostomus commersonnii	Com.			Yg.-juv.
Ambloplites rupestris	Com.			1 juv.retained.
Notropis cornutus	Com.			2 juv.
Aplites Salmoides	Com.			5 yg.-37.40,60, 39,40 MM.
Lencosomus corporalis	Com.			3 juv.
Fundulus d diaphanus	Com.			5 ad.
Lepomis auritus	1			1 ad.stunted 93 MM
Cambarus sp.	Abdt.			6 sp.
Rana clamitans	1			1 ad. to Cornell
Hellgramnite	1			1 sp.

Cat. No.3579-3588 Inc.

Height		2½-3 acres	
Area and depth of pond			
Pollution Location of outflow			
Nature, extent, index organisms			
Character of region		open poor cover	

Posted area:

Section of stream Both sides of road Mileage 3-4

Owner's name and address W.A. Harriman

Miscellaneous (1) Sm.B., common - up to 12"
Suckers abdt; common sunfish & long-eared sunfish common + fallfish common black-nosed dace - fair.

Water suitable for:

	Section	*Mileage*	*Number*
S.			
B. T.			
R. T.			
Other fish			

Tributary number	Length	Width and depth	Flow	Pools	Food	Air	Water	Time and weather	Bottom	Cover	Stocking policy
20S											✓
20a	0.3 mile										Not seen
1-20a	0.1 mile										" "
21 mth.	0.5 mile		Dry								Dry-None
1-21	0.1 mi.										Not seen
22	0.2mth. 0.6 mi.		"								Dry, none
1016b	I										" ✓ "
1016c	I										" ✓ "
1016d	I										" ✓ "
23S											✓
23A	0.7 mi.										Not seen
1016j											✓
1016k											✓
23b	1.6 mi.										Not seen
1016	1-23b										✓
1016m											✓

STREAM SURVEY

Name & Key of Stream RAMAPO R. (NJ 12)

Section T20-T24 Mileage (Section) 3.6 mi. Mileage (Entire)

County(s) Orange Town(s) Tuxedo & Woodbury

Quadrangle(s) Schunemunk

Watershed IH Date 17 July 1956 Authority Gould

Previous Stocking

Postage Mileage (Section) Posted Mileage (Entire)

Accessibility (Section) Accessibility (Entire)

Trout inhabited area (Section) Trout inhabited area (Entire)

Special features (dams, falls, pollution, dredging, erosion, etc.)

1/56/10M

Average Width (Actual) (Normal)			22' (20'-25
Depth			12" (6"-18"
Volume			20 cfs
Velocity			
Color			Wh.
Turbidity			
Altitude			650
Bottom			Sd, gr.
Temperature	A. W.	A. W.	79 A.
Time-Weather			10:50A, cl
Habitat % Pool Shelter Cover	% G.	% G.	1 90 % 1 2
Fertility Forage Soil Type			1 1 1
Wild Trout (F) No. per Acre			
Trout: Non-Trout Estimate by Weight			3
Shocker Efficiency Adjusted No. per Acre			
Length of Shocker Section (feet)			300'

Trib. No.	Location Station	Length	Width	Flow	Yg. Trout	Non-Trout	Hab-itat	Fer-tility	Temp Air	Temp Water	Weather Time	Stocking Policy
20S												
20á	1.3 mi.											Small, none
1-20a	0.1 mi.											" "
21 mth.	0.5 mi.			Dry								None
1-21	0.1 mi.											"
22	0.6 mi.			"								"
P1016b												
P1016c												
P1016d												
235												
23A	0.7 mi.											Small, none
P1016	1-23b											
P1016m.												

Recommendations: Fishing rights, improvement, spearing, commercial bait, set lines or other:

Posting Notes

Miscellaneous:

~~Stocking Policy~~ Fish Species:

Boleosoma n. olmstedi	8
Catostomuc c. commersonnii .	4
Lepomis gibbosus	2
Ambloplites rupestris	1
Salmo trutta	1
Esox vermaculatus	3
Amieurus nebulosus	1

W N H F
3 3 1 1 = 9 = 35.2 PFM

35.2 x 22 = 774.4 PM
774.4 x 0.5 = 387 BTY
387 x 1.6 = 619 BTY

538

5000 FG-27-Ap 37 Req. 183 (16-7736)

NEW YORK STATE CONSERVATION DEPARTMENT

STREAM SURVEY

Number and name of stream 5

Section E Length 3.1 miles

Tributary to 20-89 Hudson River Town Hamptonburg & Montgomery

River system Lower Hudson Quadrangle Schunemunk & Newburgh

County Orange Authority Bromley & Downs Date July 9, 1936

P. is stocking

Remarks: Coll. C. W. G. #34 5-20 ((Otter Kill) 0.4 mile above T #1. Cat. #2398-2401 inc

