CATTARAUGUS CREEK WATERSHED

RESOURCE GUIDE

AND

PROPOSED WATERSHED PLANNING STRATEGY

Acknowledgments

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PART I: INTRODUCTION

What is a Watershed?

A watershed is the area of land that water flows over and through, on the surface and underground, on its way to a creek, river or lake where it drains. All land is part of a watershed, and the waters in our rivers and streams at one time flowed over and through the land. All of the land that drains into Cattaraugus Creek is the Cattaraugus Creek Watershed. Cattaraugus Creek drains into Lake Erie, making the Cattaraugus Creek Watershed a part of the larger Lake Erie Watershed. Smaller creeks and streams that drain into Cattaraugus Creek have their own "subwatersheds" which drain the rainwater and snowmelt from surrounding lands.

Boundaries between watersheds are often visible as ridgelines or other areas of higher elevation, which determine whether water flows in one direction or the other. Watershed boundaries don't necessarily line up with municipal or county boundaries: a town might have several watersheds within it, or one watershed might be made up of several towns. The Cattaraugus Creek Watershed is about 550 square miles in area, and includes parts of five counties: Cattaraugus, Erie, Chautauqua, Wyoming, and Allegany; as well as the Seneca Nation of Indians Cattaraugus Territory. Thirty-two towns and villages count all or part of their lands within the Cattaraugus Creek Watershed.

Figure 1. Illustration of Lake Erie Watershed

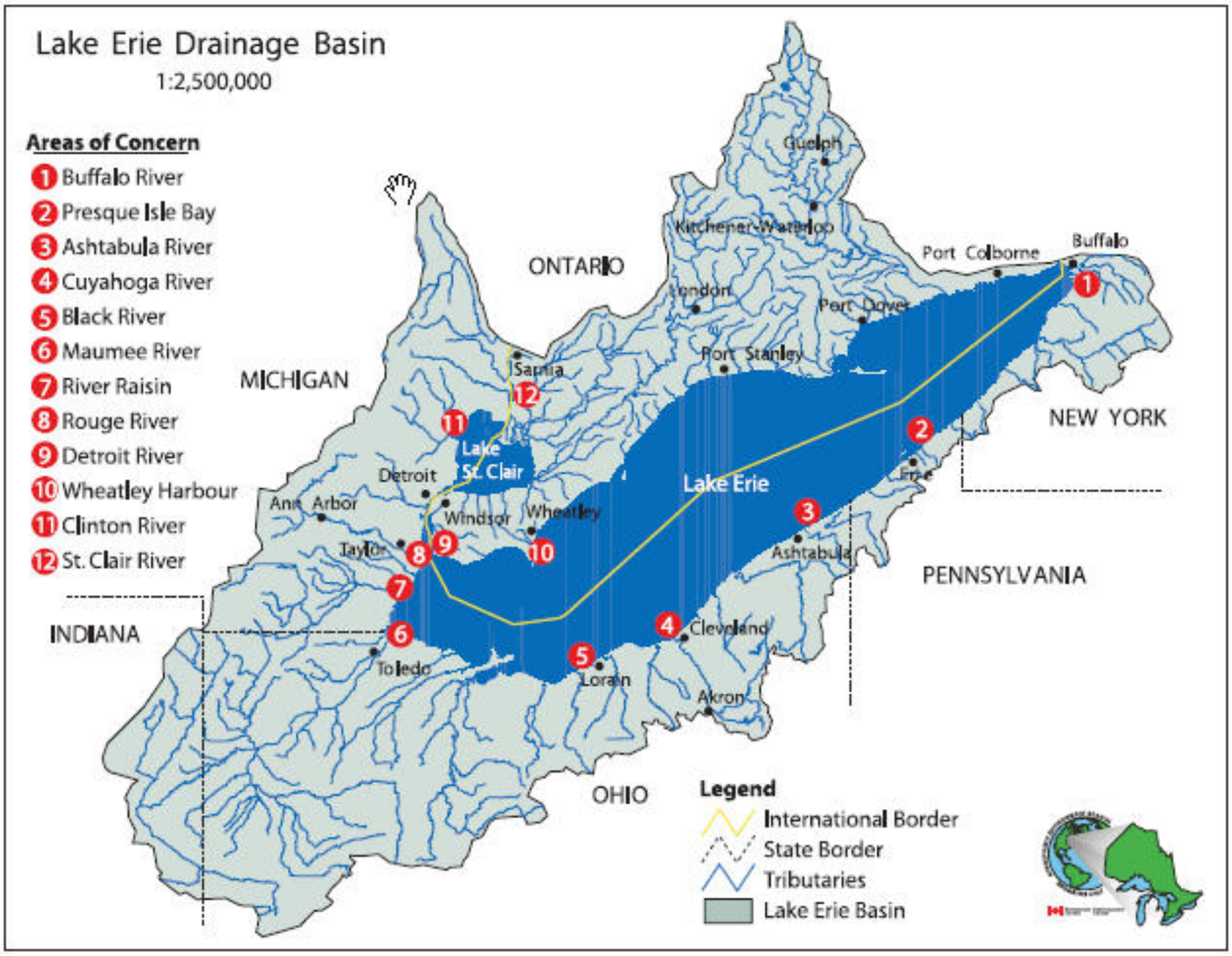
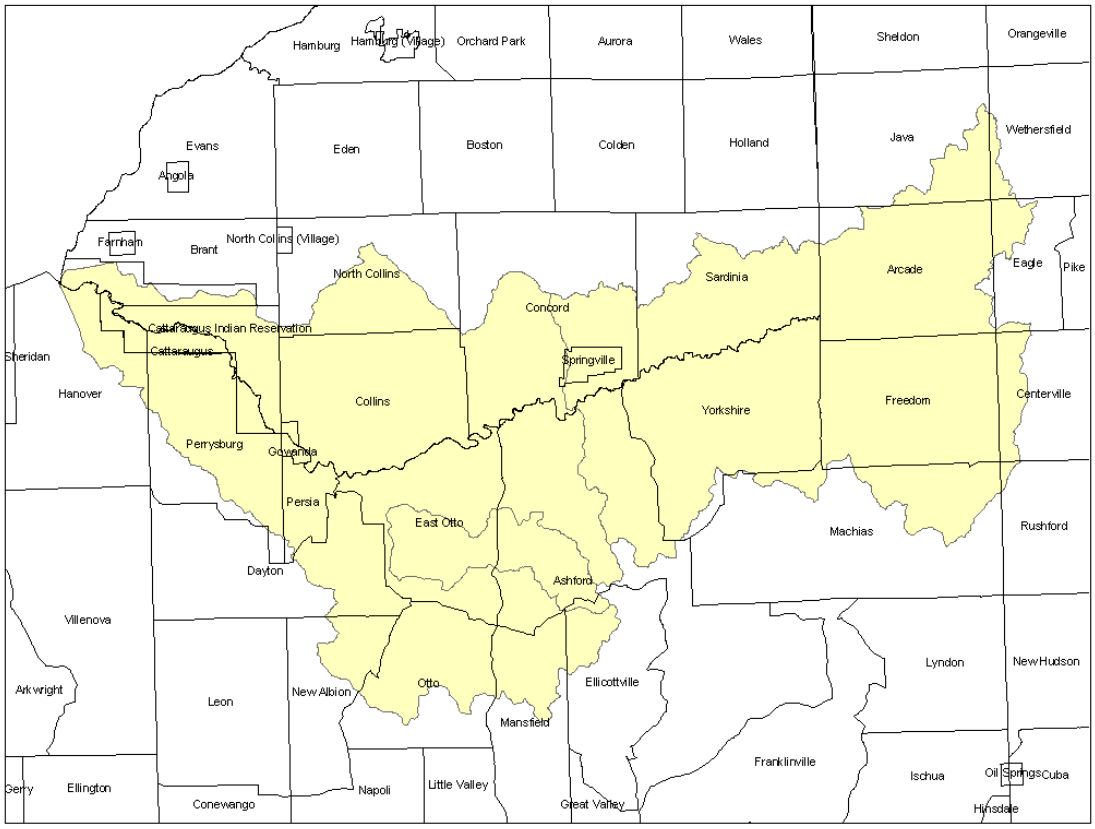


Figure 2. Cattaraugus Creek Watershed



Why is the Cattaraugus Creek Watershed important?

People who live in the Cattaraugus Creek Watershed are connected as a community--a community that shares the resources offered by the Cattaraugus Creek and its tributaries. Recreational fisheries, swimming, rafting, and even drinking and livestock water supply are supported by the Cattaraugus. These activities and uses depend upon good water quality. Water quality is the measure of whether our water resources are fit for drinking, supporting fish and other aquatic life, and providing safe places for recreation. Factors that affect water quality might be chemical (for example, nitrogen or phosphorous), physical (sedimentation, temperature, etc.) or biological (such as bacteria).

We held several meetings in the Cattaraugus Creek watershed to learn about how the local residents and stakeholders feel about their watershed. We asked people who attended our meetings to identify what are the values of the watershed to the community, and what are the beneficial uses that the community derives from the watershed. The top 5 most frequently mentioned Values and Beneficial Uses are listed below.

<u>Values of the Watershed to the Community</u>

- Unique (High) Biodiversity including the Old Growth Timber
- Recreational Uses (Hiking, Swimming, Boating, Photography)
- Healthy Fishery
- Clean Drinking Water
- Economic Uses (Timber, Gravel, Farmland)

<u>Beneficial Uses of the Watershed to the Community</u>

- Drinking water- springs, groundwater aquifers, (maybe some piped water)
- Primary Contact- swimming, bathing
- Secondary Contact- boating, fishing
- Fish Survival
- Fish Propagation

Water resources that are not fit for typical human uses and activities are said to be "impaired." As water flows over and through the Cattaraugus Creek watershed, particles of pollutants from the land are picked up by the water and carried into the Creek. This water flow and discharge of pollutants is influenced by other factors, such as forested land, agricultural buffer strips, impervious surfaces, and the everyday activities of the people living in the watershed. In this way, the human, plant and animal communities living in the Cattaraugus Creek Watershed has a direct impact on the water quality of the Creek.

Overall, Cattaraugus Creek and its tributaries are a healthy stream system with an important fisheries resource. According to the State Department of Environmental Conservation and the United States Environmental Protection Agency, some of the impairments found within the system include excess sedimentation, which makes the water turbid or cloudy and can interfere with fish spawning, and high levels of bacteria in the water during and after rain events. Further information on water quality is found in Part II, below.

What is the Cattaraugus Creek Watershed Plan?

A Watershed Plan is a means to resolve and prevent water quality problems in a specific watershed through involvement of local community members who develop a general strategy that the community as a whole can agree on. The United States Environmental Protection Agency[1] describes it like this:

- A *watershed approach* is a flexible framework for managing water resource quality and quantity within specified watersheds.