Pond Unit
July 11, 1936

~~Below P263a~~

Region Station	Upper	Middle 0.5 above 1-5	Lower 0-2 below 1-5
Width		3'-6'x2"-6"	3'-6'x3"-6"
Flow Stillwater		75 gpm	75 gpm
Velocity no overflow		slow	slow
Color from dam		W	W
Turbidity		C	C
Air temperature		88°	95°
Water temperature		72°	78°
Hour and weather		11:55 Clear	1:00 Clear
Altitude		350	340
Pools: size, type, frequency			
Pool grade		Est. B	Est. B.
Fish Food: Mayflies			
Stoneflies			
Caddisflies			
Blackflies			
Midges			
Shrimp			
Minnows			
Other forage			
Food grade		Est. I	Est. II
Bottom composition		gr. bo. r	gr. m
Vegetation			
Springs Location			
Flow and temperature			
Dams and Falls Location 5-6' below P263a			

Req. 380. 8QQJc.68. 6-13-38-10,000 (10-9043) Survey Lower Hudson

Drainage Hudson River Coll. no. C. W. Green #34

Locality 5-20 (Otter Kill)-H89 (Moodna Cr.) 0-4 mile above Tl. ¼ mile SE Maybrook

County Orange Quadrangle Schunemunk Elevation 350'

Water clear Flow 40 gpm Width 6-10'

Vegetation Potomogetons

Bottom mud Current slow

Shore Distance from shore

Temperature: Air 84 Water 74 Time 10AM Weather clear

Depth of capture 4" to 18" Depth of water to 25"

Method of capture 6' seine

Collected by Tasker & Nottingham Date July 14, 1936

Orig. preserv. formalin Time 10-11 AM

General notes: History of stocking and angling; fishing conditions and size of fish, etc.

Fish predators very abundant, i. e.
Notoneitidae
Belostomatidae
Odonata naiads
Waterbeetles and Gerrids very abundant also.

538.1

Name of species	dance	Seine	net	Number and description
Erimyzon o. oblongus				3 ad. 7 yg.
Notropis c. cornutus				1 yg.
Notropis bifrenatus				1 yg.
Esox americanus				9 yg.-42, to 59mm

Cat. no. 2398-2401 inc.

Names of species	No. and description
*Erimyzon o. oblongus	2 yg.
*Notemigonus c. crysoleucas	5 yg.
Esox americanus	2 ad., 1 yg.-242 64mm. 244
Esox niger	1 juv.=211mm.
Ambloplites rupestris	3 ad.-largest-195 mm.
	1 juv., 1 yg.25mm
Aplites salmoides (very abundant)	8 yg.=37-55mm. (dozens thrown back)
Eupomotis gibbosus	5 ad., 6 juv., Largest ad=128mm.
	2 yg. 23& 19mm.
*Lepomis auritus	1 juv.
Pomoxis sparoides	1 ad.=134mm.
	1 yg. 37 mm.

Cat. no. 2498-2506, inc.

Drainage Hudson River Coll. no. CWGreene #35

Locality 20 (Otter Kill) -H89 (Moodna Cr.) 0.5 mile above mouth, 1 3/4 miles NW Washingtonville

County Orange Quadrangle Schunemunk

Elev. 335' Water white Flow practically none Width 20-50'

Vegetation Potomogetons (2 kinds), Chara, Ceratophyllum & duck weed

Bottom r.gr. and mud current standing water

Shore

Temperature: Air 89.5 Water 80 Time 11:30 AM

Depth of capture 6"-2.5' Depth of water to 2.5'

Method of capture 12' seine

Collected by Tasker & Nottingham Date July 14, 1

Orig. preserv formalin Time 11-12 AM

Almost pond conditions here with an abundance of pond weeds and a muddy bottom.

Lm. B. young very abundant.

534.3

Height			
Area and depth of pond			
Pollution Location of outflow			
Nature, extent, index organisms			
Character of region		Cover good	open pasture land valley cover poor

Posted area:

Section of stream _____ Mileage _____

Owner's name and address _____

Miscellaneous Trout might possibly be stocked here in the upper parts of this stream. Toward the mouth the cover falls and temperature rises.

Water suitable for:

	Section	Mileage	Number
S. T.	Lower 0.5 mi.	Warm, none	
B. T.	Next 1.5 mi.	100 B. T. 6" size	
R. T.	Remainder, small,	none	

ibutary umber	Length	Width and depth	Flow	Pools	Food	Air	Water	Time and weather	Bottom	Cover	Stocking policy
Scource 0.3 mi			Stagnant pools								Small, non
62-1		Brushy swamp hollow - outlet stagnant									
63		Rush bordered Pond with much veg.				¼ acre		No dam			
0.3 mth 0.75 mi											Dry, none
263a	(Maybrook Reservoir)										

5000 FG-27-Ap 37 Req. 183 (16-7736)

NEW YORK STATE CONSERVATION DEPARTMENT

STREAM SURVEY

Number and name of stream 6 (Beaver Cr.) or (Beaverdam Crk.)