- A watershed approach requires *stakeholder involvement.* Stakeholders are community members, elected officials, representatives of major watershed populations like farmers, dairymen, landowners, and any other groups with an interest in activities that go on in the watershed.

- The *watershed planning process* is a series of steps that include:
  - characterize existing conditions,
  - identify and prioritize problems,
  - define management objectives,
  - develop protection or remediation strategies, and
  - implement and adapt selected actions as necessary.

- A *watershed plan* is a strategy that, using information documented in the planning process, provides assessment and management information for a geographically defined watershed, including the analyses, actions, participants, and resources related to developing and implementing the plan.

The Cattaraugus Creek Watershed Plan does not exist yet; it is in the *planning process* described above. Once the Cattaraugus Creek Watershed Plan is developed it will:

(1) *identify impairments and threats to Cattaraugus Creek and its tributaries and (2) provide a management strategy to prevent further degradation of the creek and its tributaries in order to maintain beneficial uses valued by the community.*

The Cattaraugus Creek watershed community stands to benefit greatly under a watershed plan. Not only will the water quality be expected to improve, but the collaboration involved in implementing a watershed plan will create other opportunities for regional projects. Once a watershed plan is in place, more funding through grants and allocations are available, not just to local governments but also to stakeholder groups for special projects.

A typical watershed plan is developed through a lengthy process that involves all stakeholders in the watershed community. The following figure outlines the process recommended by the United States Environmental Protection Agency. This process can be adapted for the Cattaraugus Creek Watershed as community planning progresses.

[1] "Handbook for Developing Watershed Plans to Restore and Protect Our Waters", US EPA, October 2005.

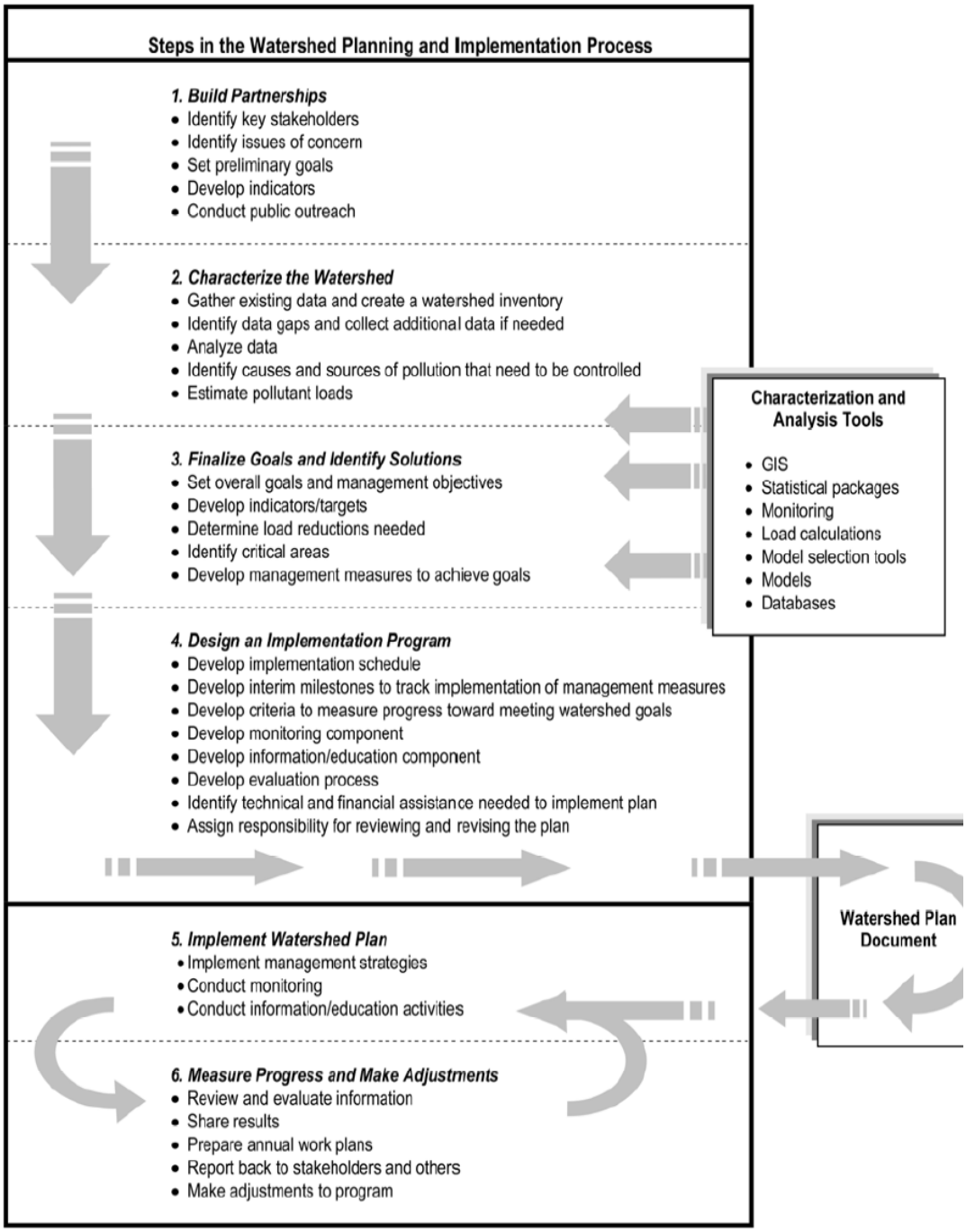


Figure 3: Watershed Planning Process

What is the Cattaraugus Creek Watershed Resource Guide?

This Watershed Resource Guide addresses Steps 1 (Build Partnerships) and 2 (Characterize the Watershed) of Figure 3. [Watershed Planning Process], and provides contact information for further project planning. The work completed on Steps 1 and 2 is described in detail below.

Step 1: Build Partnerships

Developing a community-based watershed plan requires collaboration, information-sharing, and buy-in from the various municipal governments, agencies and other stakeholders. The Project Team has been responsible for identifying stakeholder groups and representatives, compiling mailing lists, establishing a website, corresponding with municipal officials, organizing public events, and making presentations to stakeholder groups.

On October 3, 2006, the project team hosted a Watershed Summit Kickoff to commence public participation in the process of planning for the Cattaraugus Creek Watershed. The Kickoff was held in Concord Town Hall, Village of Springville, and was attended by close to 100 community members as well as representatives from various governmental regulatory agencies. Stakeholder representatives and experts presented information on the known condition of the watershed and provided opportunity for questions and answers.

A series of smaller focus groups designed to elicit further comments and concerns from the community members were held on October 24, 2006 and November 9, 2006 in Gowanda and Sardinia. Both the summit and the focus groups had substantial turnouts and provided opportunities for significant public input.

Presentations to Stakeholder Groups were made by various members of the project team. Stakeholder Groups that heard presentations included: Erie County Environmental Management Council, Erie County Water Quality Council, Erie County Department of Environment and Planning, Cattaraugus County Legislature, Cattaraugus County Water Quality Council, Seneca Nation of Indians Department of Environmental Protection, Western New York Chapter of the Society of American Foresters, Southtowns Planning Group, and the Lake Erie BiNational Forum.

The following documents are attached as Appendices to this Watershed Resource Guide:

- Agenda and List of Attendees for October 2, 2006 Kick-off event
- Agenda, List of Attendees and Focus Group notes for October 24, 2006 and November 9, 2006 Focus Group meetings
- Contact list of watershed stakeholders
- Website Home Page: www.law.buffalo.edu/cattaraugus
- Press release published in Buffalo News
- Endorsements by Cattaraugus County Legislature, Congressman Tom Reynolds, and Congressman Brian Higgins

Step 2: Characterize the Watershed

Part II of this Watershed Resource Guide provides a "snapshot" of current conditions in the watershed utilizing data collected by government agencies, academics and non-profits. The mapping resources and data may be important in future watershed planning. Some of the information relates to water quality, environmental conditions and activities that impact upon water quality. Other information, such as economic drivers and poverty, might influence the choice of watershed strategies. A complete analysis of baseline data needs should be completed at the start of strategy development.

PART II

SECTION A: LAND RESOURCES

1. Study Area

The Cattaraugus Creek watershed includes Five Counties and the Seneca Nation of Indians. Detailed information about the communities, local governments and Seneca Nation is found in the Community Resources, Section II.C.

According to the Nature Conservancy's Lake Erie Gorges Report, the Cattaraugus Creek Watershed encompasses about 357,640 acres (more than 550 square miles) of western New York. It has a moderately high natural cover, about 56 percent of this area being comprised of natural communities such as forests, wetlands, and open water. The remainder of the watershed is primarily agricultural land with scattered rural residential parcels and small villages.

2. Geology

The following information was adapted from the Cattaraugus County Soil Survey, United States Department of Agriculture.

On the south side of Cattaraugus Creek, the formerly glaciated Allegheny Plateau makes up much of the watershed. The Allegheny Plateau is characterized by steep valley walls, wide ridge tops and flat-topped hills between drainage-ways.

Geology in the watershed originates in the upper Devonian period. Hanover Shale is a gray-colored shale about 90 feet thick. It is exposed along the cliffs of Cattaraugus Creek. That is overlain in some areas by Dunkirk shale and exposed along the creek near Perrysburg. The Dunkirk Shale is overlain by South Wales Shale, about 50 feet thick. There is some exposure along the Creek from Versailles to Gowanda. Above the South Wales Shale is the Gowanda Shale member, which consists of 280 feet of mainly gray shale that has thin bands of black shale and gray siltstone. This is exposed along Cattaraugus Creek upstream from the village of Gowanda and along Big Indian Creek and parts of Little Indian Creek in the Town of Perrysburg. The next layer is the Laona Member which consists of light gray siltstone. This is exposed along Big Indian Creek and Little Indian Creek in northwestern Cattaraugus County.

The Cattaraugus Watershed experienced several advances and retreats of glacial ice during the Pleistocene ice age, ending about 12,000 to 17,000 years ago. As the glacial ice melted and receded, rock and soil debris was deposited through the melt water. These deposits are referred to as glacial outwash deposits and often contain stratified sand and gravel.

The Nature Conservancy's Lake Erie Gorges Report includes information specifically about the Zoar Valley Gorge portion of the watershed, quoting "Geology of the Zoar Valley Gorge of Cattaraugus Creek, Cattaraugus and Erie Counties, New York" (Meyers 1999) as follows:

> "The Zoar Valley Gorge of Cattaraugus Creek cuts west for 7.5 miles through up to 400 feet of Late Devonian shales and siltstones of the Canadaway Formation, part of the Portage Facies of the Catskill Delta. The Laona and Shumla Siltstones, reported to pinch out west of the gorge, are projected to crop out in the streambed at the locations of several rapids and waterfalls, respectively. Surface expressions of the Alleghenian Bass Island Trend occur as joints and a pop-up fold trending NE. Other joint sets trend N, ENE and NW. Joint sets significantly influence streambed orientation. Zoar Valley Gorge incises bedrock beneath the trace of an ice marginal meltwater channel parallel and adjacent to the Valley Heads Moraine. Subsequent ice recession allowed Cattaraugus Creek to breach the moraine and occupy the pre-glacial Allegheny River Valley in Gowanda, NY. A strong correlation exists between rapids, siltstone beds, joints and cross channel cobble and boulder deposits. It is proposed that pool and riffle morphology occurs in the bedrock streambed, modified by more resistant siltstone beds and fracture zones" (Meyers 1999).