Section E Length 3.8 miles

Tributary to 20-89 Hudson River Town Hamptonburg & Montgomery

River system Lower Hudson Quadrangle Schunemunk & Newburgh

County Orange Authority Bromley & Downs Date July 9, 1936

Previous stocking S. T. fing. 3,000 (1927)

Remarks:

(1)

Region Station	Upper	Middle 0.1 below 2	Lower 0.1 mth
Width		3'x2"-8"	2'-4'x3"-6"
Flow		75-100 gpm	100 gpm
Velocity		slow to Mod	Slug
Color		W	W
Turbidity		C	C
Air temperature		95	95
Water temperature		80	89
Hour and weather		2:15 clear	2:00 clear
Altitude			
Pools: size, type, frequency		2-2-2	2-3-2
Pool grade		B	B-
Fish Food: Mayflies		C-	C
Stoneflies			
Caddisflies		C-	C
Blackflies			
Midges			
Shrimp		C	C
Minnows		few	few
Other forage			
Food grade		II -	II
Bottom composition		Sl. R. M	R. M.
Vegetation		Moss, grass	Pot. moss
Springs Location			
Flow and temperature			
Dams and Falls Location			

Height			
Area and depth of pond			
Pollution Location of outflow			
Nature, extent, index organisms			
Character of region		Open pasture land Cover poor	Wide erroded Valley Cover poor

Posted area:

Section of stream_____ Mileage_____

Owner's name and address_____

Miscellaneous (1) Sunfish observed

Water suitable for:

	Section	Mileage	Number
S. T.	Mouth to trib. 1,	Warm, none	
B. T.	Next 2 miles,	200 B.T.	
R. T.	Remainder,	small, none	

Other fish_____

Tributary number	Length	Width and depth	Flow	Pools	Food	Air	Water	Time and weather	Bottom	Cover	Stocking policy
1 ~~0.5~~	1.2 mi										Not seer
1-1	1.7 mi		dry								Dry, nor
above mth											✓
P263 c-1											✓
P263 d											✓
2 0.1 mth	0.3 mi		dry						c		Dry, no
P263 e- 2											✓
P264	Practically dry		(very small)								✓
P265	50'	diam. 100'	long grass bordered mund pond								✓
P265 a											✓
P266	Practically dry		Very small								✓
P266a											✓
P266b											✓
P266c											✓
P266d											✓

534

8-14-51-4M (1D-90)

NEW YORK STATE CONSERVATION DEPARTMENT

STREAM SURVEY

Number and name of stream 20 (Otter Kill, upper Black Meadow Cr.)

Section Mouth to trib. 7 Length E 18.7 miles

Tributary to 89-Hudson River Town Blooming Grove & Hamptonburg

River system Lower Hudson Quadrangle Schunemunk & Goshen

County Orange Authority Bromley & Downs Date July 9, 1936

Previous stocking See separate sheet

Remarks: Coll. CW Greene 35-20(Otterkill)-H89, 0.5 mile above mouth-
Cat. No. 2498-2506.Inc.

Region / Station	Upper	Middle	Lower
	0.8 mile above T5		0.5 miles above mouth
Width	30-50'x1'-4"		6-20'x1'-6"
Flow	too slow to estimate		2 cfs
Velocity	sluggish		mod. -swift
Color	white		white
Turbidity	clear		clear
Air temperature	95°		90°
Water temperature	82		83
Hour and weather	1:15 clear		11:20pt. cloudy
Altitude	1-2-1		330
Pools: size, type, frequency	A-		2-3-2
Pool grade	C+		B-
Fish Food: Mayflies			C+
Stoneflies	C		
Caddisflies			A
Blackflies			C
Midges			
Shrimp			
Minnows			C-
Other forage	Sow bugs		
ood grade	II+		I
ottom composition	r, bo		slr, bo, r.
egetation	Potomogeton		
prings Location			
Flow and temperature			
ams and Falls Location			

Downes & Bromley

Temperature and Volume 20 (OtterKill)-H89 7/7/36

Location	Air	Water	Volume	Time &Weather
0.4 mi. below T1	85°	85°	1½-2 cfs. shallow, still water Turtles abdt.	5:00 clear
0.6 mi. above T5	85°	80°	Could not Estimate	5:15 clear
0.4 mi. above T10	85°	84°	Could not estimate	5:30 clear
0.3 miles above T 16	81°	80°	1-1½cfs	5:45 clear
0.4 mi. below P308	81°	79°	3/4-1 cfs	6:00 clear
0.5 mi. below T26	81°	74°	no flow-standing pools	6:15 clear