3. Physiography and Topography

The highest elevation in the Cattaraugus Creek watershed is 2,519 feet above sea level, while the lowest elevation is 567 feet above sea level.

As reported in the Cattaraugus County Soil Survey, the Cattaraugus County portion of the watershed contains two physiographic regions: the Erie-Ontario Plain and the glaciated Allegheny Plateau. The Erie-Ontario Plain is characterized by low relief, gently terraced by wave action in former pre-glacial lakes, with a series of narrow ravines cut across by a number of streams. The glaciated Allegheny Plateau is characterized by steep valley walls, wide ridge-tops, and flat-topped hills between wide drainage ways. On the south side of the creek, the Allegheny Plateau is intersected by a number of broad, flat-bottomed valleys, presently occupied by sluggish meandering streams.

4. Soils

According to the Cattaraugus County Soil Survey, soil erosion is a major hazard in some of the watershed. Soils are the product of weathering of some underlying material (such as bedrock or glacial till), which is then influenced by slope, climate, plant and animal life, and time. Erosion is a function of slope, the erodibility of the soils themselves, the amount and intensity of rainfall, and the type of plant cover. Soil erosion results in loss of nutrients, formation of gullies on hillsides, deterioration of tilth needed for farming, detrimental sedimentation downstream in the creeks, and pollution of streams.

5. Prime Farmland

Prime Farmland, as defined by the US Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops and is available for these uses. The soil qualities, growing season and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. Most of the prime farmland in the Cattaraugus Creek watershed is located in major valleys and till plains.

6. Watershed Integrity

The Nature Conservancy completed a study that compared all of the watersheds on the eastern end of Lake Erie. They determined a watershed's integrity by analyzing several factors, such as land cover type, land cover within 400 meter distance from streams, dams and diversions, roads, and water quality. When compared to nearby watersheds of the eastern end of Lake Erie, the Cattaraugus Creek Watershed had the highest integrity of any local watershed.

7. Flora and Fauna Communities

a. Forested Landscape:

The Nature Conservancy's Lake Erie Gorges Report uses the monikers "matrix," "reserve," and "core" forests to describe the various functional forested landscapes in the Cattaraugus Creek watershed. Reserve and Core forests are protected, intact ecological forest assemblages such as the Nature Conservancy's Deer Lick Preserve. Matrix forests are all of the other forestlands outside of the "reserve" or "core" forest. Matrix forests are "working forests" made up of a variety of ownerships and uses. Matrix forest functional landscapes include Zoar Valley, Lower Cattaraugus Creek Forest, Point Peter Brook, Thatcher Brook, and Hyler Creek Forest.

b. Old Growth Forests Ecological Community

The following text is directly quoted from the Nature Conservancy's Lake Erie Gorges Report:

> The Zoar Valley section of Cattaraugus Creek has been the focus of various old-growth forest surveys over the last decade. The Niagara Frontier Botanical Society and Citizens Campaign for the Environment (CCE) recently published a *Guide to Ancient Forests of Zoar Valley Canyon* (Kershner 2000). The Western New York Old Growth Forest Survey, which is a project of the Niagara Frontier Botanical Society and the Buffalo Audubon Society, has documented trees up to 150 feet tall and 525 years old in Zoar Valley and continues to conduct research of old growth in Zoar Valley. This forest apparently has a long list of superlative measurements associated with it at multiple scales. As of June 2002, they have officially documented "champion trees" (i.e., the tallest examples of a species for a given geographic area) for 14 species, each accurately

measured in height by multiple people and with laser-based precision instruments. A sample of reported champion trees includes 1) the second tallest sycamore in the world (150.5 feet), 2) the probable tallest American basswood in the U.S., 3) the tallest tulip tree in the Northeast U.S. (149.5 feet), 4) the tallest bitternut hickory in the Northeast U.S. (estimated at 140 feet), 5) the tallest red oak in the Northeast U.S. (130.8 feet), 6) the tallest eastern cottonwood in the Northeast U.S. (133 feet), 7) the likely tallest black walnut in New York (116 feet), and 8) the tallest white ash in New York (132.9 feet) (Bruce Kershner pers. com.). Other reported superlatives include 3 individuals of unblighted American elm with "old growth characteristics" (cf. Kershner 2002), the oldest recorded hemlock in New York (525 years), sugar maple to 420 years old, black cherry to 200 years old, chestnut oak to 285 years old, grape vines to 350 years old, and one of the few known individuals of green ash with "old growth characteristics" in New York (Bruce Kershner pers. com.). Complete data of old-growth characteristics is maintained by The Western New York Old Growth Survey Team. The area of old growth within Zoar Valley has been variously reported as 1) 600 acres (Kershner 2000), 2) 630 acres (Bruce Kershner pers. com.), and 3) 708 acres, as documented by NY Natural Heritage (see Appendix K-1). Of this area, virgin old growth has been variably reported as 1) almost 400 acres (Kershner 2000) and 2) 220 acres (Bruce Kershner pers. com.) based on land use history and tree ages (e.g., over 500 years old = presettlement). Most of the old growth has been documented from within Zoar Valley MUA (Kershner 2000). This old-growth forest landscape has also been reported to contain the only confirmed virgin old growth (in New York) outside of the Adirondacks and Catskills (Kershner 2000). The matrix forest, of which these old-growth forests are a part, consists of about 14,000 acres of hemlock-northern hardwood forest and 3,560 acres of rich mesophytic forest. The latter forest has a spectacular diversity of tree species, with 18 reported (Bruce Kershner pers. com.). The old-growth forest landscape of Zoar Valley is known to support other forest types including beech-maple mesic forest and maple-basswood rich mesic forest. The current breakdown of Zoar Valley old-growth areas mapped by NY Natural Heritage is as follows: hemlock-northern hardwood forest sub-occurrence (629 acres), rich mesophytic forest sub-occurrence (19.69 acres), maple-basswood rich mesophytic forest (37.04 acres), and beech-maple mesic forest (14.4 acres).

c. Wetlands

Wetlands regulated by the New York State Department of Environmental Conservation are relatively scarce in the Cattaraugus Creek Watershed. Those that exist are important to protect. Wetlands restoration projects may merit further consideration or evaluation.

The United States Army Corps of Engineers also regulates waters of the United States that are classified as wetlands if they meet the federal criteria of hydric soils, hydrophytic vegetation and wetland hydrology. A review of hydric soils mapping units within the watershed reveals limited acreage that would likely meet federal regulatory criteria.

d. Avifauna:

The entire watershed is within the territory studied by the Buffalo Ornithological Society. According to birders Kurt Fox, Willie D'Anna, Jeff Reed, (see website at http://www.home.eznet.net/~kfox/wny/sites/zoar.htm), and Roberta Vallone, several warbler species birds such as Louisiana Waterthrush, Black-throated Green, Prairie, Nashville, Blackburnian, Hooded, Magnolia, Canada, Blue-winged, Yellow, Chestnut-sided, Yellow-rumped, Mourning and Black-and-white, Common Yellowthroat, American Redstart, and Ovenbird can be found breeding within the watershed. Other notable species found breeding within the watershed include Bobolink, Broad-winged and Red-shouldered Hawk, Northern Harrier, Wood Thrush, Veery, and Hermit Thrush. During various seasons, Common Merganser, Purple Finch, Purple Martin, and Winter Wren, might be found among commoner species such as Blue-headed and Red-eyed Vireos, and Chickadees and Juncos.

e. Species at Risk

The following information is from the Nature Conservancy's Lake Erie Gorges Report:

> The Zoar Valley and the watershed of Cattaraugus Creek have the highest number and concentration of rare plants in the Lake Erie Gorges region. There are 14 extant occurrences of state-rare plants. Ten of the occurrences are immediately adjacent to the river or in the forested communities at the top of the gorge. The remaining four occurrences occur in the wetlands in the eastern part of the watershed. The canyon west of Gowanda contains an A-ranked population of the only extant occurrence of rough-leaf dogwood (*Cornus drummondii*) in the state. In the Zoar Valley area there is the only occurrence of nodding pogonia (*Triphora trianthophora*) in western New York.
>
> Although at least 10 rare species are documented from the Cattaraugus Creek, just three of these are from the Zoar Valley portion of the creek. However, it should be noted that the occurrences of all three of these species extend eastward along the creek beyond the Zoar Valley and east of Route 219 south of Springville. These species include cobblestone tiger beetle (*Cicindela marginipennis*) (Figure 10), White Mountain tiger beetle (C*icindela ancocisconensis*), and American rubyspot damselfly (*Hetaerina americana*). Both of the tiger beetle occurrences are especially significant as both are globally rare species and both are excellent populations. The cobblestone tiger beetle occurrence is one of just two known, extant populations of this species in New York State and these two populations are very disjunct from others in the species range. The Cattaraugus Creek population of the White Mountain tiger beetle is the best surveyed of the seven known, extant populations for this species in the state and based on these surveys the creek supports an excellent population of this tiger beetle.
>
> The lower Cattaraugus Creek area has supported populations of at least 5 rare fish species including the globally rare and state threatened eastern sand darter (*Etheostoma pellucidum*) as well as nesting bald eagles. Of the five fish species only the mooneye (*Hiodon tergisus*), which is also state threatened, has been recorded in recent times. Breeding Bird Atlas records for three state threatened grassland bird species were obtained during the original Atlas for the Cattaraugus watershed. These species include

northern harrier (*Circus cyaneus*), Henslow's sparrow (*Ammadramus henslowii*), and upland sandpiper (*Bartramia longicauda*).

8. Preserves and Protected Areas

The natural and scenic beauty of the Cattaraugus region has long been the focus of private and public conservation efforts. Groups like the Western New York Land Conservancy, the Nature Conservancy, and the Nature Sanctuary Society of Western New York have worked with landowners to both protect land through conservation easements and create preserves through purchase, donation and dedication. New York State owns 2,923 acres of land in the Zoar Valley Region of the watershed. In 2006, the New York State Department of Environmental Conservation, as management agency, released the Zoar Valley Unit Management Plan which sets aside critical ecological areas and also designates certain other areas as open for recreation. Other core protection areas include the Nature Conservancy's Deer Lick preserve, which is about 400 acres of forested habitat.