Previous stocking of T 20 (Otter Kill) of H89

	1926	1927	1928	1929	1930	1931	1932	1933	1935
SmB. fry	500			1,500		1,500	2,000	2,000	2,000
Y.P. fing.	2,000			1,000	4,000			4,500	
B.T. fing.		4,000	3,200		3,600		375		
Pp, fry				400,000					
SmB.fing.						200			
LmB.fing.								1,000	
Bh.C.fing.								900	

Tributary number	Length	Width and depth	Flow	Pools	Food	Air	Water	Time and weather	Bottom	Cover	Stocking policy
P259a											x
1S											x
1a	0.8 mile										Not se
P259h-1a											x
P260 (Browns Pond)											x
2 0.4 mile above mo.	1.8 miles		dry								Dry, n
P260b-2											x
3S											x
0.4 above mouth	2.0 miles		dry								Dry, n
P261 b-4											x
5S											x
a	0.1 mile										not see
263b-5											x
(Beaverdam Bk.)S											x

Height			
Area and depth of pond			
Pollution Location of outflow			
Nature, extent, index organisms			
Character of region	Wide flat valley stream bordered with a few large willows & maples cover, poor		Wide erod valley, c er and sh er poor

Posted area:

Section of stream _____ Mileage _____

Owner's name and address _____

Miscellaneous 4' damat P260 Downs & Bromley, July 7, 193

*Looks like good bass water

Water suitable for:

	Section	Mileage	Number
S. T.	Mouth to trib 6, 2.8 mi.,	Co. B.,	Bh. C. (LmB, NSA
B. T.	Trib 6 to trib. 20, 10.3 mi.,		Bh. C.
R. T.	Remainder, Small; none		

Other fish _____

New York State Department of Environmental Conservation
DIVISION OF FISH AND WILDLIFE
21 South Putt Corners Road, New Paltz, NY 12561-1696
(914) 256-3000 FAX (914) 255-3042
A century of commitment... a foundation for the future
Michael D. Zagata
Commissioner

May 24, 1995

Mr. Mark A. Lindberg
Fine Line Technical Services
12492 Smith Rd.
Medina, NY 14103

Dear Sir:

Enclosed find the copies of the fisheries survey reports you requested for the Ramapo River and Otter Kill, Orange County, NY. Please don't hesitate to contact me if you have any further questions.

Sincerely yours,

Robert K. Angyal

Robert K. Angyal,
Senior Aquatic Biologist

APPENDIX B

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/17/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	RED MAPLE HARDWOOD SWAMP	**PHOTO NO.**	905/905
OBS. POINT	1	**FACING:**	S/SE

VEGETATION

SPECIES	STRATA	% COVER
ACER RUBRUM	T	50
ULMUS AMERICANUM	T	20
QUERCUS PALUSTRIS	T	20
VACCINIUM CORYMBOSUM	S	60
VIBURNUM DENTATUM	S	10
CORNUS AMOMUM	S	10
OSMUNDA REGALIS	H	5
ONOCLEA SENSIBILIS	H	10
SYMPLOCARPUS FOETIDUS	H	10
CAREX STRICTA	H	10
OSMUNDA CINNAMOMEA	H	5
TOXICODENDRON RADICANS	H	<5
ARISAEMA TRIPHYLLUM	H	<5

HYDROLOGY

INUNDATED	YES	**DEPTH (INCHES)**	10

OTHER INDICATORS:

LEAF STAIN	X	**BUTTRESSING**	X
SED. DEPOSITS		**ADV. ROOTS**	X
WATER MARKS:	X	**DEBRIS**	
TOPOGRAPHY	X		

WILDLIFE

OBSERVED: YELLOW SHAFTED FLICKER, REDTAIL HAWK, CROW

TRACKS/SCAT:

COMMENTS:

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/17/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	R. MAPLE HDWOOD SWAMP/EMERGENT	**PHOTO NO.**	936
OBS. POINT	2	**FACING:**	N

VEGETATION

SPECIES	STRATA	% COVER
ACER RUBRUM	T	10
QUERCUS PALUSTRIS	T	60
FRAXINUS PENNSYLVANICA	T	10
SPARGANIUM AMERICANUM	H	20
JUNCUS EFFUSUS	H	20
PHALARIS ARUNDINACEA	H	20
ONOCLEA SENSIBILIS	H	5
CAREX STRICTA	H	10

HYDROLOGY

INUNDATED	X	**DEPTH (INCHES)**	10

OTHER INDICATORS:

LEAF STAIN	X	**BUTTRESSING**	X
SED. DEPOSITS		**ADV. ROOTS**	X
WATER MARKS:	X	**DEBRIS**	
TOPOGRAPHY	X		

WILDLIFE

OBSERVED: FROGS

TRACKS/SCAT:

COMMENTS:

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/17/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	APPALACHIAN OAK-HICKORY FOREST	**PHOTO NO.**	952/954
OBS. POINT	3	**FACING:**	W/W

VEGETATION

SPECIES	STRATA	% COVER
PRUNUS SEROTINA	T	10
QUERCUS RUBRA	T	10
CARYA OVATA	T	10
ACER SACCHARINUM	T	10
FRAXINUS AMERICANUM	T	10
ULMUS AMERICANUM	T	5
CRATAEGUS SP.	T	5
PYRUS MALUS	T	<5
PRUNUS VIRGINIANA	S	10
CORNUS FLORIDA	S	<5
CORNUS FOEMINA	S	5
ALLIARIA OFFICINALIS	H	80
PARTHENOCISUS QUINQUEFOLIA	H	10
IMPATIENS SP.	H	<5
VIOLA CONSPERSA	H	<5

HYDROLOGY

INUNDATED _____ **DEPTH (INCHES)** _____

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED: SQUIRREL, SCARLET TANANGER

TRACKS/SCAT: DEER, TURKEY,

COMMENTS:

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/17/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	FLOODPLAIN FOREST	**PHOTO NO.**	1036
OBS. POINT	4	**FACING:**	SE

VEGETATION

SPECIES	STRATA	% COVER
QUERCUS ALBA	T	20
QUERCUS PALUSTRIS	T	20
ACER RUBRUM	T	10
FRAXINUS PENNSYLVANICA	T	10
ULMUS AMERICANA	T	10
LONICERA TARTARICA	S	10
CORNUS FOEMINA	S	10
TOXICODENDRON RADICANS	S	5
TOVARA VIRGINIANA	H	5
SYMPLOCARPUS FOETIDUS	H	5
LYSIMACHIA NUMMULARIA	H	10
CALTHA PALUSTRIS	H	10
CAREX SPP.	H	5
IMPATIENS SP.	H	5
ARISAEMA ATRORUBENS	H	5

HYDROLOGY

INUNDATED SATURATED **DEPTH (INCHES)**

OTHER INDICATORS:

LEAF STAIN	X	**BUTTRESSING**	X
SED. DEPOSITS	X	**ADV. ROOTS**	X
WATER MARKS:	X	**DEBRIS**	X
TOPOGRAPHY	X		

WILDLIFE

OBSERVED:

TRACKS/SCAT: RACCOON, DEER

COMMENTS:

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/17/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	BACKWATER SLOUGH	**PHOTO NO.**	
OBS. POINT	5	**FACING:**	
	MOUTH OF BEAVERDAM BROOK		

VEGETATION

SPECIES	**STRATA**	**% COVER**
AQUATIC VEGETATION		
SAGITTARIA LATIFOLIA	H	10
LYTHRUM SALICARIA	H	10
CERATOPHYLLUM DEMERSUM	H	30
POTAMOGETON SPP.	H	10

HYDROLOGY

INUNDATED YES **DEPTH (INCHES)** 14

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED:

TRACKS/SCAT: RACCOON

COMMENTS: THIS AREA MAY HAVE BEEN EXCAVATED (SOIL PILES).

SUBSTRATE: ROCKS, GRAVEL, SAND, SILT WIDTH: 30 FT. FLOW: SLUGGISH

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/17/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	MAIN CHANNEL STREAM	**PHOTO NO.**	1048/1048
OBS. POINT	6	**FACING:**	E/W
	OTTER KILL		

VEGETATION

SPECIES	**STRATA**	**% COVER**
AQUATIC VEGETATION		
POLYGONUM HYDROPIPEROIDES	H	10
SAGITTARIA LATIFOLIA	H	<5
POTAMOGETON SPP.	H	<5

HYDROLOGY

INUNDATED X **DEPTH (INCHES)** 24

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED:

TRACKS/SCAT: DEER, RACCOON

COMMENTS: WIDTH: 40 FT, SUBSTRATE:ROCKS, SILT, CLAY, WATER: CLEAR, STAINED BROWN

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/17/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	APPALACHIAN OAK-HICKORY FOREST	**PHOTO NO.**	1117
OBS. POINT	7	**FACING:**	W

VEGETATION

SPECIES	STRATA	% COVER
QUERCUS RUBRA	T	20
FRAXINUS AMERICANA	T	10
CARYA OVATA	T	5
JUGLANS CINEREA	T	5
ULMUS AMERICANA	T	15
ACER SACCHARUM	T	10
VIBURNUM PRUNIFOLIUM	S	5
CORNUS FOEMINA	S	5
POTENTILLA SIMPLEX	H	5

HYDROLOGY

INUNDATED _____ **DEPTH (INCHES)** _____

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED:

TRACKS/SCAT: DEER, TURKEY

COMMENTS: NEAR ABANDONDED RAIL LINE

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/17/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	SUCCESSIONAL OLD FIELD/SHRUB	**PHOTO NO.**	1150/1152
OBS. POINT	8	**FACING:**	SW/W
	FORMER LAGOON AREA		

VEGETATION

SPECIES	STRATA	% COVER
BETULA POPULIFOLIA	S	15
QUERCUS RUBRUM	S	<5
JUNIPERUS VIRGINIANA	S	<5
RHUS TYPHINA	S	5
POPULUS TREMULOIDES	S	5
ANDROPOGON VIRGINICUS	H	30
SOLIDAGO ALTISSIMA	H	5
CHRYSANTEMUM LEUCANTHEMUM	H	5
FRAGARIA VIRGINIANA	H	5
AMBROSIA ARTEMISIIFOLIA	H	5
CENTAUREA MACULOSA	H	5
HIERACIUM PILOSELLA	H	<5
DAUCUS CAROTA	H	5
VERBASCUM THAPSUS	H	<5
TRIFOLIUM PRATENSE	H	<5

HYDROLOGY

INUNDATED _____ **DEPTH (INCHES)** _____

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED:

TRACKS/SCAT:

COMMENTS: FORMER LAGOON AREAS: SOILS DISTURBED

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/17/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	SHALLOW EMERGENT MARSH	**PHOTO NO.**	1238/1246
OBS. POINT	9	**FACING:**	N/S
	MARSH HEADWATER STREAM		

VEGETATION

SPECIES	**STRATA**	**% COVER**
CORNUS AMOMUM	S	<5
PHALARIS ARUNDINACEA	H	20
LYTHRUM SALICARIA	H	40
SPARGANIUM AMERICANUM	H	10
TYPHA LATIFOLIA	H	<5
CAREX STRICTA	H	5
CICUTA MACULATA	H	<5
SYMPLOCARPUS FOETIDUS	H	5
IMPATIENS SPP.	H	5
EUTHANIA GRAMINIFOLIA	H	5
JUNCUS EFFUSUS	H	5
POLYGONUM HYDROPIPER	H	<5

HYDROLOGY

INUNDATED SATURATED **DEPTH (INCHES)**

OTHER INDICATORS:

LEAF STAIN	X	**BUTTRESSING**	
SED. DEPOSITS	X	**ADV. ROOTS**	
WATER MARKS:	X	**DEBRIS**	X
TOPOGRAPHY	X		

WILDLIFE

OBSERVED:

TRACKS/SCAT: RACCOON, RW BLACKBIRD,

COMMENTS:

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/18/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	MAIN CHANNEL STREAM	**PHOTO NO.**	NONE
OBS. POINT	10	**FACING:**	

VEGETATION

SPECIES	STRATA	% COVER
AQUATIC VEGETATION		
NUPHAR VARIEGATUM	H	5
POTAMOGETON SPP.	H	5
CERATOPHYLLUM DEMERSUM	H	10
POLYGONUM AMPHIBIUM	H	5
SAGITTARIA SPP.	H	<5
IRIS VERSICOLOR	H	<5
LYTHRUM SALICARIA	H	10
ONOCLEA SENSIBILIS	H	5
PHALARIS ARUNDINACEA		30

HYDROLOGY

INUNDATED	X	**DEPTH (INCHES)**	36

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED:	CARP, FROGS
TRACKS/SCAT:	RACCOON
COMMENTS:	WIDTH: 50 FT, SUBSTRATE: ROCKS, SANDY CLAY, SILT

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/18/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	APPALACHIAN OAK-HICKORY FOREST	**PHOTO NO.**	NONE
OBS. POINT	11	**FACING:**	

VEGETATION

SPECIES	STRATA	% COVER
QUERCUS RUBRUM	T	10
ACER RUBRUM	T	10
ULMUS AMERICANA	T	20
FRAXINUS AMERICANA	T	10
CARYA OVATA	T	<5
ACER SACCHARUM	T	10
CORNUS FOEMINA	S	5
PARTHENOCISSUS QUINQUEFOLIA	H	5
TOXICODENDRON RADICANS	H	10

HYDROLOGY

INUNDATED _____ **DEPTH (INCHES)** _____

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED: GREAT HORNED OWL, WEASEL

TRACKS/SCAT: TURKEY, DEER

COMMENTS:

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/18/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	SHRUB SWAMP	**PHOTO NO.**	NONE
OBS. POINT	12	**FACING:**	