SECTION B: WATER RESOURCES

1. Groundwater

In 1987, the United States Environmental Protection Agency ("EPA") designated the Cattaraugus Creek Basin Aquifer ("CCBA") as a sole source aquifer pursuant to the Safe Drinking Water Act. No federal agency may commit funds to a project that would contaminate a sole source aquifer. The following information is derived from the EPA's 1987 Aquifer Report and the data is more than twenty years old.

The CCBA is approximately 35 miles long and underlies approximately 325 square miles in the southern most part of the Lake Erie-Niagara River drainage basin. The width of the designated area is approximately 25 miles at its eastern edge and thins to two miles at its western edge. The aquifer system consists of: (1) unconfined sand and gravel deposits at the surface; (2) confined sand and gravel lenses separate from the unconfined deposits above by relatively impermeable clay till and lacustrine sediments, and 3) fractured shale bedrock. Aquifer recharge occurs by precipitation on the land, by seepage from losing reaches of streams, and by subsurface flow from the till and bedrock along the sides and bottoms of the valleys. Ground water discharges from the aquifer by seepage into streams and lakes, by evapotranspiration, and as flow to pumping wells. Ground water flow is predominantly towards Cattaraugus Creek. Chemical analyses indicate that the water quality of the CCBA in the Sardinia area is of drinking water quality. The water is moderately to very hard with values ranging from 92 to 274 mg/l as CaC03 and a median value of 172 mg/l as CaC03. Because the unconfined sand and gravel is exposed at land surface, it is potentially susceptible to contamination from surface sources. Several of the shallow wells that tap the surficial aquifer had elevated levels of NO2and NO3, Cl, and total organic carbons which are characteristically derived from septic tanks, fertilizers, or other surface sources. Chemical analyses indicate that the water in the Springville area is suitable or marginally suitable for most uses. Hardness values range from 78 to 445 mg/l as CaCO3 (moderately hard to very hard), with a median value of 238 mg/l as CaCO3 (very hard). Seven of the ten sampling sites had very hard water, two had hard water, and one had moderately hard water. Iron and manganese exceeded the New York State drinking water standards in eight samples from four wells.

The New York State drinking water standard for nitrate (10 mg/l) was matched in one sample from a Springville well, and the standard was approached in samples from several other wells. [It should be noted that nitrate is a major cause of blue baby syndrome.] The chloride standard (250 mg/l) was nearly exceeded in samples from two wells. Although no New York State drinking water standard has been established for sodium, the sodium concentration in some of the shallow wells exceeded EPA's recommended concentration limit of 20 mg/l for people on sodium restricted diets.

In the Springville area, the unconfined sand and gravel aquifer is exposed and directly recharged at the land surface. This makes the aquifer very susceptible to surface contamination. Results of the water quality analyses indicate that soluble material is indeed entering the aquifer from surface sources.

Nitrate concentrations in two springs and all shallow wells exceeded 2.6 mg/l and in four wells exceeded 7.5 mg/l. The most likely source of nitrogen is considered to be the fertilizer which is used throughout this extensive agricultural valley.

Three shallow wells contained elevated concentrations of sodium and chloride. These well areas are all close to major highways, suggesting that the aquifer is locally influenced by road salt.

The ground water in the deep, confined sand and gravel layers is as yet largely unaffected by surface contamination. The two deep wells had low concentrations of nitrate, sodium and chloride. In 1984 the CCBA provided an estimated 2.85 MGD of drinking water to an aquifer service area with a population of 20,182. Approximately 2 MGD was pumped from the aquifer system by eight municipal and fifteen community systems serving 11,634 people. The remaining 8,548 service area residents apparently depend upon the aquifer system through private wells and springs for their drinking water supplies. Assuming the average individual uses 100 gallons of water per day, in 1984 the aquifer system provided 0.85 MGD of drinking water through private water supplies.

2. Stream Morphology and Flow

a. Sediment Delivery

Cattaraugus Creek was identified by the U.S. EPA as a source of excess sediment and siltation to Lake Erie. As part of the grant-funded project to support a Cattaraugus Creek Watershed Plan, the US EPA and the US Army Corps of Engineers provided funding to map the areas of the Cattaraugus Creek watershed that are potential areas of water pollution from sedimentation and erosion. This map can be used as a planning tool to identify water bodies and aquatic resources that are threatened by excess sedimentation, to help guide protection of sensitive landscape parcels or to restore actively eroding areas. Steps in the preparation of the GIS mapping include: 1) compilation of all environmental GIS layers for the watershed including digital elevation models (DEM – 10m resolution), soils (STASGO), landuse-landcover (LULC), National Hydrography Data (NHD) showing stream drainages and surficial and bedrock geology; 2) development of potential for erosion map (Erosion Index) for entire watershed based on elevation, slope gradients, soil type and landuse/landcover features; 3) Implementation of the Soil Water Assessment Tool (SWAT) Model for watershed and calibrate against the active USGS gage data from Cattaraugus Creek; 4) Grab sampling to determine suspended sediment concentrations at selected points/node in the watershed; 5) Evaluation of Erosion Index Map and SWAT predictions against measured suspended sediment concentrations; 6) Identification of subcatchments, landscape parcels, and stream reaches that are sensitive to erosion from the Erosion Index map and SWAT predictions. This map and all baseline GIS layers will be provided to all watershed stakeholders to aid in decision-making and planning in the watershed.

b. Dams

There are a number of small, privately-owned dams throughout the watershed. The Springville Dam, located 34 miles above the mouth of Cattaraugus Creek, is likely the most significant dam in the watershed at 40 feet high and 338 feet long. The Springville Dam has not generated electricity since 1998 and is impassable to fish. The United States Army Corps of Engineers and the New York State Department of Environmental Conservation are currently evaluating the options for creating a fish passage in order to increase spawning habitat for the steelhead fishery. According to the NYS DEC's 2006 Report on the Fish Passage at Springville Dam, significant economic benefits to the community would result from the expansion of the steelhead fisheries into the upper reaches of the Cattaraugus.

c. Floodplains and Flooding Events

Cattaraugus Creek is very prone to flooding, with the major areas of damage being concentrated in the more densely-developed areas of Arcade and Sunset Bay. In 1999, the Village and Town of Arcade developed a Flood Mitigation Action Plan with the assistance of the Genessee/Finger Lakes Regional Planning Council, available online at www.gflrpc.org/publications/ArcadeFlood.htm, in order to identify causes of and solutions to flooding in the Town and Village. The major area of concern in Arcade was identified as the confluence of Cattaraugus Creek and Clear Creek.

Ice jams are the primary cause of flooding in the Sunset Bay/Irving/Hanover region of the watershed. The U.S. Army Corps of Engineers, in their "Ice Engineering" newsletter (www.crel.usace.army.mil/library/technicalnotes/TN04-05.pdf), described an ice jam flood event that led to the evacuation of 200 homes in March 2003. Ice on the Cattaraugus Creek was 2.5 feet thick and was held back by 4 feet thick ice on Lake Erie. When the ice jam broke, mud, debris, ice and water inundated basements, yards and garages. In 1987, the US Army Corps of Engineers, Buffalo District, completed a study (DTIC reference number ADA201132) on various mitigation options to reduce Cattaraugus Creek flooding in the watershed, including the Sunset Bay area of Irving. At that time, the Corps determined that the high costs of mitigation outweighed the benefits.

3. Surface Water Quality

a. New York State Department of Environmental Conservation Waterbody Inventory Data

The New York State Department of Environmental Conservation maintains a statewide inventory of New York State waterbodies called the Waterbody Inventory/Priority Waterbodies List. Each individual surface water body is characterized for water quality, the degree to which water uses are supported, progress toward the identification of water quality problems and sources, and activities to restore and protect that individual water body.

The full report is available at www.dec.ny.gov/chemical/23852.html. The following table summarizes the types of pollution found in the Cattaraugus watershed, as well as sources of pollution and uses impacted by the pollution. More specific data on each stream and tributary

segment is available in the 2003 Waterbody Inventory/Priority Waterbodies List for the Lake Erie/Niagara River Basin. This data is scheduled to be updated in Fall 2008.

TYPES OF POLLUTANTS	*SOURCES OF POLLUTION*	*USES IMPACTED*
Silt/Sediment Nutrients Nitrogen, Phosphorus D.O./Oxygen Demand Algal/Weed Growth Priority Organics (PAHs) Pathogens Aesthetics Thermal Changes Pesticides	Streambank Erosion Agriculture Toxic Contaminated Sediments Failing On-Site Systems Hydro Modification Municipal (Waste Water Treatment Plants) Construction	Habitat/Hydrology Aquatic Life Water Supply Fish Consumption Recreation Public Bathing Aesthetics

Waterbody	**Total Segments**	**Impaired Segments**	**Minor Impacts**	**No Known Impact**	**Need Verification**	**Not Assessed**
Catt Creek, Main Stem	5	0	2	2	1	0
Tribs. to Catt. Creek, mouth to Gowanda	8	0	2	2	1	3
South Branch to Catt. Creek Watershed	4	0	0	3	1	0
Tribs. to Catt. Creek, above Gowanda	17	1	2	7	2	5

b. Surface Water Classifications, New York State Department of Environmental Conservation

As part of its implementation of the Clean Water Act, the New York State Department of Environmental Conservation classifies surface waters (streams, lakes, ponds) in accordance with goals for their best usages. Most of the Cattaraugus Creek watershed is classified as "B" and "C", with portions of Point Peter Brook being classified as "A" according to the definitions below.

§701.6 Class A fresh surface waters
(a) 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.
(b)This classification may be given to those waters that, if subjected to approved treatment equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to reduce naturally present impurities, meet or will meet New York State Department of Health drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.
§701.7 Class B fresh surface waters
The best usages of Class B waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.
§701.8 Class C fresh surface waters
The best usage 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.
§701.9 Class D fresh surface waters
The best usage of Class D waters is fishing. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of 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.

4. Fisheries:

This information is derived from the **Report of Spencer Schofield, Erie County Fisheries Advisory Board, 10-3-2006** and from the **NYS DEC's 2006 Report on the Fish Passage at the Springville Dam.** For purposes of understanding the fisheries and fish spawning habitats, Cattaraugus Creek is 68 miles in length, with 37 miles from Mouth to Scobey Hill (also known as "Springville") Dam and 31 miles more upstream to Java Lake. Below Gowanda, the stream bed is gravelly with sand & silt in lower reaches (from the Hanover Boat launch to the mouth at Lake Erie). Upstream of Gowanda, the stream bed is made of shale with some gravel beds to the Scobey Hill Dam. Upstream of Scobey Hill Dam, the creek is primarily freestone streambed.

There are two major fisheries in the Cattaraugus Creek Watershed; (1) the mouth to Scobey Hill Dam, with a subarea from the mouth to Gowanda; and (2) upstream of the Scobey Hill Dam.

(1) MOUTH TO SCOBEY HILL DAM: The lowest 20 miles are within the Seneca Nation of Indians territory with no free access for the general public. Outside of the Seneca Nation, the NYS DEC has obtained about 4 miles of stream for "Public

Fishing Right" access areas and allows public fishing with the 8 miles of stream located in the Zoar Valley Multiple Use Area.

a. STEELHEAD: The American Angler magazine (Fall, 2006), in an article entitled "Americas Top 20 Steelhead Rivers: East and West," ranked Cattaraugus Creek at number 9 east of the Rockies. Fly anglers favor the reach downstream from Gowanda. These Steelhead, a Washington strain of Rainbow Trout, are stocked in the lower sections of the main branch of Cattaraugus Creek, and, after spending months in Lake Erie, begin returning to the Creek in September to feed and spawn in the Spring. They remain in stream through May, weather dependent. Unlike Pacific strain salmon, Steelhead will return to feed and spawn up to 4 separate years before dying. Approximately 25% of the Steelhead returning to the Cattaraugus are wild fish, presumably spawned and hatched in the Cattaraugus tributaries.

b. COHO SALMON: There are limited numbers of coho salmon from the first week in September to the first week in December. Coho were last stocked in 1992 in the lower Cattaraugus, indicating that natural reproduction is occurring.

c. CHINOOK SALMON: There are limited numbers of Chinook salmon from the first week in September to the first week in December. Chinook were last stocked in 1997 in the lower Cattaraugus, indicating that some natural reproduction is still occurring.

d. PINK SALMON: There are extremely limited numbers from the first week of September to the last week of October in even numbered years. All reproduction of pink salmon is natural as there have been no introductions since 1956, when 20,000 pink salmon were accidentally introduced into Lake Superior.

e. BROWN TROUT: NYS DEC stocked these fish from 1973 to 1994; and began re-stocking in 2002 to replace the Domestic Rainbow Trout. They should return from the second week of September to the last week of December.

f. DOMESTIC RAINBOW TROUT: These fish appear in the Cattaraugus during the second week of August through May. Stocking occurred in the near shore areas of Lake Erie up until 2001. The domestic rainbow trout is the same species as Steelhead, but a different strain; spawning earlier than Steelhead, in the fall.

g. Tributary Fisheries:

    a. Clear Creek- Steelhead runs in fall/spring; wild Rainbow and Brook Trout.

b. Coon Brook- Wild Brown, Rainbow and Brook Trout.
c. Derby Brook- Wild Rainbow (Nursery for wild Rainbow/Steelhead)
d. Spooner Creek- (Nursery for wild Rainbow/Steelhead)

h. Mouth to Gowanda: Large numbers of Lake Erie Smallmouth Bass use this section in early spring to spawn. Stream resident Smallmouth Bass are available through the summer and fall. Channel Catfish are available beginning in May. Bullhead, Yellow Perch, Sheepshead, Pumpkinseeds, and Rock Bass are always available. NYS DEC helped create a Walleye nursery in these lower reaches in the 1990's, using fry and fingerling Walleye. Today this nursery enhances Lake Erie's Walleye population in the eastern basin.

(2) SCOBEY HILL DAM TO HEADWATERS AT JAVA LAKE: This upstream segment, created by the Scobey Hill Dam, is a very significant habitat for wild Rainbow, Brown and Brook Trout. NYS DEC has fish stocking operations here and has obtained many stream miles of 'Public Fishing Right' access areas.

a. Spring Brook- wild Brook Trout
b. Elton Creek- stocked Brown Trout; wild Rainbow and Brown Trout.
c. Lime Lake Outlet- not stocked since 1993; wild Rainbow and Brown Trout.
d. McKinstry Creek- wild Brook, Brown and Rainbow Trout.
e. Hosmer Brook- wild Rainbow and Brown Trout.
f. Clear Creek- wild Rainbow, Brown and Brook Trout.

A major impact to the Cattaraugus fisheries is the parasitic sea lamprey, which attaches to fish species and bores through the skin, often resulting in death to the host. The sea lamprey was introduced to Lake Erie in the 1920s through the Welland Canal. Cattaraugus Creek is a significant breeding area for the sea lamprey and must be treated with lampricide on a three year cycle. The NYS DEC and the US Army Corps of Engineers are currently evaluating the options for increasing the reach of steelhead upstream of Scobey Hill Dam. If the Dam were removed, both steelhead and sea lamprey could migrate upstream. Sea lamprey populations, once introduced in the upper reaches, would be very difficult and costly to control. Another option is a fish ladder with security to prevent lamprey passage to upstream reaches. In September 2007, the US Army Corps of Engineers commenced a feasibility study to detail the economic and environmental benefits of a fish ladder. Further phases of the project are pending appropriations, and the cost of construction of the fish ladder with lamprey assessment trap is estimated at over $4 million.

5. Regulated Activities that could impact Water Resources

a. Contaminated Properties:

Both the New York State Department of Environmental Conservation and the United States Environmental Protection Agency are responsible for identifying and managing the remediation of sites where hazardous waste has been released or disposed. The U.S. E.P.A. manages sites that are listed under the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") and the Department of Environmental Conservation gets its cleanup authority from the New York State Superfund Act.

There are numerous properties where hazardous waste contamination has been identified within the watershed. NYS DEC provides information on the locations and compounds at sites undergoing clean up pursuant to various New York State programs, such as: (1) Voluntary Clean-up Program; (2) Environmental Restoration Program; and (3) State Superfund. The Voluntary Clean-up program has recently been replaced with the New York State Brownfield Act program. Further details on hazardous waste sites within the watershed that are regulated by New York State can be found at the NYS DEC's website: www.dec.ny.gov/chemical/brownfields.html.

The Federal government has jurisdiction over remediation of properties that are listed on the National Priorities List ("NPL"). NPL sites are those that meet federal criteria that would require a major remediation for the protection of public health and the environment. The Peter Cooper Site in Gowanda is an NPL site that has been targeted for remediation by the US EPA. Peter Cooper Company and its predecessor manufactured animal glue in Gowanda from 1904 until 1972, and industrial adhesives from 1972 until the plant closed in 1985. Between 1925 and October 1970, Peter Cooper Company used the northwest portion of the property to pile sludges remaining after the manufacturing process. The waste contains elevated levels of chromium, arsenic, zinc, and some organic compounds. Samples of landfill waste collected in 1988 during a Remedial Investigation (RI) showed total chromium concentrations as high as 44,000 milligrams per kilogram (mg/kg) and zinc up to 840 mg/kg. A composite waste sample contained chlorobenzene, 2-butanone, and low concentrations of ethylbenzene, toluene, 1,2-dichlorobenzene, naphthalene, phenanthrene, and fluoranthene. Landfill waste samples collected in September 1996 contained chromium, arsenic, zinc, polycyclic aromatic hydrocarbons, and phenols.

US EPA issued a Record of Decision that identified preferred remedial actions for the Peter Cooper site on September 30, 2005. The major components of the selected remedy include the following:

- Excavating three hot-spot areas and consolidating them within the Elevated Fill Subarea, then capping the 5-acre Elevated Fill Subarea with a low permeability barrier cap, consistent with the requirements of New York State regulations, including seeding with a mixture to foster natural habitat.
- Post-excavation confirmatory soil sampling;
- Backfilling of excavated areas with clean fill;
- Collecting the leachate from the seeps, pretreating the leachate as necessary, then discharging the leachate to the Village of Gowanda collection system for further treatment and discharge. As a contingency, if treatment of the leachate by the Village not available, it would be treated on site and discharged to Cattaraugus Creek. Since the

installation of the cap should reduce leachate generation, the volume of seep leachate requiring treatment is anticipated to be reduced or eliminated over time. The specific treatment and disposal option will be further evaluated during the remedial design phase;
• Installing a groundwater diversion system to limit groundwater migration through the Elevated Fill Subarea. However, should additional data collected in the remedial design phase of the project support the conclusion that the installation of a diversion wall will result in a minimal increase in the collection of contaminants by the leachate collection system, the diversion wall would not be installed;
• Installing a passive gas venting system for proper venting of the 5-acre Elevated Fill Subarea;
• Stabilizing the banks of the Cattaraugus Creek;
• Performing long-term operation and maintenance including inspections and repairs of the landfill cap, gas venting, and leachate systems;
• Performing air monitoring, surface and groundwater quality monitoring; and
• Evaluating Site conditions at least once every five years to determine if a modification to the selected alternative is necessary.

The remedy also includes institutional controls for limiting future use of the Site and the groundwater to ensure that the implemented remedial measures will not be disturbed and that the Site will not be used for purposes incompatible with the completed remedial action. Further information can be found at the EPA's website: www.epa.gov/superfund/sites/npl/nar1496.htm.

b. RCRA Sites

The Resource Conservation and Recovery Act ("RCRA") is a federal law that governs the disposal of solid and hazardous waste. Hazardous waste is a waste with properties that make it potentially harmful to human health or the environment. RCRA created the "cradle to grave" approach to managing hazardous waste. Any facility which is involved in the treatment, storage or disposal of hazardous waste must acquire a registration number and report their waste-related activities to the federal government. Although numerous RCRA sites are located within the Cattaraugus Creek watershed, there are no environmental impacts from those sites unless the hazardous waste is improperly handled.

c. Gravel Mining

Gravel mining is a major component of the Cattaraugus Creek watershed economy. Approximately 7800 acres of land are owned by mining permit holders. These holders include many large companies, such as Gernatt Asphalt Products, Inc. which impacts over 2,000 acres of property with their mining activities.

New York State Department of Environmental Conservation regulates mining activities within the watershed. Permits issued include mining permits and ancillary permits such as wetlands filling and disturbances to protected streams. Most permits have a life of 5 years.

The Cattaraugus County Department of Economic Development, Planning and Tourism evaluated mining activities in the County in a 2000 Report. The County found that, while

mining has economic benefits, it can pose both environmental and safety hazards and threats. Extraction will permanently change the land base and has a direct impact on physical habitat, biota and food webs; it can disrupt and alter the groundwater recharge capability, and it may adversely affect water quality of both surface and groundwater. Potential safety issues include traffic hazards, disruption to neighboring land uses, dust and noise, and accelerated wear and tear on roads. After conducting this extensive study, the County recommended that there needed to be better planning and even found that the industry would benefit from such planning. (Cattaraugus County Department of Economic Development, Planning, and Tourism, *A New Look at Gravel Mining In Cattaraugus County* (Twenty First Century Planning for the Route 16 Corridor), available at http://www.cdtoolbox.net/development_issues/000186.html.)