VEGETATION

SPECIES	STRATA	% COVER
CORNUS AMOMUM	S	60
SPIREA ALBA	S	20
ALNUS SERULATA	S	20
PHALARIS ARUNDINACEA	H	40
LYTHRUM SALICARIA	H	40
SYMPLOCARPUS FOETIDUS	H	5
CAREX STRICTA	H	5
EUTHANIA GRAMINIFOLIA	H	5
EUPATORIUM MACULATUM	H	<5
ONOCLEA SENSIBILIS	H	<5

HYDROLOGY

INUNDATED	SATURATED	**DEPTH (INCHES)**	

OTHER INDICATORS:

LEAF STAIN	X	**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY	X		

WILDLIFE

OBSERVED:

TRACKS/SCAT:

COMMENTS:

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/18/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	FLOODPLAIN FOREST	**PHOTO NO.**	NONE
OBS. POINT	13	**FACING:**	
	HEADWATER STREAM		

VEGETATION

SPECIES	STRATA	% COVER
FRAXINUS PENNSYLVANICA	T	10
FRAXINUS NIGRA	T	5
QUERCUS PALUSTRIS	T	10
ACER RUBRUM	T	20
ULMUS AMERICANA	T	20
LONICERA TARTARICA	S	5
CORNUS AMOMUM	S	20
TOXICODENDRON RADICANS	H	5
CAREX SPP.	H	5
IMPATIENS SP.	H	10
TOVARA VIRGINIANA	H	5
SYMPLOCARPUS FOETIDUS	H	5
LYSIMACHIA NUMMULARIA	H	30
POLYGONUM SAGITATUM	H	5

HYDROLOGY

INUNDATED	SATURATED	**DEPTH (INCHES)**	

OTHER INDICATORS:

LEAF STAIN	X	**BUTTRESSING**	X
SED. DEPOSITS		**ADV. ROOTS**	X
WATER MARKS:	X	**DEBRIS**	X
TOPOGRAPHY	X		

WILDLIFE

OBSERVED:	S
TRACKS/SCAT:	DEER
COMMENTS:	FLOODED OUT TREES (DEAD ELM)

CREEK-WIDTH: 5-10 FT, DEPTH:1-2 FT, SUBSTRATE: MUD, WATER: CLEAR

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/18/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	SHALLOW EMERGENT MARSH	**PHOTO NO.**	NONE
OBS. POINT	14	**FACING:**	

VEGETATION

SPECIES	STRATA	% COVER
CORNUS AMOMUM	S	30
CORNUS FOEMINA	S	5
SPIREA ALBA	S	5
LONICERA TARTARICA	S	5
TYPHA LATIFOLIA	H	30
SPARGANIUM AMERICANUM	H	20
LYTHRUM SALICARIA	H	20
CAREX SPP.	H	10
SYMPLOCARPUS FOETIDUS	H	5
IMPATIENS SPP.	H	5
IRIS VERSICOLOR	H	<5

HYDROLOGY

INUNDATED	SATURATED	**DEPTH (INCHES)**	

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY	X		

WILDLIFE

OBSERVED:

TRACKS/SCAT:

COMMENTS:

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/24/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	EMERGENT MARSH/OPEN WATER	**PHOTO NO.**	NONE
OBS. POINT	15	**FACING:**	

VEGETATION

SPECIES	STRATA	% COVER
CORNUS AMOMUM	S	40
PHALARIS ARUNDINACEA	H	20
TYPHA LATIFOLIA	H	10
IRIS VERSICOLOR	H	<5
SAGITTARIA LATIFOLIA	H	<5

HYDROLOGY

INUNDATED X **DEPTH (INCHES)** 36

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY	X		

WILDLIFE

OBSERVED: BULL FROG, PAINTED TURTLE

TRACKS/SCAT: RACCOON

COMMENTS: THESE TWO ISOLATED "PONDS" WERE PROB. EXCAVATED.

SUBSTRATE: MUD

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/24/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	APPALACHIAN OAK-HICKORY FOREST	**PHOTO NO.**	1255
OBS. POINT	16	**FACING:**	SE

VEGETATION

SPECIES	STRATA	% COVER
QUERCUS RUBRUM	T	20
ACER RUBRUM	T	20
ACER SACCHIRINUM	T	20
BETULA POPULIFOLIA	T	<5
FRAXINUS AMERICANA	T	5
POLYGONATUM PUBESCENS	H	<5

HYDROLOGY

INUNDATED _____ **DEPTH (INCHES)** _____

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED: _____

TRACKS/SCAT: _____

_____

COMMENTS: _____

_____

_____

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/18/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	FLOODPLAIN FOREST/ROCKY STREAM	**PHOTO NO.**	1307
OBS. POINT	17	**FACING:**	N