Below is a summary of permits for mining activities in the Cattaraugus Creek watershed that are on file with the New York State Department of Environmental Conservation:

NAME OF FACILITY	APPLICANT CITY/MINE TOWN	PERMIT TYPE	ACTIVITY	PERMIT LIMITATION (ACRES)	EFFECT-IVE DATE	PERMIT TERM	EXPIRA-TION DATE	APPLICA-TION TYPE
Blue Circle Aggregates Inc.	Brantford/Freedom	Mining	Sand and gravel mining	Old Acerage Permitted=165 New Permit App.=3	5/10/1999	5 years	5/10/2004	Modification
Brandon, Raymond, David Zylinksi	Lakeview/Concord	Mining	Unconsolidated Soils	60	3/15/2006	25 years	3/15/2031	Renewal
Carl Youngers	Bliss/Eagle	Mining	Gravel mining	11	10/7/2002	5 years	10/7/2007	Modification
Charles David Woodruff	Chaffee/Sardinia	Mining	Bankrun Gravel	Old Acerage Permitted=67.5 New Permit App.=4	6/27/1998	5 years	6/27/2003	Renewal
Clarence Materials Corporation	Clarence/Delevan	ECL Art 23 title 27 Mined Land Reclamation	Sand and gravel mining	97.3	10/24/1997	5 years	10/24/2002	New
Cold Spring Construction Co.	Akron/Arcade	Mining	Gravel mining	Old Acerage Permitted=39 New Permit App.=11	5/25/2004	5 years	5/25/2009	Renewal
Concrete Applied Technologies Corporation (CATCO)	Lancaster/Persia	ECL Art 23 title 27 Mined Land Reclamation; Art. 24 Freshwater Wetlands	Gravel and earth and material processing	6.2	7/18/1997	3 years	7/18/2000	New

NAME OF FACILITY	APPLICANT CITY/MINE TOWN	PERMIT TYPE	ACTIVITY	PERMIT LIMITATION (ACRES)	EFFECT-IVE DATE	PERMIT TERM	EXPIRA-TION DATE	APPLICA-TION TYPE
Country Side Sand & Gravel Inc., Simmons Borrow Pit	Collins/Persia	ECL Art. 23, Title 27: Freshwater Wetlands; Art. 24: Freshwater Wetlands	Sand and gravel mining	Old Acerage Permitted=6.2 New Permit App.=0-.5	6/14/2005	5 years	6/14/2010	Renewal
D & H Excavating, Inc.	Arcade/Yorkshire	Art. 15 Title 5 Protection of Water: Art 23 title 27 Mined Land Reclamation	Gravel mining	13.7	7/18/2001	5 years	7/18/2006	
D+H Material, Inc.	Arcade/Yorkshire	Mining	Sand and gravel mining	35.5	8/29/2005	5 years	12/22/2007	Modification
Dale R. Smith, Rt. 353 Mine	Cattaraugus/Persia	Mining	Valois Gravity Silt Loam	2.5	6/28/2004	5 years	6/28/2009	Renewal
Dan Gernatt Gravel Products, Inc.	Collins/Collins	NYSECL Stream Disturbance, Navigable Water (Excavation and Fill), 401 Water Quality	Sand and gravel skimming	200-2500cubic yards	11/29/2004			New
Dan Gernett Gravel Products, Inc.	Collins/Collins	Mining	Sand and gravel mining	Old Acerage Permitted=72.4 New Permit App.=0-10	5/2/2003	5 years	5/2/2008	Renewal
E.R. Rule & Sons, Inc.	Arcade/Freedom	Mining	Gravel mining	6	5/15/2001	5 years	6/1/2006	Renewal
Gernatt Asphalt Products, Inc.	Collins/Freedom	Mining	Sand and gravel mining	Old Acerage Permitted=144.1 New Permit App.=0-18		5 years	5/19/2002	Renewal
Gernatt Asphalt Products, Inc.	Collins/Freedom	Mining	Sand and gravel mining	Old Acerage Permitted=25 New Permit App.=0-8		5 years	4/30/2002	Renewal
Gernatt Asphalt Products, Inc.	Collins/Hanover	Mining	Sand and gravel mining	16.5	2/23/2000	5 years	2/23/2005	Renewal

NAME OF FACILITY	APPLICANT CITY/MINE TOWN	PERMIT TYPE	ACTIVITY	PERMIT LIMITATION (ACRES)	EFFECT-IVE DATE	PERMIT TERM	EXPIRA-TION DATE	APPLICA-TION TYPE
Gernatt Asphalt Products, Inc.	Collins/Concord	Mining	Sand and gravel mining	Old Acerage Permitted=107.4 New Permit App.=3-10	6/23/2003			Modification
Gernatt Asphalt Products, Inc.	Collins/Sardinia	Mining	Sand and gravel mining	175	4/1/2004	5 years	4/1/2009	Renewal
Gernatt Asphalt Products, Inc.	Collins/Sardinia	Mining	Sand and gravel, Clay	Old Acerage Permitted=36.7 New Permit App.=0-2	10/23/2001	5 years	10/23/2006	Renewal
Gernatt Asphalt Products, Inc.	Collins/Sardinia	Mining	Sand and gravel mining	Old Acerage Permitted=14.3 New Permit App.=0-7	7/29/1997	5 years	7/29/2002	Renewal
Gernatt Asphalt Products, Inc.	Collins/Sardinia	Mining	Sand and gravel mining	Old Acerage Permitted=350 New Permit App.=7.5	5/3/2005	5 years	5/3/2009	Renewal
Gernatt Asphalt Products, Inc.	Irving	Art. 15 Title 5 Protection of Water: Art 23 title 27 Mined Land Reclamation	Sand and Gravel mining	4,000cubic yards	11/13/1991	5 years	11/7/1996	
Gernatt Asphalt Products, Inc.	Collins/Persia	Minig	Sand and gravel mining	Old Acerage Permitted=8 New Permit App.=0-2.5	6/19/1997	5 years	6/19/2003	Renewal
Glacial Products, Ltd.	Buffalo/Yorkshire	Mining	Sand and gravel mining	Old Acerage Permitted=125 New Permit App.=49	6/22/2004	5 years	6/22/2009	Renewal
Greogory P. Waterman	East Concord/concord	Mining	Sand and gravel mining	Old Acerage Permitted=44 New Permit App.=0-4	7/10/2001	5 years	7/10/2006	Renewal
Holmes & Murphy, Inc.	Orchard Park/Concord	Mining	Sand and gravel mining	Old Acerage Permitted=54.5 New Permit App.=1-2+/-	1/25/2005	5 years	1/25/2010	Renewal
Lafarge North America, Inc.	Buffalo/Freedom	Mining	Gravel mining	Old Acerage Permitted=220.6 New Permit App.=14.4	12/10/2001	5 years	12/10/2006	Modification

NAME OF FACILITY	APPLICANT CITY/MINE TOWN	PERMIT TYPE	ACTIVITY	PERMIT LIMITATION (ACRES)	EFFECT-IVE DATE	PERMIT TERM	EXPIRA-TION DATE	APPLICA-TION TYPE
Lafarge North America, inc.	Amherst/Concord	Mining	Sand and gravel mining	95	4/14/2003	5 years	4/14/2008	Renewal
Richard R. Morris	Sardinia/Sardinia	Mining	Gravel mining	3	8/31/2000	3 years	8/31/2003	Renewal
Russo Development Inc.	Hamburg/Concord	ECL Art 23 title 27 Mined Land Reclamation	Sand and gravel mining	17.1	10/18/2005		1/20/2007	Modification
Southern Erie Gravel Products	East Concord/East Concord	Mining	Sand and gravel mining	Old Acerage Permitted=9.6 New Permit App.=6	9/2/1999	5 years	9/2/2004	Renewal
Town of Ashford	West Valley/Ashford	Mining	Gravel mining	Old Acerage Permitted=20.26 New Permit App.=3.26	1/27/04	5 years	1/31/2004	Renewal
Town of Freedom	Freedom/Freedom	Mining	Sand and gravel mining	9.5		5 years	1/10/2006	Renewal
Village of Springville-DPW	Springville/Concord	Mining	Gravel mining	2.1	3/18/2002	5 years	3/18/2007	Renewal
Yorkshire Materials, Inc.	Akron/Yorkshire	Mining	Sand and gravel mining	56.2	1/7/2003	5 years	1/7/2008	Renewal

d. SPDES Permits:

The New York State Department of Environmental Conservation ("DEC") has been delegated the authority to implement the Clean Water Act in New York State. The DECs primary mechanism for regulating the discharge of pollutants into New York State waters is called the State Pollutant Discharge Elimination System ("SPDES") (see, www.dec.ny.gov/permits/6054.html).

No discharges of pollutants into streams, lakes, ponds and wetlands from a point source are legal unless a SPDES permit has been issued. Permitted point sources within the Cattaraugus Creek watershed include such facilities as waste water treatment plants, multi-unit residential facilities, laundromats, restaurants and garages. Below are the facilities listed by DEC as operating under a SPDES permit:

NAME OF FACILITY	CITY/TOWN/VILLAGE
Ford Bros. Wholesale Meats Inc., Labor Housing	West Valley/Ashford
Ford Bros. Wholesale Meats Inc.	West Valley/Ashford
Creekside Industrial Real Estate LLC	Ashford
Zaepfel - Krog Corp.	Ashford
West Valley Central School	West Valley
West Valley Fire Co., Banquet Hall	Ashford

Rainbow Lake Resort	East Otto
East Otto Sewer District	East Otto
Living Waters Ministries Inc., Circle C Ranch, youth camp	Delevan
Pleasant View Mobile Home Park	Freedom
American Baptist Churches, Camp Vick	Freedom
Setterstix Inc.	New Albion
Catt. Central School	New Albion
Town of Otto Wastewater Treatment Plant	Otto
Haus Talblick of Gowanda Inc.	Gowanda
The Perrysburger, Coffee Shop	Perrysburg
Moench Tanning Co.	Gowanda
Bridges Trailer Park	Persia
Yorkshire Sewer Works, Yorkshire Plaza	Chaffee Yorkshire
Delevan Garden Apts.	Delevan
Delevan Terrace Apts.	Delevan
Larry Stevens Apt. Complex	Yorkshire
Laurie Sulzbach, Rental Property	Delevan
Delevan Elementary School	Delevan
Pix-Mic Trailer Park	Machias
Rolling Acres Mobile Home Park	Yorkshire
Grove St. Apts.	Delevan
Yorkshire Burger King	Yorkshire
Yorkshire Corners Elderly Housing	Yorkshire
Whispering Meadows	Yorkshire
Duffield Camp & Conference Center	Yorkshire
Ultra Cleaners	Yorkshire
Executive Cleaners	Yorkshire
Delevan Firefigthers Memorial Training Center	Delevan
Seitz Community Lodge	Delevan
Truby's Place	West Valley
Aristo Terrace Corp.	Macedon
Crescent Ridge Mobil Home Court	Yorkshire
Just a Bite Gourment	Yorkshire
Village Apartments	Delevan
Havens Trailer Park	Yorkshire
Yorkshire Apartments	Yorkshire
Delevan Laundromat	Delevan
RoseBrook Golf Course	Hanover
Town of Hanover Sewer District	Hanover
Village of Gowanda Wastewater Treatment Facility	Gowanda
NYS Dept. of Trans. Hgwy. Maint. Div., Resident Engineer's Subheadquarters	Collins
Shorty's Tavern	Collins
Springwood Mobile Village Mobile Home Park	Collins
Town of Collins Highway Garage	Collins
The Dreamers (Tavern, Restaurant)	Collins
Waterman's Restaurant & Produce	Collins
Goode's Market	Collins
Timmel Farm Equipment Repair	Collins
Peerless-Winsmith, Inc.	Springville
Perkins Mobiel Home Park	Springville
Robinson/Fiddlers Green Manufacturing Co., Inc.	Springville
Village of Springville Wastewater Treatment Facility	Springville
Springville Inn	Springville

Springville Mobile Home	Concord
County Fair	Springville
Springville Country Club	Concord
Diamond Saw Works	Chaffee
CheStop Plaza	Sardinia
Suburban Adult Services	Sardinia
Josie's Nichols Brook Restaurant	Sardinia
The Hearth Restaurant	Chaffee
Erie County Bureau of Forestry	Sardinia
Village of Arcade Wastewater Treatment Plant	Arcade
Whistlestop Craft Market	Arcade
Emkay Trading Co.	Arcade
Lake Hiram Group	Arcade
Jellystone Park of WNY	North Java
NYS Dept. of Corrections Facility at Collins Water Filtration Plant	Collins

Further permit information is available in the Appendix to the Resource Guide.

i. Concentrated Animal Feeding Operations:

Concentrated Animal Feeding Operations ("CAFOs") are considered to be a point source for discharges of pollutants to the water and are regulated through the SPDES program by the DEC. An ***Animal Feeding Operation (AFO)*** means a lot or facility (other than an aquatic animal production facility) where animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and where the animal confinement areas do not sustain crops, vegetation, forage growth, or post-harvest residues in the normal growing season. A ***Concentrated AFO ("CAFO")*** is an AFO that meets criteria as a large or medium AFO in terms of numbers of livestock housed at the facility AND that meets one of the following two conditions: (a) pollutants are discharged into waters of the State through a man-made ditch, flushing system, or other similar man-made device; or (b) pollutants are discharged directly into waters of the State that originate outside of the facility and pass over, across, or through the facility or otherwise come into direct contact with animals confined in the operation.

Almost 15,000 cows and heifers are located on regulated CAFOs within the Cattaraugus Creek watershed. CAFOs are required to comply with the DEC's General Permit 04-02, dated July 1, 2004. General Permit 04-02 is designed to provide guidance to CAFO operators so that they can better protect water quality through nutrient management plans, best management practices and proper operation and maintenance of waste management structures. At last count, there were 23 regulated CAFOs in the Cattaraugus Creek watershed, with 5 in Allegany County, 8 in Cattaraugus County, 4 in Erie County and 6 in Wyoming County.

e. West Valley Site:

Both the New York State Energy Research and Development Authority ("NYSERDA") and the United States Department of Energy ("DOE") control and/or operate components of the West Valley Site. For information on the NYSERDA portion of the project, refer to the

NYSERDA website at www.nyserda.org/programs/West_Valley/default.asp. The DOE also provides a public information website with all environmental documents at www.wv.doe.gov. A description of the project is provided by NYSERDA as follows:

> The Western New York Nuclear Service Center (Center) was established in the 1960s in response to a federal call for efforts to commercialize the reprocessing of spent nuclear fuel from power reactors. The Center is a 3,300-acre parcel owned by NYSERDA, located near the hamlet of West Valley in Cattaraugus County. The reprocessing facilities were constructed and operated by a private company, Nuclear Fuel Services, Inc. (NFS).
>
> The major facilities at the Center are located within a central area of approximately 200 acres. They include the reprocessing plant itself, a spent fuel storage facility, liquid high-level radioactive waste underground storage tanks, a low-level liquid radioactive waste treatment plant and lagoons, and a five-acre disposal area [the "U. S. Nuclear Regulatory Commission (NRC)-Licensed Disposal Area," or NDA] for solid waste generated by the reprocessing operations that had radioactivity levels too high for disposal at commercial low-level radioactive waste (LLRW) disposal facilities. A 15-acre commercial disposal area (the "State-Licensed Disposal Area," or SDA) regulated by New York State agencies, under delegation of authority from the NRC, accepted LLRW from operations at the Center facilities and from off-site facilities.
>
> The NFS reprocessing operations began in 1966 and were performed under license from the U. S. Atomic Energy Commission (AEC) and its successor, the NRC. In 1972, NFS shut the reprocessing plant down for expansion, modifications and additions. Reprocessing never resumed, however. During the six years of operation, the plant processed approximately 640 metric tons of spent nuclear fuel, about three-fourths of which was provided by the AEC (60 percent of the total was from U. S. defense reactors). Over 600,000 gallons of liquid high-level radioactive waste was produced during reprocessing and stored in underground steel tanks that had a design life of approximately 40 years.
>
> In 1976, NFS informed New York State that it intended to leave the reprocessing business and not renew the lease when the initial term expired at the end of 1980. Federal legislation was enacted in 1980 providing for solidification of the high-level liquid radioactive waste from reprocessing, then clean-up of related areas and wastes. In February 1982, NFS transferred possession of the reprocessing facilities to the U. S. Department of Energy (DOE) for that purpose. All responsibilities under the NRC license transferred to NYSERDA; however, they were essentially suspended for the duration of the DOE project. Responsibilities for maintenance of the SDA under state regulation transferred from NFS to NYSERDA in 1983.

THE WEST VALLEY DEMONSTRATION PROJECT

The West Valley Demonstration Project (WVDP) Act

In 1980, Congress passed the West Valley Demonstration Project Act, Pub. L. 96-368,

directing the DOE to carry out a high-level radioactive waste management demonstration project at the Center. The federal Act requires the Secretary of Energy to enter into an agreement with New York State for carrying out the Project (see below), and New York State to pay 10 percent of the Project costs and the federal government to pay 90 percent. Under this arrangement, NYSERDA has provided approximately $200M toward completion of the Project.

The Project has twin goals: first, to demonstrate solidification and preparation of high-level radioactive waste for disposal; and, second, to decontaminate and decommission the facilities, materials, and equipment used in the Project, in a manner that protects public health and safety. The WVDP Act directs DOE to:

- Solidify the 600,000+ gallons of liquid high-level radioactive wastes.
- Develop containers for permanent disposal of the solidified HLWs.
- Transport the solidified HLWs to a federal repository for permanent disposal.
- In accordance with NRC Regulatory Commission requirements, decontaminate and decommission:
  - the tanks and other facilities in which the HLWs were stored;
  - the facilities used in carrying out solidification; and
  - the material and hardware used in connection with the Project.
- Dispose of the LLRW and transuranic waste produced in conducting the Project.

To the extent practical, the facilities at the Center were to be decontaminated and reused to carry out the activities of the Project.

The Cooperative Agreement between DOE and NYSERDA

As required by the Project Act, on behalf of their respective governments, DOE and NYSERDA entered into a Cooperative Agreement for carrying out the Project (effective October 1, 1980; amended September 18, 1981). Under the Cooperative Agreement, DOE has exclusive use and possession of a portion of the Center known as the Project Premises (approximately 175 acres) to carry out the Project. The Project Premises include all of the major facilities at the Center except for the shut-down commercial LLRW burial area known as the SDA. The Cooperative Agreement provides for the State's 10 percent share of Project costs to be met through a combination of a credit for the facilities used by DOE, expenditures on services provided by NYSERDA, and direct NYSERDA payments for Project activities.

The Cooperative Agreement also defines the relationships and responsibilities of DOE and NYSERDA for the WVDP and NYSERDA involvement in Project management. DOE has the lead and controlling role. DOE holds full responsibility for controlling and managing the Project and maintaining the Project Premises, including maintenance of facilities and areas with waste stored or disposed of prior to the start of the Project. DOE

also provides environmental monitoring over the remaining 3,100 + acres of the Center -- known as the Retained Premises -- but generally does not have authority to use that area for waste management activities without the further consent of NYSERDA.

Over the years, DOE also has provided considerable support for NYSERDA's management responsibilities at the SDA, including security, environmental monitoring, and radiation and safety monitoring. NYSERDA pays 100 percent of the incremental costs for these support services.

WVDP Status

DOE estimates that more than 98 percent of the liquid high-level radioactive waste been removed from the underground waste storage tanks and solidified into 275 glass-filled canisters, which are in storage in a shielded cell in the former reprocessing plant. With the bulk of the hazard removed from the HLW tanks, efforts are now focused on placing those tanks in a stable configuration awaiting a final decision regarding the decommissioning of the Project facilities.

Project activities have expanded to include: decontamination of the reprocessing building; characterization of waste remaining in the tanks, vitrification facility and the reprocessing building; construction of a remote-handled waste facility to process and package highly radioactive components removed from site facilities; shipment of low-level waste stored on site for disposal; and treatment of contaminated groundwater.

DOE also transported 125 spent nuclear fuel assemblies from the West Valley Site to the Idaho National Engineering and Environmental Laboratory in 2003. The fuel assemblies were originally owned by the former site operator, NFS, and were in storage in the former reprocessing plant since the 1970s. In 1984, NFS entered into an agreement with DOE in which DOE assumed ownership of the fuel assemblies and responsibility for their removal. The fuel assemblies will be transported over commercial rail lines using two specially designed, heavily shielded shipping casks. The preparations and shipment of the spent nuclear fuel assemblies is not part of the WVDP and not subject to the Project cost sharing.

STATE-LICENSED DISPOSAL AREA (SDA)

The SDA occupies approximately 15 acres of the Western New York Nuclear Service Center immediately adjacent to the 175 acres DOE is using for the WVDP. NFS opened the SDA in 1963 and continued to operate it until 1975, when disposal operations were terminated as a result of problems managing water that infiltrated the disposal trenches. Approximately 2.4 million cubic ft of LLRW were disposed of in the SDA. NYSERDA currently has responsibility for the monitoring and maintenance of the SDA.

During operations, packaged waste was placed in long trenches excavated in the fine-grained, tight clay, through which water moves only very, very slowly, and covered with four to eight feet of excavated soil. Water from rain and snow melt was able to infiltrate

the trenches through cracks and discontinuities in the trench covers and upper levels of the soil, however. Because of the highly impermeable nature of the soil surrounding the trenches, water accumulated in them and became contaminated from contact with the wastes. In early 1975, this accumulation, coupled with the site operator's (NFS) inability to gain regulatory approval to remove, treat, and discharge the trench water on a controlled basis to an adjacent stream, led to uncontrolled seepage of contaminated water from some of the trenches. Waste burial operations promptly ceased and the SDA has remained shut down ever since.

Between 1975 and 1981, NFS pumped water out of the trenches several times and treated it and released it to the adjacent stream. Redesigning and reworking of the covers reduced, but did not eliminate, water accumulation in the trenches. Water management problems continued to be a concern at the SDA.

In 1983, NYSERDA assumed management responsibility for the SDA from NFS. NYSERDA focused its efforts in the 1990s on minimizing water infiltration through an active maintenance program. Infiltration control measures, consisting of a geomembrane cover over the entire SDA and installation of a belowground barrier wall, have been successful in eliminating increases in trench water levels. NYSERDA continues to monitor environmental conditions at the SDA and site-specific data are being collected to allow for decisions to be made on stabilization and closure of the SDA. Long-term management of the SDA is being addressed as part of a joint environmental impact statement the DOE and NYSERDA are carrying out for Decommissioning and/or Long-Term Stewardship of the West Valley facilities.

WEST VALLEY CITIZEN TASK FORCE (CTF)

In March 1996, NYSERDA and DOE issued a Draft Environmental Impact Statement (DEIS) for public comment which focused on evaluating closure options for the future management of facilities at the Center. During the development of the DEIS, NYSERDA perceived a need for broader public participation, above and beyond the public comments on the DEIS, to help in the development of a closure option for the Center. Forming a community advisory group seemed to be the best way to ensure that the issues and concerns of the community were understood. To make this a reality, NYSERDA, along with the support of DOE, initiated the formation of the West Valley Citizen Task Force.

The West Valley Citizen Task Force held its first meeting in late January 1997. In July 1998, NYSERDA and DOE received the Task Force's Final Recommendations Report on its policies, priorities, and guidelines for the clean up, closure, or long-term management of the Center. Since 1998, the Task Force has met regularly to discuss a variety of issues regarding facility closure and long-term management of the Center. The mission of the Task Force has expanded into other areas including future site use, long-term stewardship, and regulatory issues. The group has provided several sets of comments to the U.S. Nuclear Regulatory Commission on its policy statement on the decontamination and decommissioning criteria for West Valley. The Task Force is also active in keeping

the Congressional Representatives from the Western New York Region informed about the ongoing issues at the West Valley Site.

Decommissioning and/or Long-Term Site Management

In March 2003, NYSERDA and DOE issued a Notice of Intent to announce that the agencies will prepare an Environmental Impact Statement (EIS) for Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project (WVDP) and Western New York Nuclear Service Center. This EIS will revise the 1996 Draft Environmental Impact Statement. In this EIS, DOE and NYSERDA will evaluate the range of reasonable alternatives to address their decommissioning and/or long-term management responsibilities at the Center.

SECTION C: COMMUNITY RESOURCES

1. Local Governments: Planning, Zoning, Subdivision, Site Plan Approval

Municipalities in New York have both the right and the responsibility to regulate land use within their borders, pursuant to the New York State Constitution, common law of nuisance, and the statutory delegation of comprehensive planning, zoning, subdivision of land and site plan approval. A Comprehensive Plan lays out a community's vision and projects the pattern of growth and development. A Town or Village Zoning Code controls land use by establishing usage districts and should reflect the objectives of the municipality's Comprehensive Plan. Subdivision Regulations control the pattern of development. Even a community without zoning may adopt rules for ensuring that a land subdivision does not result in negative impacts to community services. The subdivision of land defines the pattern of a community, which in turn shapes its character. Dividing land also defines traffic circulation patterns and access and future rights-of way. Even with these authorities, many municipalities in New York do not comprehensively regulate land use within their boundaries and may be poorly prepared when large federal or state infrastructure projects appear on the horizon. The following chart is a status report on local government planning and zoning within the watershed, obtained primarily from the New York State Legislative Report, Rural Zoning, 2004, with assistance from Cattaraugus County Department of Economic Development, Planning and Tourism.

Cattaraugus County	**Comprehensive Plan**	**Zoning Code**	**Subdivision Ordinance**	**Site Plan Approval**	**Planning Board**
1. Village of Little Valley	YES	YES	YES	YES	YES
2. Town of Perrysburg	YES	YES	YES	NO	YES
3. Town of Persia	YES	YES	YES	YES	YES
4. Town of Dayton	YES	YES	NO	YES	YES
5. Town of New Albion	YES	YES	YES	YES	YES
6. Town of Otto	NO	YES	NO	NO	YES
7. Town of East Otto	YES	YES	YES	YES	YES
8. Town of Mansfield	YES	YES	YES	YES	YES
9. Town of Ashford	YES	NO	NO	YES	YES
10. Town of Ellicottville	YES	YES	YES	YES	YES
11. Town of Yorkshire	YES	YES	YES	YES	YES
12. Town of Machias	NO	NO	NO	NO	NO
13. Town of Freedom	YES	NO	NO	NO	YES
14. Town of Farmersville	NO	NO	NO	NO	NO
15. Village of Perrysburg (Town of Perrysburg)	YES	YES	YES	YES	YES
16. Village of Cattaraugus	YES	YES	YES	YES	YES

Cattaraugus County	**Comprehensive Plan**	**Zoning Code**	**Subdivision Ordinance**	**Site Plan Approval**	**Planning Board**
(Town of New Albion)					
17. Village of Delevan (Town of Yorkshire)	NO	YES	NO	NO	NO
Erie County					
18. Town of Brant	NO	YES	YES	YES	YES
19. Town of Collins	YES	YES	YES	YES	YES
20. Town of North Collins	NO	YES	YES	YES	YES
21. Town of Concord	YES	YES	YES	YES	YES
22. Town of Sardinia	NO	YES	NO	YES	NO
23. Village of Gowanda	YES	YES	YES	YES	YES
24. Village of North Collins	NO	YES	YES	YES	YES
25. Village of Springville	YES	YES	YES	YES	YES
Chautauqua County					
26. Town of Hanover	YES	YES	YES	YES	YES
Wyoming County					
27. Town of Arcade	YES	YES	NO	YES	YES
28. Town of Eagle	NO	NO	NO	NO	YES
29. Town of Wethersfield	NO	NO	NO	NO	NO
30. Town of Java	YES	YES	NO	YES	YES
31. Village of Arcade	YES	YES	YES	YES	YES
Allegany County					
32. Town of Centerville	NO	NO	NO	NO	NO

2. State Environmental Quality Review Act

Article 8 of the Environmental Conservation Law is the State Environmental Quality Review Act ("SEQRA"), enacted by the State legislature in 1975. SEQRA requires that all state agencies (including Counties, Towns, Villages, Planning Boards, Authorities, Departments and Divisions) carry out their business "with an awareness that they are stewards of the air, water, land, and living resources, and that they have an obligation to protect the environment for the use and enjoyment of this and all future generations." The purpose of SEQRA is to incorporate the consideration of environmental factors into the existing planning, review and decision-making processes of state, regional and local government agencies at the earliest possible time. While

environmental factors are not the "sole consideration" in decision-making, environmental impacts must be given appropriate weight with economic and social considerations.

SEQRA provides local governments with a mechanism for improving public participation in decision-making. If a project might have a harmful environmental impact, the municipality can require the project sponsor to prepare an environmental impact statement and describe methods for mitigating the harmful impacts to the environment. The New York State Department of Environmental Conservation regulations at 6 N.Y.C.R.R. 617 should be followed when implementing SEQRA.

3. Economy

An accurate picture of the economy of the Cattaraugus Creek Watershed is difficult to obtain because most publicly-available economic data is not organized by watershed, but rather, by County. While the relatively values of each economic sector might be unknown, a few of the obvious economic drivers are agriculture, extractive industries like logging and mining, and recreation and tourism including fishing, kayaking, swimming and hiking.

It is important to note that the various economic sectors of the Cattaraugus watershed are largely dependent upon the environmental resources of the watershed:

- Water
    1. Public drinking water from groundwater and surface waters
    2. Irrigation water for agriculture
    3. Drinking water for livestock
    4. Water flow supports recreation and tourism: kayaking, rafting
    5. Fisheries provide recreation and tourism as well as food supply

- Forests
    1. Timber for logging
    2. Erosion control
    3. Filtration for stormwater runoff protects water quality
    4. Flood prevention
    5. Real Estate Value – views and vistas, timber value
    6. Unique old growth forests
    7. Recreation attraction for hiking, horsebacking riding

a. Agriculture:

A review of the soil classifications for soils in the Cattaraugus Watershed illustrates that the majority of soils in the watershed are adequate or favorable for agriculture. Approximately 53% of the watershed is located in an "Agricultural District." Agricultural Districts are created under New York State Law as a way to provide property tax relief for farmers. Agricultural assessment allows farmland to be taxed for its agricultural value rather than its market value. Any land used for agricultural production may qualify if it meets the acreage and

income requirements established by the Agricultural Districts Law. This provision recently changed from 10-acre minimum parcel size to 7 acres plus $10,000 a year in agricultural sales. Smaller parcels are eligible if they generate at least $50,000 annually. Another important change in agricultural provisions was to allow horse boarding income to count toward agricultural income. Land placed under agricultural assessment and then converted to a non-agricultural use is subject to conversion fees. These payments equal five times the taxes saved in the last year during which the land was receiving an agricultural assessment, plus 6% interest compounded annually for each year that the assessment was granted (up to five years).

b. Recreation and Tourism

The Steelhead fisheries of the Cattaraugus are recognized as a major attraction for the recreation and tourism industry of the region. The U.S. Army Corps of Engineers, the NYS DEC and Professor Peter Reinelt of the State University of New York at Fredonia are undertaking economic studies to determine both the economic value of the fishery and the economic activity generated by the fishery in the local economy.

The Cattaraugus County Department of Economic Development, Planning and Tourism actively promotes the development of the recreation and tourism economy both within and around the Cattaraugus watershed. The County prepared a series of Guidebooks to assist the region in developing the Equestrian economy, snowmobile recreation, and hiking trails with the expected spin-off businesses that would be required. These guidebooks are available at the County's website: www.cattco.org

c. Forestry

Forestlands within the Cattaraugus watershed and the surrounding region are owned and managed for a variety of products and uses. Some common purposes of management include wildlife, timber, recreation, and hunting. These uses are almost always compatible, depending upon how practices are implemented. Forest management operations were identified by focus groups as "of concern" or "incompatible" to a healthy watershed. Forest management activities in other locations have demonstrated compatibility with maintenance of water quality (see www.nycwatershed.org). Issues can (and do) arise when poor harvesting techniques are utilized, prompting the NYSDEC to publish a "Best Management Practices" guidebook for loggers and forest managers (www.nycwatershed.org/pdfs/BMP%20Field%20Guide.pdf).

NOTE: FURTHER MATERIAL TO BE ADDED TO THIS SECTION IS UNDER DEVELOPMENT