VEGETATION

SPECIES	**STRATA**	**% COVER**
FRAXINUS PENNSYLVANICA	T	10
QUERCUS PALUSTRIS	T	10
ULMUS AMERICANA	T	20
ACER RUBRUM	T	20
LONICERA TARTARICA	S	10
CORNUS AMOMUM	S	30
LYSIMACHIA NUMMULARIA	H	20
TOXICODENDRON RADICANS	H	10
SYMPLOCARPUS FOETIDUS	H	<5
IMPATIENS SP.	H	5
TOVARA VIRGINIANA	H	5

HYDROLOGY

INUNDATED	X	**DEPTH (INCHES)**	12

OTHER INDICATORS:

LEAF STAIN	X	**BUTTRESSING**	X
SED. DEPOSITS		**ADV. ROOTS**	X
WATER MARKS:	X	**DEBRIS**	
TOPOGRAPHY	X		

WILDLIFE

OBSERVED:	MIDGES
TRACKS/SCAT:	DEER, RACCOON
COMMENTS:	WIDTH: 10 FT, SUBSTRATE: COBBLES, STONES, GRAVEL, SILTY SAND

LOW GRADIENT

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/24/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	APPALACHIAN OAK-HICKORY FOREST	**PHOTO NO.**	1303
OBS. POINT	18	**FACING:**	SE

VEGETATION

SPECIES	STRATA	% COVER
PRUNUS SEROTINA	T	10
QUERCUS RUBRA	T	10
CARYA OVATA	T	10
ACER SACCHARINUM	T	10
FRAXINUS AMERICANUM	T	10
ULMUS AMERICANUM	T	5
CRATAEGUS SP.	T	5
CORNUS FOEMINA	S	5
PRUNUS VIRGINIANA	S	10
ALLIARIA OFFICINALIS	H	60
PARTHENOCISUS QUINQUEFOLIA	H	10
IMPATIENS SP.	H	15
VIOLA CONSPERSA	H	<5

HYDROLOGY

INUNDATED _____ **DEPTH (INCHES)** _____

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED: _____

TRACKS/SCAT: _____

COMMENTS: _____

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/24/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	SHALLOW EMERGENT MARSH	**PHOTO NO.**	NONE
OBS. POINT	19	**FACING:**	

VEGETATION

SPECIES	**STRATA**	**% COVER**
LYTHRUM SALICARIA	H	70
TYPHA LATIFOLIA	H	10
PHALARIS ARUNDINACEA	H	10

HYDROLOGY

INUNDATED SATURATED **DEPTH (INCHES)**

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY	X		

WILDLIFE

OBSERVED:

TRACKS/SCAT: DEER

COMMENTS:

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/24/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	SUCCESSIONAL HD WOOD/SHRUB	**PHOTO NO.**	NONE
OBS. POINT	20	**FACING:**	

VEGETATION

SPECIES	**STRATA**	**% COVER**
ACER RUBRUM	T/S	20
CRATEGUS SP.	T	20
FRAXINUS AMERICANUM	T/S	10
PRUNUS SEROTINA	S	5
POPULUS TREMULOIDES	T	5
LONICERA TARTARICA	S	20
CORNUS FOEMINA	S	20
SOLIDAGO ALTISSIMA	H	10
DAUCUS CAROTA	H	10

HYDROLOGY

INUNDATED _____ **DEPTH (INCHES)** _____

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED: _____

TRACKS/SCAT: _____

_____

COMMENTS: _____

_____

_____

DETAILED FIELD DATA SHEET

PROJECT:	**NEPERA LAGOON SITE**	**DATE:**	5/24/95
PROJ. LOCATION	HAMPTONBURGH, NEW YORK	**CREW:**	MAL
COMMUNITY:	APPALACHIAN OAK-HICKORY FOREST	**PHOTO NO.**	NONE
OBS. POINT	21	**FACING:**	

VEGETATION

SPECIES	STRATA	% COVER
QUERCUS RUBRUM	T	20
QUERCUS ALBA	T	10
ACER RUBRUM	T	20
ACER SACCHARUM	T	<5
FRAXINUS AMERICANA	T	5
ULMUS AMERICANA	T	10
CARYA OVATA	T	<5
PRUNUS VIRGINIANA	S	10
CORNUS FLORIDA	S	<5
CORNUS FOEMINA	S	15
PARTHENOCISSUS QUINQUEFOLIA	H	5
TOXICODENDRON RADICANS	H	10
POLYGONATUM PUBESCENS	H	<5

HYDROLOGY

INUNDATED _____ **DEPTH (INCHES)** _____

OTHER INDICATORS:

LEAF STAIN		**BUTTRESSING**	
SED. DEPOSITS		**ADV. ROOTS**	
WATER MARKS:		**DEBRIS**	
TOPOGRAPHY			

WILDLIFE

OBSERVED: DEER

TRACKS/SCAT: DEER,TURKEY

COMMENTS: